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# *Abstracts of Scientific Papers*

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**SPR, Scientific Paper Committee**

# PA – Scientific Papers

## 1 - ABDOMINAL/GASTROINTESTINAL

### PA.01.002

#### **SCLERODERMA'S CLINICAL AND LABORATORIAL DIFFERENCES AMONG PATIENTS WITH AND WITHOUT ALTERATIONS IN THE CONTRASTED ESOPHAGUS STUDY.**

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**Brief description of the purpose of the study:** The esophagoduodenal serioscopy (EGDS) is an important exam in patients with systemic sclerosis (SS). The objective of this study was the clinical and laboratory comparison between patients with scleroderma with alterations in the EGDS, to those without alterations.

**Methods:** We recruited 50 patients with scleroderma (according to the American college of Rheumatology preliminary qualifying criterias) and collected socio-demographic and clinical data, applied the International dysphagia specific questionnaire (QEID) and performed the EGDS, according to the institution's protocol. P-value was considered significant when less than or equal to 0.05.

**Main results:** We studies 50 patient: 94% females, 72% caucasians, 50 years old mean age and the clinical forms limited (50%), diffuse (30%), overlap (18%) and sine sclerosis (2%). The main clinical finding was pulmonary fibrosis (58%). The ANF was positive in 98% and the main auto-antibody was the anti-centromere (27.02%). At least one alteration on the EGDS was found in 82%. It was found a significant difference in the punctuation on the QUEID ( $p=0,0367$ , by Mann Whitney statistical study).

**Importance of the conclusions:** There was a significant difference between both groups, when punctuating the QEID.

### PA.01.007

#### **LIPOSARCOMA OF THE INGUINAL CANAL: A CASE REPORT**

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**Brief description of the purpose of the report:** Case report of a liposarcoma of the inguinal canal, a rare malignancy with only about 200 cases previously reported in the literature, showing images of ultrasonography (USG), computed tomography (CT) and histopathology slides.

**Medical History:** 67-year-old man presented with a slow-growing, painless, right scrotum mass, clinically diagnosed as inguinal hernia. CT showed a large expansive formation involving the right inguinal canal and the scrotum, measuring 38,0 x 16,0 x 15,5 cm. It has partially defined limits with heterogeneous attenuation, presenting fat attenuation areas, calcification foci, and heterogeneous contrast enhancement. No signs of secondary involvement in other

abdominal organs. At ultrasonography, the mass was solid, heterogeneous pattern with calcified foci and anechoic area (necrosis? Cystic degeneration?). The patient underwent surgical excision of the lesion and ipsilateral orchiectomy.

**Diagnosis:** Histologically, it was confirmed well-differentiated liposarcoma, lipoma-like, with sclerotic areas.

**Discussion and summary of the case:** Liposarcoma is a rare malignant tumor of the inguinal canal. Its clinical behavior ranges from indolent to aggressive disease. The clinical presentation is usually a soft, palpable, painless and slow-growing mass of soft tissues. The appearance of liposarcoma on CT reflects the degree of the tumor differentiation. A well-differentiated liposarcoma typically presents as a mass with predominant fat.

### PA.01.011

#### **MRI CHOLANGIOGRAPHY OF THE BILIARY SYSTEM: NORMAL ANATOMY AND VARIANTS.**

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**Brief description of the purpose of the report:** The anatomic variants of the biliary tract are very common. It is important that the radiologist know and allocate as predisposing to bile duct injury in biliary- digestive or potential liver surgery. The cholangiography MRI is an excellent non- invasive method to recognize and untested variants of the biliary tree with high degree of certainty.

**Medical History:** This poster aims to make a pictorial review by sequences Fast Spin Echo Single Shot , or “cholangiographic “ sequences for anatomic variants of the biliary tract and the gallbladder.

**Diagnosis:** This images of anatomic variants of the biliary tract including the different configurations of its branches, bile ducts and fittings insertion of the cystic variants are also developed.

**Discussion and summary of the case:** The most common are those involving the right posterior like the duct trifurcation of the biliary tree . Less common are the right rear drain branch or a branch right accessory in the common hepatic duct or cystic.

### PA.01.012

#### **ABDOMINAL DESMOPLASTIC SMALL ROUND CELL TUMOR: A CASE REPORT.**

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**Brief description of the purpose of the report:** Purpose: To report a case of desmoplastic small round cell tumor (DS-RCT) and call attention to this rare, aggressive and recently described neoplasm.

**Medical History:** Clinical History: a 24-year-old male, previously healthy, went to hospital reporting a five-day-history

of lower abdominal pain. Physical examination revealed a hard palpable hypogastric mass. Ultrasonography displayed a large hypoechoic paravesical mass, retroperitoneal lymphadenomegaly as well as infiltrative right hepatic lobe lesion and multiple hepatic nodules. Tomography study confirmed these findings. Ultrasound-guided biopsy of the hypogastric mass was performed.

**Diagnosis:** Diagnosis: Histopathological study revealed DS-RCT. The patient is currently on polichemotherapy.

**Discussion and summary of the case:** Discussion: DSRCT is a rare neoplasm, first described in 1991. This aggressive malignancy affects mainly young adults and teenagers. Symptoms and signs are mostly characterized by abdominal pain and palpable mass. Radiologic findings include intraperitoneal soft tissue masses adhered to the omentum or the mesentery. Liver metastasis and ascites are common at the time of the diagnosis. To the present time no efficient treatment has been developed. Prognosis is poor, leading to an overall survival of 17 months.

### PA.01.014

#### MRI AND CT OF THE LESS COMMON ACUTE COMPLICATIONS OF CHOLELITHIASIS.

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**Brief description of the purpose of the report:** Cholelithiasis affects approximately 10% of the general population and is twice as common in women than in men, increasing in prevalence with age. The most frequent complication is acute cholecystitis, but not the only one. We present a group of less frequent acute complications of cholelithiasis, including Mirizzi syndrome, the Biliodigestive fistulas and biliary ileus, with emphasis on evaluation with MR and CT.

**Medical History:** Representative cases of the diseases studied were selected, including only those who had surgical confirmation. The images were analyzed by three subspecialists radiologists in abdomen and selected by consensus.

**Diagnosis:** Infrequent acute complications of cholelithiasis, as the Mirizzi's syndrome, the biliodigestive fistulas, and biliary ileus are potentially lethal diseases, which have specific signs allowing imaging diagnosis.

**Discussion and summary of the case:** MRI and CT, allow to diagnose less frequent complications of cholelithiasis reliably. To know the radiological signs of these conditions allows early diagnosis, improving the prognosis of patients.

### PA.01.018

#### PANCREATIC TUBERCULOSIS

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**Brief description of the purpose of the report:** Discussion of causes of mass in the pancreatic head.

**Medical History:** Male patient, 54 years old. Two months ago abdominal discomfort and nausea. Amylase, lipase, FA and elevated GGT, bilirubin touched. CT and MRI showed enlargement of the pancreatic head, involving common hepatic artery and portal vein. Two eco endoscopies with biopsies negative for malignancy. Developed in three months with poor general condition, weight loss and fever. Similar to early laboratory tests, antibiotics and corticosteroids were

initiated and after one month of treatment, MRI showed retro pancreatic collection. Patient was hospitalized and underwent laparotomy, material culture indicated Mycobacterium tuberculosis. Started RIPE scheme with clinical and radiological improvement.

**Diagnosis:** Pancreatic tuberculosis

**Discussion and summary of the case:** Exclusive involvement of the pancreas is very rare. Nonspecific signs and symptoms, laboratory variable. Imaging studies reveal pancreatic mass and venous compression, being confused with neoplastic lesion. Beyond the tough suspicion aspirate with the BAAR test is usually negative. Thus, often the diagnosis is only executed at laparotomy or autopsy, obtaining material for culture. The diagnosis requires a high level of suspicion and although it is a rare condition, should be considered as a differential diagnosis for pancreatic injury, especially in those patients with constitutional symptoms and negative for malignancy.

### PA.01.021

#### INTESTINAL MALROTATION WITH APPENDICITIS CAUSED BY APPENDICOLITH: LITERATURE REVIEW WITH A CASE REPORT

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**Brief description of the purpose of the report:** Report an extremely rare form of appendicitis associated with intestinal malrotation.

**Medical History:** 39 years old woman presenting constant diffuse abdominal pain at first, high intensity crampy, with progressive worsening to the left groin and lower abdomen, followed by vomiting with food aspect for 5 days. Physical examination demonstrates positive rebound.

**Diagnosis:** Abdomen CT scan found intestinal malrotation, identifying the cecum in the left iliac fossa, with local fat obliteration and the ascending colon across the midline and intestinal loop segment blindly with an appendicolith. During surgery, a necrotic and perforated appendix was found in the left iliac fossa, with plastron. The surgical procedure was performed uneventfully and the patient discharged 4 days later.

**Discussion and summary of the case:** Acute appendicitis is one of the most common conditions requiring emergency surgery. When it presents with pain in the left lower abdominal quadrant is extremely rare, with most cases reported associated with congenital malrotation, situs inversus or an very long appendix. The imaging, especially CT scan, play an important role in establishing an accurate and fast diagnosis, beyond the detection of associated anomalies that may require surgical correction.

### PA.01.023

#### OPTIMIZATION OF ABDOMINAL MRI PROTOCOL WITH USE OF CONTRAST WITH HEPATOBILIARY EXCRETION PATHWAY IN A 3 TESLA EQUIPMENT

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**Brief description of the purpose of the study:** The aim of this work is to establish an optimized protocol for abdominal

magnetic resonance studies using intravenous contrast agent (PRIMOVIIST) with Hepatobiliary excretion pathway in a 3T field strength equipment.

**Methods:** The present study was conducted with 20 patients ( $42 \pm 16$  years) in a 3T magnetic resonance equipment (PHILIPS Ingenia 3T HP), with digital technology and dedicated body coil. Protocol optimization was performed for total abdominal and upper studies, obeying the time required for images acquisition on Hepatobiliary phase and optimizing the acquisition of initial dynamic phase.

**Main results:** The suggested Protocol had an average duration of 25 and 35 minutes to upper abdominal and total studies respectively. The dynamic phase was carried out in 4 stages, with isotropic acquisitions in apnea. Two late stages were obtained with 10 and 20 minutes after injection of contrast.

**Importance of the conclusions:** The optimized protocol has proven to be useful for diagnostic purposes, not impairing the exam flow and without loss of quality compared to the original Protocol. Dynamic phases with isotropic resolution allowed a comparison of the contrast wash in different planes, enabling better anatomical localization of lesions in liver segments.

#### PA.01.024

##### THE MEAN VALUES OF LIVER STIFFNESS ASSESSED BY ACOUSTIC RADIATION FORCE IMPULSE ELASTOGRAPHY IN NORMAL SUBJECTS

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**Brief description of the purpose of the study:** The AIM of this paper is to establish the values of liver stiffness (LS) assessed by means of ARFI in patients without known liver pathology and considered healthy subjects.

**Methods:** MATERIAL AND METHOD: the study group was composed of 62 subjects without known liver pathology, healthy volunteers or patients from other departments of our hospital who did not have altered liver laboratory tests. 37 women and 25 men, mean age  $32.3 \pm 12.4$  years). In each subject abdominal ultrasound was performed (patients with steatosis or any other signs of chronic liver pathology were excluded) as well as ARFI (using Siemens Acuson S2000). The median value of 10 measurements was calculated, expressed in m/s. Mean ARFI values.

**Main results:** RESULTS: The mean value of ARFI measurements in normal individuals was  $0.98 \pm 0.16$  m/s. There were no significant differences between the mean ARFI values in men vs. women, also among different age.

**Importance of the conclusions:** CONCLUSION: In our study the mean LS value obtained by ARFI in healthy subjects was 0.98 m/s.

#### PA.01.027

##### ELASTOGRAPHY ARFI IN CHRONIC HEPATITIS C

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**Brief description of the purpose of the study:** This study attempts to compare several non-invasive methods of fibrosis assessment in chronic hepatitis C including ARFI elastography, APRI, Forns, FIB-4 e King scores versus percutaneous liver biopsy.

**Methods:** This prospective study enrolled 51 consecutive treatment-naive patients. Biological tests needed for calcu-

lating the scores were performed in the same week of liver biopsy. The time interval between liver biopsy, assessed according to the METAVIR score, and tissue stiffness was less to six months.

**Main results:** Results: The best test for predicting significant fibrosis ( $F \geq 2$  METAVIR) was ARFI elastography with AUROC 0,90, followed by FIB-4 (AUROC 0,86), King (0,85, Forns (0,84) e APRI (0,82). For a cut-off of 1,31m/s, ARFI had 89,3% sensitivity (Se) and 87% specificity (Sp). The best test for cirrhosis was ARFI elastography with AUROC 0,98, followed by FIB-4 (0,94), King (0,90), APRI (0,82) and Forns (0,81). For a cut-off of 1,95m/s, ARFI had 100% Se and 95,2% Sp.

**Importance of the conclusions:** Conclusions: ARFI elastography had very good accuracy for the assessment of liver fibrosis. It was more effective than APRI, Forns, King and FIB-4 scores for the prediction of significant fibrosis and cirrhosis in chronic hepatitis C patients.

#### PA.01.029

##### PRIMARY PANCREATIC GLOMANGIOMYOMA: A RARE CASE REPORT

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**Brief description of the purpose of the report:** Glomus tumors are mesenchymal neoplasms composed of cells like modified muscle cells of normal glomus body. They are rare (less than 2% of soft tissue tumors), more frequent in young adults, have no sex predilection and most of them are benign. Most common sites of involvement are subungual region of the finger, palm, wrist, forearm and foot, although rarely can affect other sites such as bone, stomach, colon and kidney. Only one case of pancreatic glomus tumor was reported in the literature. Glomangiomyoma is the least common subtype and characterized by similar architecture to the classic glomus tumor, in addition to the presence of vascular channels and elongated cells resembling smooth muscle.

**Medical History:** We present a rare case of primary pancreatic glomangiomyoma in a 40-year-old female patient, who complained of epigastric pain radiating to the back. MRI of the abdomen revealed a solid lesion with cystic areas in the neck of the pancreas.

**Diagnosis:** Gastroduodenopancreatectomy was performed and the morphological findings associated with immunohistochemical panel were compatible with pancreatic glomangiomyoma.

**Discussion and summary of the case:** Glomus tumors are rare neoplasms. Although there is only another case described in the literature, glomus tumors in the pancreas should be included in the differential diagnosis of solid and well-vascularized tumors.

#### PA.01.034

##### COMPARATIVE STUDY OF THE NEGATIVE CONTRAST AND NATURAL CONTRAST IN EXAMS ON MAGNETIC RESONANCE CHOLANGIOPANCREATOGRAPHY

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**Brief description of the purpose of the study:** The objective of this study is to evaluate the feasibility, effectiveness and advantages of using a concentrated pineapple juice as a negative oral contrast agent, in exams on Magnetic Resonance Cholangiopancreatography ( MRCP ), performed in a Center for Diagnostic Imaging in Curitiba - PR .

**Methods:** After approval by the Research Ethics Committee number 04147312.5.0000.5547 and selection of five volunteers, tests with fasting time of 6 hours were performed. The sequences were acquired in fasting and 15 minutes after administration of 400 ml of concentrated pineapple juice. The images were analyzed by two radiologists from the scores proposed by Duarte (2008 ), evaluated the images with score 1-4 for the following anatomical structures: right and left hepatic ducts , common hepatic duct , cystic duct , common bile duct and pancreatic.

**Main results:** The results showed diversity in the scores assigned by the two doctors, for this reason future analyzes should be performed, but proved the feasibility of using the pineapple juice marketed as negative oral contrast agent in MRCP.

**Importance of the conclusions:** In addition to examination become less costly, we cited the following benefits of juice: not stimulation of adverse reactions , the palatable taste and its easy availability .

### PA.01.035

#### MERKEL CELL CARCINOMA - ASPECTS ON NUCLEAR MAGNETIC RESONANCE

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**Brief description of the purpose of the report:** Here we report on the assessment by nuclear magnetic resonance of Merkel cell carcinoma (MCC), a rare tumor with atypical localization, due to its aggressiveness, poor prognosis and high incidence of lymph node metastasis distance, radiology and histopathology are essential.

**Medical History:** Male patient, 74 years old, having purplish lesion on the left forearm who underwent surgical excision. Presented about 12 months after resection of the nodule injury firm and painless consistency located in the left inguinal region.

**Diagnosis:** The result of the histopathological and immunohistochemical study confirmed the lesion to be CCM. Magnetic Resonance Imaging (MRI) of the pelvis showed an expansive oval lesion measuring about 6.0 x 7.5 x 2.0 cm in greatest dimension, with hyposignal on T1 and hyperintense T2, located in the left inguinal lymph node biopsy which demonstrated that it was distant metastasis.

**Discussion and summary of the case:** CCM represents a rare and aggressive form of skin malignancy, affects patients over 60 years in sun-exposed areas. Male patient, 74 years old, presenting lesion in the left forearm, histopathological and immunohistochemical study confirmed the lesion to be CCM. MRI of the pelvis showed lesion with hyposignal on T1 and hyperintense T2, located in the left inguinal lymph node biopsy which confirmed it was distant metastasis.

### PA.01.036

#### DIFUSÃO DE CORPO TODO: EXPERIÊNCIA DE UM CENTRO ONCOLÓGICO

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**Introduction:** Ressonância magnética de corpo (RMC) baseada na técnica de difusão vem se tornando uma ferramenta importante em oncologia. Os avanços tecnológicos permitem aquisição de imagens com tempo e qualidade satisfatórias para um serviço oncológico. Além disso, novas técnicas de processamento disponibilizam fusão com imagens anatômicas, inversões e quantificação do mapa de ADC (apparent diffusion coefficient).

**Methods Involved:** Será apresentado um protocolo de RMC baseado em: difusão, STIR e T1 com variações passíveis de serem aplicadas em aparelhos de diferentes níveis de tecnologia. Os casos clínicos exemplificarão as principais aplicações em oncologia, principalmente na avaliação de lesões ósseas em câncer de mama e próstata, estadiamento de tumores neuroendócrinos, tumores gastrointestinais, melanoma e detecção de carcinomatose peritoneal. Será explorado o papel do ADC na caracterização de lesões, controle de tratamento e comparação com métodos de medicina nuclear.

**Discussion:** RMC é uma técnica que não usa radiação ionizante, injeção de radio-isótopos ou contraste endovenoso, sendo mais barata que a maioria dos exames disponíveis para avaliação sistêmica de tumores. Além disso, a difusão se apresenta como potencial biomarcador em oncologia e possível preditor de resposta e sucesso de tratamento.

**Conclusion of the presentation:** RMC é uma nova e poderosa ferramenta que deve ser explorada em centros oncológicos.

### PA.01.038

#### MAGNETIC RESONANCE IMAGING FOR THE ASSESSMENT OF ABDOMINAL AND PELVIC ENDOMETRIOSIS: FREQUENT AND LESS COMMON IMAGING PATTERNS

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**Introduction:** Endometriosis is a common cause for seeking medical and gynecological attention by young and middle-aged women, either for its typical symptoms or reproductive issues. The scope of its workup includes magnetic resonance imaging (MRI). Knowledge of imaging aspects and common locations and morphologies are well documented in literature. However, atypical and unusual patterns of endometriotic disease, although not frequent, should be known by every radiologist.

**Methods Involved:** Selection of cases in imaging databases of a private practice and a federal education institution after interpretation by an experienced radiologist, and directed graphical representation of the relevant findings.

**Discussion:** Abdominal and pelvic endometriotic lesions and implants present characteristic imaging patterns on MRI, according to the stage of disease and phase of the menstrual cycle. This possibility should be considered in internal medicine as a possible differential diagnosis for women of re-

productive age with the characteristic clinical features of the disease, even if in unusual locations.

**Conclusion of the presentation:** For excelling as a non-invasive method with high resolution for soft tissues, good sensitivity and specificity, multiplanar, not using radiation and being relatively safe regarding contrast media, MRI is an excellent tool in the diagnostic approach and follow-up of pelvic and abdominal endometriosis.

## 2 - GENITOURINARY

### PA.02.001

#### ROLE OF TRANSVAGINAL ULTRASONOGRAPHY WITH BOWEL PREPARATION IN THE DIAGNOSIS OF DEEP PELVIC ENDOMETRIOSIS. WHAT SONOGRAPHER SHOULD KNOW?

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**Introduction:** Endometriosis is a common multifocal gynecologic disease that manifests during the reproductive years, often causing chronic pain and infertility. It is characterized by growth of endometrial tissue outside the uterine cavity. Deep pelvic endometriosis is a peculiar form of this condition, where the endometrial implants occur below the peritoneal surface. The anatomic structures most often involved are the uterosacral ligament, retosigmoid colon, rectovaginal septum and bladder. Transvaginal ultrasonography is still the most cost-effective imaging method for the initial evaluation of endometriosis. When performed after bowel preparation, the diagnosis of nodules located in the posterior compartment of the pelvis is more accurate.

**Methods Involved:** Initially, the normal anatomy of the pelvis (anatomical schemes and related ultrasound images) will be shown. After that, cases from the institution's teaching file will be shown with the various manifestations of deep pelvic endometriosis.

**Discussion:** This study aims to demonstrate the main imaging findings of endometriosis that can be found on transvaginal ultrasonography with bowel preparation. Will be addressed the main site of attack and to report on each of them.

**Conclusion of the presentation:** It is essential that radiologists are familiar with the sonographic aspects of deep endometriosis, to perform an accurate diagnosis

### PA.02.003

#### POLYORCHIDISM: CASE REPORT AND ITS FINDING ON ULTRASONOGRAPHIC AND MAGNETIC RESONANCE (MRI).

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**Brief description of the purpose of the report:** This report aims to describe the polyorchidism (more than two testicles), a rare condition, with about 200 cases reported so far.

**Medical History:** Man, 40 years old, complaining of a "lump on the scrotum", observed about 5 months ago, painless and without growth or other complains, comorbidities or previous surgeries. On physical examination, it was noticed an ex-

tra-testicular tumor, mobile, firm, located on the right side of the scrotum, near the inguinal canal. In the ultrasound exam, it was found one testicle on the left side, and two testicles on the right side of the scrotum. The extranumerary testicle showed minimal increase in its echogenicity and slight lower volume. The study was followed by an MRI exam in which was clearly confirmed the presence of 3 testicles. The patient is being followed, with serial ultrasound follow-up. No surgical planning is in view.

**Diagnosis:** Polyorchidism.

**Discussion and summary of the case:** The polyorchidism usually presents itself as triorchidism. The most common manifestation is a painless paratesticular mass. It has an increased risk of malignancy. The diagnosis can be set by the ultrasound and MRI. Its management ranges from orchiectomy to conservative follow-up with serial imaging studies.

### PA.02.004

#### MRI IMAGING FINDINGS IN PLACENTA ACCRETA: REVIEW OF THE LITERATURE.

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**Brief description of the purpose of the Review of Literature:** To present a literature review of principal imaging findings in Magnetic Resonance Imaging (MRI) of Placenta Accreta patients, and comparing with local cases.

**Description (s) condition (s), method (s) or technique (s):** Placenta Accreta is a generic term that includes the distinct grades of abnormal placentation, which are determined by the level of invasion, going from the compromise of only the junction in the myometrium, to the invasion of its full thickness and surrounding structures.

**Conclusion:** It has been described specific findings in magnetic resonance that allows to suspect the diagnostic, like the bulge of the placenta with the loss of its pear-like form, increase in its vascularity with subsequent hemorrhagic phenomena and low-intensity intraplacental bands that can compromise from the endometrium-myometrium interphase to adjacent organs, like the bladder.

### PA.02.006

#### UTERINE SCHWANNOMA: CASE REPORT

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**Brief description of the purpose of the report:** In this report, we demonstrate clinically and radiologically an unusual site of schwannoma tumors origin, the uterus.

**Medical History:** 79 years old woman with increased abdominal size due to pelvic mass

**Diagnosis:** The Computed Tomography showed a pelvic cystic lesion with septation inside located in the right adnexal region. The anatomopatologic study showed schwannoma with cystic and hemorrhagic degeneration in uterine serous.

**Discussion and summary of the case:** Schwannomas are benign tumors with low malignant potential, originated from Schwann cells, usually found in cranial nerves, neck and flexor surfaces of the extremities. They are rarely found in the retroperitoneal space, as well as primary uterine origin. Usually affects patients aged 20-50 years, without a clear sex predilection. The radiological diagnosis is important to assess the extent of the injury as well as malignant transformation, monitor the treatment and guide biopsies.

### PA.02.007

#### MRI IN THE DIAGNOSIS OF DEEP ENDOMETRIOSIS WITH SURGICAL CORRELATION.

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**Brief description of the purpose of the report:** Endometriosis is a chronic gynecological disorder characterized by the growth of endometrial tissue outside the uterine cavity, either in the ovary or peritoneal surface. When there subperitoneal commitment, deeper than 5 mm, deep called endometriosis, in descending order affecting the uterosacral ligaments, the pelvic peritoneum surrounds the uterus, fallopian tubes, rectosigmoid, surgical scars, bladder, the ureters, the retrovaginal septum and the perineum, the inguinal canals.

**Medical History:** Representative cases of deep endometriosis, who had surgical confirmation were selected. The images were analyzed by radiologists subspecialists in abdomen, and selected by consensus.

**Diagnosis:** MRI allows to diagnose deep endometriosis reliably, distinguishing it from other causes of pelvic pain. In addition, MRI is accurate in determining the anatomical location of the implants, facilitating the surgical approach.

**Discussion and summary of the case:** MRI is the imaging method of choice for the diagnostic study of deep endometriosis, and allows detailed anatomical description that facilitates the surgical approach.

### PA.02.008

#### GIANT RENAL ONCOCYTOMA : A CASE REPORT IN PERU

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**Introduction:** BRIEF DESCRIPTION Renal oncocytoma is a rare benign renal neoplasm, of slow growth, arising from epithelial cells metaplasia lining the renal collecting tubules. It is usually asymptomatic, of incidental diagnosis and difficult to differentiate in imaging and clinical from renal cancer

**Methods Involved:** CLINICAL HISTORY We report a female patient of 55 years old without any cancer history and any disorder of the urogenital system. Patient underwent an

abdominal ultrasound screening finding a large lesion in the left kidney, further study of tomography showed extensive lesion of 14 x 12 cm with contrast hypercaptation, with hypodense interior areas, suggestive of central necrosis or a scar.

**Discussion:** DIAGNOSIS The patient underwent left radical nephrectomy and the histological study determined the diagnosis of giant renal oncocytoma.

**Conclusion of the presentation:** BRIEF CASE DISCUSSION : The radiographic features of giant renal oncocytoma not allow to distinguish with certainty from the renal carcinoma, being needed the radical nephrectomy for histopathological and immunohistochemical evaluation. In this report we include major radiological and pathological features of the case.

### PA.02.009

#### MAJOR ANATOMIC LANDMARKS FOR URETEROLITHIASIS DIAGNOSIS IN TOMOGRAPHIC STUDY.

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**Introduction:** Ureterolithiasis has high prevalence and recurrence rates, and is one of the most common urinary tract disorders. The greatest difficulty is to differentiate ureteral calculus and phlebolith, especially in the pelvic area.

**Methods Involved:** The test chosen for the diagnosis of obstructive uropathy due to calculus is the Computed Tomography scan (CT) without contrast. Direct visualization of the calculus inside the ureter is the most common sign. This study analyses calcifications through CT and, according to anatomic landmarks, it is possible to indicate the correct topography of the calcium focus.

**Discussion:** It is most commonly found in the ureterovesical junction or above it, in the pelvic part of ureter. The ureteropelvic junction is around 29.7mm above the pubic symphysis, and 10.5mm below the acetabular roof, which helps distinguishing between distal ureteral calculus and other pelvic calcifications. Calcifications that are 3cm below the acetabular roof and less than 1.5cm above the upper border of pubic symphysis probably have no signs of ureteral calculi.

**Conclusion of the presentation:** CT scan without contrast plays a major role in ureterolithiasis research and its differential diagnosis, in order to provide the proper treatment.

### PA.02.011

#### RENAL MEDULLARY CARCINOMA - A CASE REPORT

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**Brief description of the purpose of the report:** L.H.B.S, male, 17 age, leucodermic.

**Medical History:** Submitted right flank pain and weight loss for 2 months, preceded by cough, dyspnea and sputum for 3 months.

**Diagnosis:** Radiography of the chest showing bilateral diffuse alveolar infiltrates, the Computed Tomography (CT) of

the chest showed numerous nodules. In the abdomen, CT demonstrated enlarged right kidney with heterogeneous, solid mass with DMSA scintigraphy and demonstrated functional size exclusion of the right kidney, opting for nephrectomy. Histopathological study defined renal medullary carcinoma. Hemoglobin electrophoresis confirmed that the patient had sickle cell trait. Patient had an adverse outcome, and death after two months of therapy.

**Discussion and summary of the case:** Renal medullary carcinoma is a rare, aggressive disease, affecting young people with sickle cell trait, and the diagnosis is usually performed in an advanced stage, with unfavorable outcome. Disease characteristics make it essential inclusion on the list of differential diagnoses in specific populations (children and young people with sickle cell hemoglobinopathies), but their ignorance by most health professionals delays their diagnosis, reducing the chances of cure. This report highlights the importance of knowledge of this rare disease, but devastating, wherein the imaging methods have a key role in the diagnosis and staging.

### PA.02.012

#### RADIOLOGICAL ASSESSMENT IN THE DIAGNOSIS OF ACUTE AND CHRONIC RENAL FAILURE

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**Brief description of the purpose of the Review of Literature:** Highlight the importance of imaging, primarily ultrasound, in the rating between Acute and Chronic Renal Failure, associating them to the patient's clinical presentation and laboratory tests.

**Description (s) condition (s), method (s) or technique (s):** The precise biochemical or clinical criteria for diagnosis of renal failure (RF) are not clearly defined. In RF, renal function is abnormal, but able to maintain essential bodily functions. The distinction between acute renal failure (ARF) and chronic renal failure (CRF) can sometimes be observed before the requested radiological examinations. However, many patients initially have very high creatinine levels, raising doubts about the ARF or CRF rating in the early stages. There are significant limitations to the use of serum creatinine as a measure of kidney function. There is a reasonable correlation between creatinine clearance 2 hours and 24 hours clearance ( $r = 0.85$ ), but the error in the calculation can vary from 10% to 27%. However, in a patient with previously undiagnosed RF, initial evaluation of renal size by ultrasound (US) has been shown to be more useful than other laboratory tests, with a sensitivity of 98%.

**Conclusion:** Ultrasonography has been the most sensitive method to dispel doubts between the diagnosis of ARF and CRF, evaluating renal size.

### PA.02.013

#### DEDICATED PROTOCOLS FOR CT AND MRI IN GENITOURINARY RADIOLOGY - PRECISIONISM OR NECESSITY?

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**Introduction:** Introduction: The technological evolution of computed tomography and magnetic resonance were an important contributions for the evaluation of many disorders of the genitourinary tract. This study aims to demonstrate the main imaging acquisition protocols of the genitourinary tract emphasizing different organs and pathologies, in order to increase the diagnostic efficacy and to improve the communication with assistant physician.

**Methods Involved:** Methods: Computed tomography and magnetic resonance.

**Discussion:** Discussion: Appropriate acquisition protocols of magnetic resonance imaging and computed tomography are essential in the proper diagnosis of diseases of the genitourinary tract. In this paper we will illustrate the following protocols, with their indications and circumstances: CT for nephrolithiasis, URO-CT and URO-MRI, CT and MRI for evaluation of renal focal lesions, CT and MRI for evaluation of adrenal lesions, TC and MRI of kidney donor, CT and MRI of renal transplant, MRI of penis and scrotum, MRI of prostate, MRI of the female pelvis and obstetric MRI.

**Conclusion of the presentation:** Conclusion: Knowledge of acquisition protocols of magnetic resonance imaging and computed tomography of the genitourinary tract by radiologists is essential to increase the diagnostic efficiency of these methods.

### PA.02.014

#### AValiação E SEGUIMENTO DE CISTOS RENAIIS COMPLEXOS DA CATEGORIA BOSNIAK IIF

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**Introduction:** A detecção incidental de lesões renais em pacientes assintomáticos aumentou nos últimos anos devido a disseminação de métodos de imagem como ultrassom, tomografia computadorizada e ressonância magnética. Em estudos de autópsia, pacientes ao redor dos 50 anos apresentam 50% de chance de apresentar ao menos um cisto simples. Tumores renais sólidos e lesões císticas simples não representam dificuldades ao diagnóstico, mas lesões císticas complexas podem ser desafiadoras para o radiologista e de condução duvidosa.

**Methods Involved:** Tomografia computadorizada e ressonância magnética. Serão apresentados casos de cistos complexos classificados como Bosniak IIF, o seguimento destas lesões, pitfalls e sinais cruciais que determinam mudança de conduta, seja ela cirúrgica ou suspensão do seguimento.

**Discussion:** O objetivo na avaliação por imagem de uma lesão focal renal é diferenciar lesões benignas de alterações possivelmente malignas. A classificação de Bosniak permite a categorização de cistos em lesões que necessitam tratamento cirúrgico, que podem ter seguimento clínico ou aquelas que são claramente benignas e não necessitam de cirurgia ou seguimento adicional. As lesões císticas renais moderadamente complexas (Bosniak IIF) tem potencial maligno estimado em cerca de 12% e necessitam seguimento por no mínimo 5 anos.

**Conclusion of the presentation:** Cistos renais moderadamente complexos representam um desafio para o clínico e o radiologista deve estar familiarizado com os achados de imagem para o adequado diagnóstico e seguimento

## PA.02.015

### INCIDENTAL FINDINGS ON PROSTATE RESONANCE MAGNETIC

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**Brief description of the purpose of the study:** Magnetic resonance imaging (MRI) of the prostate, classically indicated in the prostate cancer staging, has been performed more often before (re) biopsy, as well as additional study in cases of patients who fit the criteria for active surveillance. Due to its greater accuracy, particularly with the introduction of high field MRI, their realization has increased considerably and hence the detection of incidental findings. This work aims to identify the most common incidental findings related to the method, and evaluate their relevance to the patient and examination report.

**Methods:** Retrospective study, analyzing the reports of prostate MRI performed between 01/01/2008 and 12/31/2013 on our service, constituting a total of 1555 exams.

**Main results:** Preliminary data analysis showed significant incidental findings such as bladder tumors, testicular and bowel injuries. Other incidental findings, of less importance, such as colic diverticula and degenerative changes of the lumbar spine were also observed.

**Importance of the conclusions:** Incidental findings in MRI of the prostate are an increasingly frequent occurrence. Radiologists should not only search for additional findings present examination as set its relevance, avoiding unnecessary additional procedures or advising further research when necessary.

## PA.02.016

### NEUROENDOCRINE TUMOR OF THE BLADDER : A CASE REPORT

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**Brief description of the purpose of the report:** The neuroendocrine tumor of the bladder (or small cell) is rare, accounting for less than 0.5 % of bladder cancers . Aggressive and invasive once diagnosed, most patients present hematuria as the chief complaint. This study will be discussed imaging findings of this tumor through the literatures pictures ultrasonography (USG), computed tomography (CT) and magnetic resonance imaging (MRI).

**Medical History:** Man, 70 ,smoker ,referred to the emergency department with complaints of hematuria and urinary continence. Physical examination revealed abdominal pain and poor performance status.

**Diagnosis:** Laboratory and imaging tests such as ultrasonography, CT and MRI, which showed bladder mass affecting much of its length were performed.

**Discussion and summary of the case:** Neuroendocrine bladder tumors are large and polypoid or nodular and may appear ulcerated surface. Parietal invasion is common with large masses. The lymph node spread occurs in two thirds of cases and distant metastases usually occur to the liver, bones and lungs. Despite therapeutic measures the prognosis is poor.

## 3 - HEAD & NECK

### PA.03.002

#### EVALUATION OF DOUBLE INVERSION RECOVERY PULSE SEQUENCES ON BRAIN MAGNETIC RESONANCE IMAGING EXAMINATION

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**Brief description of the purpose of the study:** The goal of this study is to evaluate the image quality obtained from the double inversion recovery pulse sequences used as a diagnostic tool for evaluation of the brain, with white matter and cerebrospinal fluid suppression.

**Methods:** The study was performed with 30 patients (41 ± 24 years) submitted to a MRI brain examination, using a 1,5T equipment (SIEMENS Magnetom ESPREE) and a dedicated brain 6 channel coil. The DIR sequences were analyzed drawing regions of interest for quantification of the background signal, white and gray matter signal, and obtaining the contrast index of those regions. Areas with generative suspicion were analyzed as well.

**Main results:** The contrast index within the white and gray matter of those sequences were 85,13 ± 15,15, being the background signal intensity, white and gray matter of 2,07 ± 1,17, 95,21 ± 16,83 e 10,08 ± 5,14, respectively.

**Importance of the conclusions:** The DIR pulse sequences are a good option on the detection of degenerative brain disease, showing an elevated contrast index within normal and degenerative areas.

### PA.03.005

#### IMAGE ARTEFACTS IN CONE BEAM COMPUTED TOMOGRAPHY IN MAXILLOFACIAL EXAMINATIONS

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**Introduction:** OBJETIVE: To present the types of artefacts formed in more commom cone beam computed tomography ( CBCT ) equipments and its main features to assist for a correct diagnosis.

**Methods Involved:** MATERIAL AND METHOD: Images of these pictorial were generated randomly from many equipments of CBCT and classified according to its etiology related to the patient, scanning acquisition system of imagens and imaging reconstruction algorithm, related to the patient.

**Discussion:** DISCUSSION: The term artefact means any distortion or image error unrelated to the studied object. The CBCT is now becoming a method of standard diagnosis for planning tridimensional ( 3D ) in healthcare, specifically in dentistry and maxillofacial pathologies. It has been advocated as a radiographic method that greatly reduces the formation of artefacts when compared with the survey carried out on Multislice Computed Tomography.

**Conclusion of the presentation:** Different types of materials are currently used in dental treatments, such as orthodontic brackets, titanium implants, metal alloys, acrylic materials, porcelain and ceramic. Probably all these radiopaque objects when placed in cone beam system result in some degree of

artefact range that has the potential to affect the quality of image of the surrounding anatomical structures, interfering in the accurate interpretation of CT images.

### PA.03.006

#### EVALUATION OF INFLUENCE OF DICOM AND JPEG FORMATS IN THE REPRODUCIBILITY OF CEPHAOMETRIC LANDMARKS IN DIGITAL POSTERO-ANTERIOR RADIOGRAPHS

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**Brief description of the purpose of the study:** The aim of this study was to evaluate the influence of DICOM and JPEG file formats on quality factors 100,80 and 60, in the reproducibility intra and interexaminator at cephalometrics landmarks identification at postero-anterior radiographies

**Methods:** The 30 original images in DICOM format was converted into a JPEG format on quality factors 100,80,60. After blind and random the samples, three calibrated orthodontist marked the 18 cephalometric points on each image using an X and Y coordinates system.

**Main results:** The results shown that the cephalometric points on digital postero- anterior radiographies presents a reproducibility agreement on intra such as interexaminator, except for points ZL, ZR,AZ,JR,NC,CN on coordinate Y and A6 on coordinate X.

**Importance of the conclusions:** The file formats DICOM and JPEG on quality formats 100,80,60 do not affected the reproducibility intra and interexaminators on a postero –anterior radiographies

### PA.03.010

#### PRELIMINARY STUDY WITH CT “CONE BEAM” HIGH RESOLUTION SUBMILLIMETER 2D AND 3D OF MASTOID LABYRINTH BONE IN DRY SKULLS

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**Brief description of the purpose of the study:** Objective: To evaluate the bony labyrinth structures of the temporal bone of dry skulls, on the images of high spatial and submillimeter resolutions, obtained with CT “cone beam” (CBCT)

**Methods:** Material and Methods: We studied 19 pieces of dry skulls (38 temporal bones), 8 female, 11 male, between 3-50 years, with acquisitions of the temporal bone, FOV 17x11, 835x835 matrix, 80 kV, 15 MAS and spatial resolution of 180 nm (0.18 mm). The visual and subjective evaluations were performed by two experienced radiologists, qualifying is well defined or not, the cochlea, the saccule, semicircular canals, the vestibular and cochlear aqueducts and translabyrinthine paths of the facial nerves.

**Main results:** Results: All the structures in the images of 38 reviews bony labyrinths were identified and well defined, demonstrating high accuracy and sensibility of the method.

**Importance of the conclusions:** Conclusion: CBCT allows to identify the structures of the temporal bone labyrinth in dry skulls with high spatial resolution. This preliminary study al-

lows us to infer the use of the same in the clinical evaluation of the temporal bone, without intravenous iodinated contrast, according to clinical and technical limitations of the method .

### PA.03.011

#### MULTIMODALITY IMAGING OF REFRACTORY PAPILLARY THYROID CARCINOMA: FROM USUAL TO UNUSUAL PRESENTATIONS IN AN ONCOLOGIC HOSPITAL

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**Introduction:** INTRODUCTION: Papillary thyroid carcinoma usually has an indolent course. In some cases, local recurrence or metastatic disease may cause serious clinical discomfort and shorten life expectancy. The diagnostic accuracy, follow up and prognosis may be improved by the state-of-the-art imaging available.

**Methods Involved:** METHODS: Pictorial review of pre and post thyroidectomy imaging of the primary tumor, recurrence, metastasis or incidental findings with Radionuclide Scintigraphy, Positron Emission Tomography (PET) - Computed Tomography (CT), Post-radioiodine therapy including Single Photon Emission CT (SPECT), Ultrasound (US), Multidetector CT and Magnetic Resonance Imaging (MRI).

**Discussion:** DISCUSSION: The indolent course of papillary carcinoma may induce radiologists and clinicians to underestimate the possibility of recurrent lesions. Although the incidence of refractory lesions is not common, they do exist and should be suspected. The radiologist must be familiar with the cervical anatomy, routes of lymphatic drainage and sites of metastases from papillary carcinomas. The domain of the diagnostic methods to be used in the investigation improves the quality of the follow-up of these patients and helps the choice of new therapeutic approaches.

**Conclusion of the presentation:** CONCLUSION: The aim of this comprehensive review is to help viewers to recognize the available imaging modalities for the management of the refractory papillary thyroid carcinoma.

### PA.03.013

#### OTOSCLEROSIS: WHAT YOU WANT TO KNOW BUT HAVE NO TIME TO REVIEW.

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**Introduction:** Otosclerosis is a cause of conductive and / or neurosensorial hearing loss, which can be unilateral or bilateral, has genetic inheritance with variable penetrance, and affects more women than men. In appropriate clinical context, recognition of subtle radiological findings allows correct diagnosis.

**Methods Involved:** Demonstration of usual and unusual diagnostic findings in early and late phases of the disease by computed tomography and magnetic resonance imaging, as well as its differential diagnosis and key points in its pre and post operative evaluation.

**Discussion:** The early phase of the disease is hypervascular, which can also be called otospongiosis. There is conductive hearing loss at low frequencies and foci of bone resorption. The fissula ante fenestram is initially affected and later are the pericochlear regions and the bony labyrinth, including the walls of the internal auditory canal. Later, there is bone formation and usually sclerosis of the stapes footplate and narrowing of the oval window.

**Conclusion of the presentation:** Otosclerosis is a potentially treatable cause of hearing loss that may present as subtle radiologic findings. Recognition of these findings allows correct diagnosis and implementation of treatment with significant improvement in quality of life.

### PA.03.023

#### TIPS FOR THE DIFFERENTIAL DIAGNOSIS BETWEEN AMELOBLASTOMA AND OTHER MANDIBULAR CYSTIC LESIONS

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**Introduction:** Ameloblastoma is a benign but locally aggressive mandibular tumor derived from odontogenic epithelium. The differential diagnosis are broad and include other cystic mandibular lesions, like odontogenic keratocyst and odontogenic myxoma.

**Methods Involved:** We present two didactic ameloblastoma cases, one of the multicystic type and the other of the unicystic type, and compare them with cases from our institution's digital archives that represent their main differential diagnosis. These cases include odontogenic keratocyst, odontogenic myxoma, dentigerous cyst and ameloblastic carcinoma. These diagnosis, with the exception of the dentigerous cyst, were confirmed after histopathological analysis.

**Discussion:** The evaluation of mandibular cystic lesions is difficult, since many of them present similar clinical and radiological features. The definitive diagnosis of ameloblastoma is rendered only after surgical excision, based on histopathological findings. However, radiological features, associated with clinical characteristics, allow narrowing the diagnosis, providing an adequate surgical approach.

**Conclusion of the presentation:** The role of imaging studies in ameloblastoma and other cystic mandibular lesions is to aid in diagnosis as well as to help evaluate the extension of the disease, propitiating decision on the best therapeutical management.

### PA.03.024

#### UNUSUAL CAUSE FOR REPEATED DYSPNEA: FIBROVASCULAR POLYPOID LESION WITHIN PYRIFORM SINUS.

BARROSO JR., J.E.A.; TÁVORA, D.G.F.; TRINDADE, J.W.M.; HOLANDA, I.M.P.; SILVEIRA, C.R.S.; PAIVA, R.G.S.; ARAGÃO JR., A.G.M.

SÃO CARLOS IMAGEM, FORTALEZA, CEARÁ, BRASIL  
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**Brief description of the purpose of the report:** Fibrovascular polyp of the hypopharynx are rare disorders, which may vary in size. Your regurgitation may result in eventual aspiration, with suffocation. The objective of this case report

is to demonstrate the good correlation between the cervical magnetic resonance imaging (MR) and computed tomography (CT) and its histopathology.

**Medical History:** Male patient, 39 years old, complaining of cough and dyspnea repeated events. Performed CT and MRI cervical, followed by study laryngoscope, being forwards the surgery to remove the lesion

**Diagnosis:** Fibrovascular polypoid lesion of the hypopharynx and pyriform sinus, confirmed on histopathology.

**Discussion and summary of the case:** Fibrovascular polyp is composed of vascular tissues, fibrous and adipose, covered by the normal mucous tissue. In the study, CT revealed hypodense lesion occupying an the right pyriform sinus with fat component confirmed by its high signal intensity on T1 and T2 sequences in MRI without enhancement. Histopathology showed a lesion with angiomatous and adipose component without atypia. Thus, because of the good correlation between the imaging and pathologic features, research in CT and MRI are considered useful in diagnosis

## 4 - NEURORADIOLOGY

### PA.04.006

#### DEVELOPMENT OF EDUCATIONAL MATERIAL FROM MAGNETIC RESONANCE SAGITTAL IMAGES FOR THE STUDY OF NEUROANATOMY

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**Introduction:** The diagnostic neuroimaging technologies, such as magnetic resonance imaging (MRI), may also contribute to the development of learning tools for the study of neuroanatomy by medical students, allowing a direct contact with these images that have revolutionized the knowledge and the treatment of neurological disorders. Thus, the aim of this study was to develop an atlas with MRI images of the supra and infratentorial regions that can be used as an instrument for the study of neuroanatomy.

**Methods Involved:** MRI images in T1 and T2 weighted and 3D-CISS were selected, with the identification of the anatomical elements in levels of court in sagittal plane highlighting structures in the following observed areas: bulb, bridge, mid-brain, cerebellum, cranial nerves, diencephalic structures, basal ganglia, telencephalon, vessels and the ventricular system.

**Discussion:** The recognition of anatomical sites involved in pathologies of the central nervous system (CNS) contributes to the learning process of neuroanatomy and is quite useful for radiological practice.

**Conclusion of the presentation:** Our pictorial essay is useful for undergraduates in medicine who are studying neuroanatomy and radiologists, as it provides developed material for study and consultation.

### PA.04.008

#### DEVELOPMENT OF EDUCATIONAL MATERIAL FROM MAGNETIC RESONANCE IMAGES IN AXIAL PLANES FOR THE STUDY OF NEUROANATOMY

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**Introduction:** The diagnostic neuroimaging technologies, such as magnetic resonance imaging (MRI), may also contribute to the development of learning tools for the study of neuroanatomy by medical students, allowing a direct contact with these images that have revolutionized the knowledge and the treatment of neurological disorders. Thus, the aim of this study was to develop an atlas with MRI images of the supra and infratentorial regions that can be used as an instrument for the study of neuroanatomy.

**Methods Involved:** MRI images in T1 and T2 weighted and 3D-CISS were selected, with the identification of the anatomical elements in levels of court in axial planes highlighting structures in the following observed areas: bulb, bridge, mid-brain, cerebellum, cranial nerves, diencephalic structures, basal ganglia, telencephalon, vessels and the ventricular system.

**Discussion:** The recognition of anatomical sites involved in pathologies of the central nervous system (CNS) contributes to the learning process of neuroanatomy and is quite useful for radiological practice.

**Conclusion of the presentation:** Our pictorial essay is useful for undergraduates in medicine who are studying neuroanatomy and radiologists, as it provides developed material for study and consultation.

#### PA.04.014

##### NEUROIMAGING FINDINGS IN IMMUNE-MEDIATED ENCEPHALOPATHIES

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**Introduction:** Immune-mediated encephalopathy (EI) encephalitis are caused by antibodies that may or may not be associated with the existence of systemic malignancies. Among the preferred sites of involvement of the central nervous system highlights the limbic system, and for this reason is also called limbic encephalitis. Neurological paraneoplastic syndromes (PNS) are rare and affect less than 1% of systemic cancer patients, but 70% of these have neurological symptoms as the first manifestation of an occult tumor. Commonly there is a correlation of specific antibodies detectable in the serum / CSF with certain types of primary tumors. The diagnosis of this encephalitis has increased recently, justifying the need to recognize these imaging findings.

**Methods Involved:** In this paper we will review the main findings of EI using cases from our institution.

**Discussion:** The image findings in EI may be from normal until typical. Signal intensity changes in the resonance specific sequences can be found, and in preferred locations. The correlation of clinical and laboratory data enables a targeted investigation in these cases.

**Conclusion of the presentation:** The recognition of radiological patterns of EI is important because it is increasingly diagnosed syndromes in our midst, and the rapid institution of therapy contributes for a better prognosis.

#### PA.04.017

**PSEUDOPROGRESSION VERSUS EARLY TUMOR RECURRENCE: COULD ADC VALUES BE HELPFUL?**  
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**Brief description of the purpose of the study:** The purpose of this study was to differentiate early tumor progression from pseudoprogression in patients with glioblastoma multiforme (GBM) treated with surgery, radiotherapy (RT) and chemotherapy by using apparent diffusion coefficient (ADC) values.

**Methods:** Magnetic resonance (MR) studies of 8 patients diagnosed with GBM who underwent surgery, RT (60 Gy) and chemotherapy (temozolomide) with suspected early tumor recurrence due to worsening of image features were reviewed. ADC values were measured with four standardized ROIs (36,9 pixels) positioned in areas of enhancement in the earliest MR study after RT (1-3 months after completion of RT). Minimum and mean values were compared with patient outcomes (disease progression x pseudoprogression).

**Main results:** Five patients were diagnosed with pseudoprogression in the follow up studies and 3 with tumor progression, proved by surgery. The minimum ADC values in the pseudoprogression group were  $0,99 \pm 0,21$  and in the tumor progression group were  $0,98 \pm 0,05$ . ( $p=0,948$ ). The average ADC values in the pseudoprogression group were  $1,11 \pm 0,19$  and in the tumor progression group were  $1,06 \pm 0,12$  ( $p=0,680$ ).

**Importance of the conclusions:** These values were not statistically significant to differentiate pseudoprogression from tumor progression, which is in agreement with the literature. Besides, the small number of patients remains a limitation.

#### PA.04.028

##### IS THIS A LYMPHOMA? DIFFERENT MANIFESTATIONS OF PRIMARY LYMPHOMA OF THE CENTRAL NERVOUS SYSTEM.

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**Brief description of the purpose of the Review of Literature:** The lymphoma may be primary of the CNS, accounting for about 1-5%, or secondary to systemic involvement by the disease ( most common ). We present the imaging features of primary CNS lymphoma in a didactic way, and based on illustrative cases treated in our service and based on a literature review, discuss the features that allow the radiologist to point out this disease as a differential diagnosis and relate to clinical and epidemiological contexts that make the hypothesis of lymphoma more or less likely.

**Description (s) condition (s), method (s) or technique (s):** In order to illustrate the different forms of presentation of primary CNS lymphoma , in their different histological subtypes , we show imaging findings with CT and MRI , of typical and atypical cases in immunocompetent and immunocompromised patients .

**Conclusion:** Some imaging features are common of lymphomas but no imaging finding alone can make the diagnosis , or differentiate it unequivocally of other CNS lesions. The evaluation of the imaging findings of lymphoma by the radiologist, combined with clinical and epidemiological data of the patient , can be lead to early diagnosis of the disease.

#### PA.04.029

##### COPPER METABOLISM RELATED DISEASES AND THEIR IMAGING FINDINGS IN THE CENTRAL NERVOUS SYSTEM (CNS)

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**Brief description of the purpose of the Review of Literature:** The study consisted of updated bibliographic review, using different medicine research sources such as: pubmed, birem and medline. Copper metabolism related disorders are well known causes of neurologic symptoms among metal transport and storage related diseases. In this study we reviewed these disorders, with emphasis on their computed tomography and magnetic resonance imaging findings, also approaching advanced imaging methods.

**Description (s) condition (s), method (s) or technique (s):** Wilson's disease (WD), Menkes disease (MD) and Occipital Horn Syndrome (SCO), three rare hereditary entities were addressed in this discussion. These diseases are caused by genetic mutations that give origin to dysfunctional copper binding proteins, leading to abnormal concentration levels of this metal in the tissues.

**Conclusion:** Given the infrequency of these entities, as well as the sparse literature that deal with them together in association to its imaging findings in the CNS, we decided to study this subject in more depth.

#### PA.04.031

##### BRAINSTEM CAVERNOUS MALFORMATION : A CHALLENGE FOR TRACTOGRAPHY .

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**Introduction:** The cavernous malformation are common findings in neuroradiologist practice, and are a possible cause of bleeding in the central nervous system. Its location and size are important for prognosis and treatment planning of these lesions, as well as the volume of associated bleeding . In particular, the brainstem cavernous malformation are surgical challenges due to its location and the risks involved , and one of the concerns in surgical planning is the way the cavernoma displaces the fibers of the corticospinal tracts .

**Methods Involved:** The use of tractography in this context can provide valuable information related to the projection of these fibers, however, we must be familiar with artifacts that can reduce the anisotropy (edema , magnetic susceptibility ) and consequently the sensitivity of the study .

**Discussion:** To illustrate that , we use cases of a tertiary hospital with brainstem cavernous angiomas and study of pre-operative tractography and comment on the outcomes of the surgical point of view .

**Conclusion of the presentation:** The tractography is a potentially useful technique for the evaluation and surgical planning of brainstem cavernous angiomas , and its interpretation should be cautious do to potential artifacts .

#### PA.04.038

##### IMAGING FINDINGS IN HIRAYAMA'S DISEASE: CASE REPORT

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**Brief description of the purpose of the report:** Hirayama's disease is a rare self-limiting condition, typical of young men, characterized by progressive atrophy and reduced muscle strength of the distal upper limb, usually unilaterally.

**Medical History:** Patient female, 31 years old, with pain and atrophy of the right upper limb of long standing, without other neurological manifestations. Electromyography showed light chronic motor neuropathic process restricted to the right myotomes of C7 to D1 without denervation. Magnetic resonance (MR) showed mild atrophy of the anterior spinal funiculi at cervico-dorsal level with increased dural sac and spinal cord mobility in dynamic sequences in flexion.

**Diagnosis:** Hirayama's disease or juvenile muscular atrophy of distal upper extremities.

**Discussion and summary of the case:** Hirayama's disease is credited to the dynamic compression of the lower cervical spinal cord during flexion. The diagnosis is based on clinical, electromyography , and imaging findings, with MR having a key role. Should be taken in neutral position and in flexion. The classic MR findings in the neutral position include: asymmetric atrophy and flattening of the lower cervical spine, anteriorly; intramedullary high signal intensity on T2-weighted images, and abnormal curvature of the cervical spine. In cervical flexion is observed anterior displacement of the medulla and growing mass in the posterior epidural space with contrast enhancement.

#### PA.04.044

##### LYMPHOMA OF THE CENTRAL NERVOUS SYSTEM - PICTORIAL ESSAY ON THE VARIOUS PRESENTATIONS

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**Introduction:** Lymphoma of the central nervous system (CNS) is a common condition in the daily practice of both expert and general radiologists, and has shown increasing incidence in recent years, mainly due to HIV infection. Due to its frequency and for its many different presentations, it is important for the radiologist to be aware of this condition.

**Methods Involved:** Pictorial essay with magnetic resonance imaging, including advanced sequences, of histologically confirmed and didactic relevant cases from the files of a public hospital with a strong neurosurgery service.

**Discussion:** In the central nervous system, lymphoma may be primary or secondary, the latter being more common. It affects both immunocompetent and immunosuppressed patients. It can manifest in many different ways: as a focal lesion, multiple nodular lesions, meningeal thickening. The lesions are typically ependymal in origin. Another form of presentation, more rare, is purely intravascular, which is difficult to diagnose. In advanced sequences, these tumors tend to show restricted diffusion for its high cellularity.

**Conclusion of the presentation:** CNS lymphoma has sever-

al presentations and can mimic many diseases. Thus, imaging studies, especially MRI, play a key role in diagnosis and follow-up.

#### PA.04.046

##### **PATHOLOGICAL INTRACRANIAL CALCIFICATIONS: WHAT EVERY RADIOLOGIST SHOULD KNOW**

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**Introduction:** Intracranial calcifications are a common finding in the radiologist's daily practice. Although associated with physiological and/or age-related disorders in most cases, may also be characterized in several diseases.

**Methods Involved:** Selection of cases in imaging database of a state institution, graphic reproduction of the relevant findings and literature review.

**Discussion:** Intracranial calcifications characterized as pathological may be associated with various disease categories, including: post-traumatic and residual, such as sequelae of ischemic and traumatic events; congenital, mainly in phakomatoses; vascular, including malformations, aneurysms and atherosclerosis; infectious, both congenital and acquired; inflammatory, such as sarcoidosis; neoplastic, potentially associated with several tumors of the central nervous system; and endocrinometabolic, especially in diseases of the thyroid and parathyroid glands. The analysis of the characteristics of calcifications in addition to any other findings on imaging studies and the patient's clinical data, help the radiologist to classify them properly.

**Conclusion of the presentation:** Knowing how to recognize these findings and communicate their impression to the requesting physician is essential to any radiologist. The characterization of an intracranial calcification, associated with joint analysis of all the other information available, allows the radiologist to make a proper diagnosis, directing the appropriate course of action in each case.

#### PA.04.047

##### **INTRAVENTRICULAR NEOPLASMS: MAIN HISTOLOGICAL TYPES AND HOW TO NARROW THE DIFFERENTIAL DIAGNOSIS**

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**Introduction:** A variety of neoplasms potentially originate in the cerebral ventricular system and may either represent incidental findings on imaging studies or present various symptoms, including headache, focal neurological deficit and/or manifestations of intracranial hypertension.

**Methods Involved:** Selection of cases in imaging database of a state institution, graphic reproduction of the relevant findings and literature review.

**Discussion:** Intraventricular neoplasms can be divided into three main groups: neoplasms of the ventricular wall and septum pellucidum, including ependymoma, subependymo-

ma, central neurocytoma and subependymal giant cell tumor; neoplasms of the choroid plexus, such as papilloma and choroid plexus carcinoma; and others, where we highlight meningioma and metastases. Many of these lesions have generally similar characteristics on imaging studies. However, analysis of their location and patient data, such as age, sex and comorbidities, assists the radiologist to narrow the differential diagnosis.

**Conclusion of the presentation:** Knowing how to interpret the findings and communicate their impression to the requesting physician is essential to any radiologist. The characterization of an intraventricular mass associated with the joint analysis of all the other information available allows the radiologist to make a proper diagnostic hypothesis, directing the appropriate course of action in each case.

#### PA.04.048

##### **CEREBELLOPONTINE ANGLE MASSES: HOW TO NARROW THE DIFFERENTIAL DIAGNOSIS**

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**Introduction:** Approximately 5-10% of intracranial masses in adults occur in the posterior fossa, and the cerebellopontine angle is a relatively frequent site. In general, these manifest with cranial neuropathies, especially involving the vestibulocochlear nerve, and/or signs of posterior fossa mass effect, including headache, vomiting, and ataxia.

**Methods Involved:** Selection of cases in imaging database of a state institution, graphic reproduction of the relevant findings, and literature review.

**Discussion:** The characterization of these lesions and their division into three main groups allow the radiologist to direct the diagnosis: enhancing masses, where we highlight schwannoma and meningioma, as well as ependymoma and metastasis; masses with cerebrospinal fluid attenuation / signal, including epidermoid cyst and arachnoid cyst; and eventual lesions with high signal intensity on T1-weighted images, rarer, such as neurenteric cyst, lipoma, and hemorrhagic schwannoma.

**Conclusion of the presentation:** Knowing how to interpret the findings and communicate their impression to the requesting physician is essential to any radiologist. The characterization of a cerebellopontine angle mass associated with the joint analysis of all the other information available allows the radiologist to make a proper diagnostic hypothesis, directing the appropriate course of action in each case.

## **5 - MUSCULOSKELETAL**

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#### PA.05.007

##### **CASE REPORT:AVULSION OF RECTUS ABDOMINIS AND LONG ADDUCTOR MUSCLE COMMON APO-NEUROSIS WITH RESPECTIVES MYOTENDIOUS JUNCTIONS INJURIES.**

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**Brief description of the purpose of the report:** Avulsion of rectus abdominis and long adductor muscle common aponeurosis associated with partial adductors detachment is an uncommon lesion and deserves directed protocol in magnetic resonance imaging (MRI).

**Medical History:** C.M.M., 49 years-old man, with pubeitis as previous diagnosis. After trauma in extension (kick movement) in a soccer match, evolved with left thigh root pain, local echymosis and hematoma which extended to the scrotum sac. Radiographic study showed subchondral sclerosis in symphysis pubis and surrounding soft tissues ossification. MRI revealed total disinsertion of long adductor/rectus abdominis complex, as well as detachment of their common aponeurosis originated from symphysis pubis and respective myotendinous junctions injuries.

**Diagnosis:** Avulsion of rectus abdominis and long adductor muscle common aponeurosis with respective myotendinous junctions injuries.

**Discussion and summary of the case:** The common adductor origin with the aponeurosis of the rectus abdominis muscle provides anterior support for the symphysis pubis. An acute avulsion of this common origin can result in instability of the symphysis. On the suspicious of this kind of injury, it should be considered MRI sagittal sequence parallel to abovementioned aponeurosis, and axial oblique sequence of pubic region in off-midline sagittal planes parallel to the arcuate line of the pelvic inlet.

#### PA.05.008

##### ANATOMICAL VARIATIONS ON HINDFOOT BONE AND ITS IMPLICATIONS.

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**Introduction:** The hindfoot is by definition composed of talus and calcaneus bones and might exhibit numerous anatomical variants. The aim of this paper is to illustrate some of these variants as well as its pathological potential

**Methods Involved:** Illustration of clinical cases by means of literature review.

**Discussion:** The hindfoot is the site of numerous anatomic bone variations, which are often involved in pathological processes. Noteworthy are the “os trigonum” and a larger posterolateral process of the talus, associated with the subsequent impact of the hindfoot; the accessory anterolateral talar facet, involved in talocalcaneal impingement; the prominence of the posterior superior calcaneal tuberosity and fibular trochlea, which are related to the impact on the calcaneal tendon and the fibular tendinopathy. And finally, the classic talocalcaneal coalition with second degenerative changes.

**Conclusion of the presentation:** Identifying the anatomical variants of the hindfoot and its implications are an everyday challenge for the radiologist. Therefore, understanding its particularities might be crucial for improving clinical practice.

#### PA.05.011

##### PATELLAR HYPEROSTOSIS IN PROTEUS SYNDROME – CASE REPORT WITH EMPHASIS ON MAGNETIC RESSONANCE IMAGING AND COMPUTED TOMOGRAPHY FINDINGS AND LITERATURE REVIEW

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**Brief description of the purpose of the report:** We describe the findings on magnetic resonance imaging (MRI) and computed tomography (CT) in the knee in a patient with Proteus Syndrome (PS).

**Medical History:** 6 year old boy with progressive increase in the volume of the knee and functional limitation

**Diagnosis:** Proteus Syndrome

**Discussion and summary of the case:** PS is a rare genetic disorder that determines multifocal and asymmetric overgrowth of mesenchymal tissue. Diagnosis is based on clinical criteria and can be confirmed by genetic testing. In this study, we describe the knee manifestations, identified on MRI and CT. Skeletal manifestations are the most common in the disease and are characterized by diffuse hyperostosis, typically disorganized. The patella is one of the most affected bones, along with the skull bones and the long bones, typically in the hands and feet. Our case demonstrates that the bone changes of PS initiates in physis of long bones and centers of ossification of flat bones and are initially characterized by proliferation of chondral matrix, later replaced by disorganized bone matrix. There is enhancement by the contrast media, reflecting its hypervascular nature. To date there are few reports in the literature of MRI findings in PS, and we believe that these features may be useful for the diagnosis of these patients.

#### PA.05.012

##### QUADRICIPITAL FAT PAD EDEMA ASSOCIATED WITH THICKENING OF THE SUPRA-PATELLAR PLICA ON MRI OF THE KNEE.

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**Brief description of the purpose of the study:** We describe a case series of magnetic resonance imaging of the knee in which we observe the quadricipital fat pad edema associated with thickening of the supra-patellar plica.

**Methods:** We reviewed the MRI scans of the knee performed at our institution in which the findings described above were observed.

**Main results:** We identified several cases in which the association of the quadricipital fat pad edema and thickening of the supra-patellar plica was present.

**Importance of the conclusions:** The quadriceps fat pad edema is a relatively frequent finding on MRI of the knee, and its pathophysiology and symptoms are still poorly understood. Likewise, the supra-patellar plica is identified in several MRI scans, especially in its incomplete form. There are few reports about diseases of the supra-patellar plica, most of them related to its complete form. The aim of this study is to describe a series of cases in which we observed quadriceps fat pad edema associated with thickening and alteration of the intrinsic signal of supra-patellar plica. We propose that plicae disease could be implicated in the development of edema in the quadricipital fat pad or even the edema could result in plicae disease, issues with little approach by the current literature so far.

#### PA.05.013

##### COMPUTED TOMOGRAPHY FINDINGS OF PARACOCIDIODOMYCOSIS IN MUSCULOSKELETAL SYSTEM: PICTORIAL ESSAY

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**Introduction:** The aim of this study was to illustrate characteristic computed tomography findings in musculoskeletal (MSK) Paracoccidioidomycosis (PCM).

**Methods Involved:** Review of eight cases with confirmed osteoarticular involvement of PCM.

**Discussion:** The characteristic involvement of PCM in CT images is multiple osteolytic lesions, well-demarcated and without marginal bone sclerosis or periosteal reaction, and may affect any bone. We illustrate a case with bony sequestrum. The lesions may eventually be insufflative, especially when affecting the ribs or sternum. PCM should be included in the differential diagnosis of destructive bone lesions affecting both acromioclavicular joints as well as in the differential of multiple lytic lesions in children and adolescents. Once treatment starts, the lesions change slowly over time through new bone formation acquiring a coarse and dense trabecular pattern.

**Conclusion of the presentation:** Since bone and articular involvement in Paracoccidioidomycosis are very rare, there are no case series in the literature dedicated to its imaging features on CT. The recognition of the imaging findings of osteoarticular involvement in PCM allows to accurately include the disease in the differential diagnosis of focal and multifocal osteoarticular abnormalities.

#### PA.05.014

##### MR IMAGING FINDINGS OF PARACOCIDIOMYCOSES IN MUSCULOSKELETAL SYSTEM

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**Brief description of the purpose of the study:** To investigate Magnetic Resonance Imaging (MRI) findings in musculoskeletal (MSK) Paracoccidioidomycosis (PCM).

**Methods:** Medical records and MRI findings of patients with microbiologically and/or pathologically proven osteoarticular PCM were retrospectively reviewed. MRI abnormalities were evaluated in consensus by two experienced musculoskeletal radiologists.

**Main results:** We found 10 patients with a mean age of 29 years (10 – 55 years). MSK involvement was the only or the primary presentation of the disease in 7/10 patients. Osteomyelitis was the most common presentation (n=6). Our cases showed high signal intensity compared to muscle signal intensity in T1-weighted images. Primary arthritis was found in one patient. Isolated extra-articular soft tissue PCM was found in 3 patients, 2 cases of myositis and 1 case of subcutaneous involvement. The penumbra sign was present in 3 of 10 cases. T2-weighted images showed reactive soft tissue edema in 8/10 cases. Images obtained after Gd-DTPA showed peripheral (n =7) or heterogeneous (n=1) enhancement. Synovial enhancement was present in joint involvement (n= 6).

**Importance of the conclusions:** MSK involvement may be the unique or primary presentation of PCM. Osteomyelitis was the most common presentation, often with secondary involvement of joint and or soft tissue.

#### PA.05.016

##### IMAGING EVALUATION OF METAL-ON-METAL HIP PROSTHESIS (MOM) PSEUDOTUMOR COMPLICATION

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**Introduction:** Metal-on-metal prostheses has been widely used in hip surgery. Despite of good functional and clinical outcomes, some adverse reactions in the peri-prosthesis tissues, like chromium and cobalt particles release, can occur, requiring in some cases surgical revision. The development of pseudotumors is among the major MoM surgery complications.

**Methods Involved:** Magnetic resonance imaging (MRI) and computed tomography.

**Discussion:** As a result of artifacts and distortions in the images, basic sequences of MRI examination are not able to assess the peri-prosthesis tissues and its complications adequately. Appropriate protocols to reduce metal artifacts MRI has become the method of choice.

**Conclusion of the presentation:** Pseudotumor complication of MoM prostheses have a complex diagnosis and imaging exams, particularly MRI, are essential for early diagnosis, even in asymptomatic patients.

#### PA.05.019

##### OSTEOID OSTEOMA IN DIFFERENT LOCATIONS: PICTORIAL ESSAY AND LITERATURA REVIEW.

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**Brief description of the purpose of the report:** Osteoid osteoma is a benign skeletal neoplasm composed of osteoid and woven bone. The majority of these lesions arise in the cortex of long bones of young men and have characteristic clinical and imaging findings. However, osteoid osteoma may display features that can be misleading and it can be difficult to differentiate from other conditions such as infection, inflammatory and noninflammatory arthritis and other tumors.

**Medical History:** They can be categorized as subperiosteal, intracortical, endosteal or intramedullary on the basis of computed tomographic (CT) and magnetic resonance (MR) imaging findings.

**Diagnosis:** The authors present four cases of osteoid osteoma with different clinical e radiologic features that were seen in a short period of time at this institution. Two of these lesions were located in the vertebral column - each one of them with a different clinical presentation - one in the hip and one in the femur.

**Discussion and summary of the case:** It is important to keep in mind the possibility of osteoid osteoma every time a localized bone marrow edema / inflammatory bone condition is seen at MR imaging of a young patient, even though a bone lesion is not straightforwardly defined. A brief literature review follows the cases description.

### PA.05.021

#### MUSCLE CHANGES QUANTIFIED BY T2 MAPPING AND INDICATORS OF MUSCLE DAMAGE AFTER EXERCISE.

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**Brief description of the purpose of the study:** Physical activity have been recommended for sedentary individuals and athletes to improve physical capabilities and health, but few studies which effectively analyze performance improvements, inflammatory profile related to physical exercise.

**Methods:** Investigate the inflammatory profile, performance parameters of acute and chronic effect session after training with the Pilates Method. Plasma and inflammatory status was assessed through analysis of blood plasma and muscle activation using magnetic resonance imaging of the quadriceps muscle for quantification of signal intensity T2 T2 mapping).

**Main results:** Blood plasma and applied multieco, T2 weighted and STIR sequences were used before and after physical activity. Images generated in MRI 1.5T Excite HDXT 8 channels, GE Healthcare, HD coil BodyFull.

**Importance of the conclusions:** The analysis of the quantification of T2 mapping compared to serum analyzes of plasma applied to the muscle compartments were significant to evaluate perfooce muscle groups: proximal, medial and distal portions of the rectus femoris and vastus lateralis muscle and the proximal portion of the gluteus maximus the preconditions and immediately after physical intervention.

### PA.05.022

#### STAGING OF PYOMYOSITIS BY 18F-FDG PET/CT - A CASE REPORT

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**Brief description of the purpose of the report:** Pyomyositis is defined as an acute intramuscular bacterial infection secondary to hematogenous spread of a microorganism. This report shows the use of 18F-FDG PET/CT to evaluate the extension of the disease.

**Medical History:** We report a case of a 67 year-old, male patient, without comorbidities, which presented with weakness, weight loss, swelling, pain and increased temperature of the right thigh. Laboratory exams revealed anemia associated with increased leucocyte counts and erythrocyte sedimentation rate. MRI was suggestive of pyomyositis. 18F-FDG PET/CT, performed for staging purposes, demonstrated intense radiotracer uptake in all the muscle groups of the right thigh with regions within the muscles with no uptake (suggestive of necrosis); right lung base pulmonary consolidation (consistent with primary focus of infection); focal liver uptake without anatomical changes (possible infectious dissemination); hypermetabolic right external iliac and inguinal lymph nodes and bone marrow and spleen increased uptake (consistent with reactive sites). The patient was submitted to surgical resection and the fluid culture was positive for strep-

tococcus pneumoniae. Antibiotic therapy was directed to the isolated agent. The patient had improvement of the clinical symptoms and laboratory data.

**Diagnosis:** Pyomyositis.

**Discussion and summary of the case:** This is the first case to describe the value of 18F-FDG for staging patients with pyomyositis.

### PA.05.023

#### HIP ARTHROPLASTY: GETTING TO KNOW THE MATERIALS AND EVALUATING THE IMPLANT

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**Introduction:** Periodic monitoring of hip arthroplasty with imaging is recommended for all the patients. The radiologist must be familiar with the parameters used in the evaluation of the implant, taking into account the variability of the materials, their newer generations and indication for different patients.

**Methods Involved:** Patient cases were selected in postoperative follow-up of hip arthroplasty, evaluated by plain radiography and computed tomography in most cases.

**Discussion:** Image findings expected in postoperative hip arthroplasty vary according to the type of implant and its method of fixation, serial radiological evaluation and comparison with previous studies, when available, is very important. The study aims to show the different types of arthroplasty which can be recognized on radiographs, the terms used to describe the prosthesis and the type of fixation of the implant as well as the radiological criteria used in evaluating the placement, integrity and stability of the prosthesis components.

**Conclusion of the presentation:** The knowledge of implants and radiological findings expected in postoperative hip arthroplasty is essential for the radiologist evaluation, allowing to identify the first signs of failed prostheses, which can occur even in the absence of clinical symptoms.

### PA.05.024

#### HIP ARTHROPLASTY: FOLLOW UP AND RECOGNIZING COMPLICATIONS

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**Introduction:** The imaging studies performed for monitoring patients undergoing hip arthroplasty are performed primarily to identify the presence of complications such as osteolysis, infection, heterotopic ossification, prosthese migration and fractures.

**Methods Involved:** Patient cases were selected in postoperative follow-up of hip arthroplasty, describing the main imaging findings related to postoperative complications.

**Discussion:** Plain radiography remains the initial method of choice in evaluating the best known complications such as osteolysis, fractures, heterotopic ossification and loosening of the prosthesis. Many complications have specific findings, that radiologists should recognize. Other imaging methods

can provide additional information in the evaluation of prostheses and post-surgical complications. Ultrasonography has a role in evaluating fluid collections, vascular and adjacent soft tissues abnormalities, while computed tomography allows the visualization of largest collections located in deep layers and is used in conjunction with plain radiography for evaluation of osteolysis and loosening. MRI is useful in the diagnosis of complications in soft tissues and contiguous structures.

**Conclusion of the presentation:** The knowledge of imaging findings related to postoperative complications of hip arthroplasty enables the radiologist to contribute to the early diagnosis of these complications and follow-up of these patients.

### PA.05.025

#### ATYPICAL IMAGE PATTERNS OF CALCIUM HYDROXYAPATITE CRYSTAL DEPOSITION DISEASE (CHCD)

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**Introduction:** CHDD occur predominantly in periarticular soft tissues and have diverse clinical presentations, from a sudden pain of inflammatory character to asymptomatic patients. Imaging studies are part of the diagnostic arsenal and therapeutic orientation, however, atypical image patterns can be misleading and should be recognized.

**Methods Involved:** Revision of symptomatic patients with imaging findings of CHCD. Diagnoses confirmed by analysis of aspirated or follow-up.

**Discussion:** The differential diagnoses of pain coming from the periarticular tissues is very wide and accurate identification of the cause may require imaging workup, guiding specific treatment, such as needle aspiration of CHCD. The recognition of such deposits can be difficult, especially when atypical, and one should consider it whenever there are signs of atraumatic periarticular edema, provided that sometimes it is not possible to characterize low density calcifications in radiographic, tomographic and magnetic resonance studies. In such situations, ultrasound is a valuable complement. The deposits' contours, the density, echogenicity and acoustic shadowing pattern are important guiding therapy choices.

**Conclusion of the presentation:** Imaging studies play a central role in the diagnosis and treatment planning of CHCD. It is important to recognize atypical patterns.

### PA.05.028

#### BONE WITHIN A BONE: WHAT THE RADIOLOGIST NEEDS TO KNOW

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**Brief description of the purpose of the report:** The aspect of "bone within bone" is a well-known radiologic term and has a variety of causes. It is important to recognize this aspect and be aware of its differential diagnosis. A number of common conditions rarely cause this appearance. Other causes are rare and some remain mainly of historical interest.

**Medical History:** In this review, we illustrate some of these conditions that can cause "bone within bone" and discuss the

physiological and pathological etiology of each and show the images from our archive.

**Diagnosis:** Different causes share similar pathophysiological processes: physiological new bone formation; pathological periosteal new bone formation; cortical splitting with secondary periosteal new bone formation; subcortical osteopenia; altered bone growth; failure or inhibition of osteoclast mediated bone resorption; altered bone metabolism; crystal deposition; iatrogenic; spurious.

**Discussion and summary of the case:** Among all, the most common is found in the body of the lumbar and thoracic vertebrae in children until around the 2nd month of life. The most accepted etiology is that it is only a stage of maturation with physiological periosteal reaction, and alternatively, that it relates to a disorder of bone growth linked to perinatal insults.

### PA.05.032

#### HAJDU-CHENEY SYNDROME: CASE REPORT

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**Brief description of the purpose of the report:** The objective is to report a case of a patient with Hajdu-Cheney syndrome.

**Medical History:** We present a case of a 16 year old male patient who was born with interatrial communication and submucous cleft palate. Both were surgically corrected. During the childhood, he was diagnosed with osteoporosis leading to multiple fractures and progressive difficulty to walk. Radiographs show multiple fractures and acro-osteolysis of the medium third of the distal phalanges of the hands and halluces, widening of cranial sutures and wormian bones. The patient is receiving bisphosphonates and was submitted to surgical correction of fractures.

**Diagnosis:** Hajdu-Cheney syndrome.

**Discussion and summary of the case:** Hajdu-Cheney syndrome is a rare autosomal dominant disorder of the connective tissue. Only about 70 cases were reported around the world. It causes severe and progressive bone loss, predisposing to fractures and skeletal malformations. The main radiographic features are osteoporosis, multiple fractures, dental anomalies, acro-osteolysis of distal phalanges of hands and feet, short stature and skull abnormalities, including wormian bones and widened sutures. The radiographic evaluation of these patients is fundamental to early diagnosis and to detect complications.

### PA.05.033

#### MÜLLER-WEISS DISEASE: CASE REPORT

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**Brief description of the purpose of the report:** Report a case of bilateral Müller-Weiss disease.

**Medical History:** A 43 year-old diabetic and obese woman presented with bilateral foot pain for the last three years, with progressive worsening. She denied any traumatic previous events. The feet radiographs showed increased density

of the tarsal navicular, with irregular contours and reduced sagittal diameter.

**Diagnosis:** Müller-Weiss disease.

**Discussion and summary of the case:** Müller-Weiss disease is a rare condition characterized by spontaneous osteonecrosis of the navicular bone, bilaterally. It usually affects adult female patients. Its etiology is not completely understood and other theories have been proposed, like congenital malformation, stress fracture and traumatic necrosis. The symptoms are characterized by chronic midfoot pain localized to the medial aspect of the tarsus and aggravated by weight-bearing activities. The radiological findings are increased density of the tarsal navicular, changes of shape, a decrease in the sagittal diameter, medial or dorsal protrusion and fragmentation. Tarsal navicular collapse may occur as well as talonavicular degenerative changes. The treatment includes nonspecific measures aiming symptoms relief. Surgical therapy is reserved for refractory cases. We report another case of Müller-Weiss disease in a 43 year-old woman with chronic feet pain.

### PA.05.035

#### UNUSUAL LOCATION FOR GIANT CELL TUMOR OF THE TENDON SHEATH: A CASE REPORT.

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**Brief description of the purpose of the report:** The Giant Cell Tumor of Tendon Sheath (GCTTS) is an uncommon benign neoplastic process, which rarely affects large joints. The aim of this study is to present a case of GCTTS knee, featuring their main changes to Magnetic Resonance Imaging (MRI).

**Medical History:** Male patient, 63 years old, with pain when walking, and bend your left knee, evolved to stop walking. Searched orthopedist, being study conducted by MRI of the knee.

**Diagnosis:** Intra-articular injury in the left knee caused by GCTTS, confirmed by histopathology.

**Discussion and summary of the case:** The clinical and radiological diagnosis of GCTTS is difficult, with nonspecific results of history, physical examination and conventional radiography. MRI has been established as the best technique for diagnosis. In this presented case, an oval structure located before the anterior cruciate ligament, with isointense signal on T1-weighted and T2-weighted, without contrast uptake, was observed. The pulse sequences, as the gradient-echo, allow confirmation of the presence of hemosiderin, which appears with a low brightness signal intensity due to the magnetic artifact. Changes of cortical bone surrounding structures and extent of the lesion, important in the surgical management, may also be evidenced by MRI.

### PA.05.043

#### SPORTSMAN'S GROIN: IMPORTANCE OF A MULTIDISCIPLINARY APPROACH AND MAGNETIC RESONANCE IMAGING IN EARLY DIAGNOSIS

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**Introduction:** Define a diagnostic and management algorithm for the "sportsman's groin". Evaluate the need for a multidisciplinary approach involving the surgeon, radiologist, physiotherapist and sport's physician. Assess the role of MRI imaging as a comprehensive early diagnostic tool. We will present the experience in assessing pubalgia athlete in a tertiary referral center.

**Methods Involved:** Were evaluated by magnetic resonance study of 1.5 Tesla, 39 patients athletes (31 men and 7 women) who had a clinical diagnosis of pubalgia athlete, between January 2012 and November 2013.

**Discussion:** Traditionally, the athlete pubalgia included a wide range of conditions that may be contributing to the patient's symptoms. This, combined with nonspecific signs on clinical examination may result in inaccurate diagnosis and treatment. Rupture of the rectus abdominis aponeurosis / adductor longus, demonstrated to be the main causes of groin pain in athletes patients.

**Conclusion of the presentation:** The multidisciplinary approach encompassing the orthopedic surgeon, sports physician, physiotherapist and radiologist is invaluable for the diagnosis, treatment and management of patients with pubalgia athlete, with an MRI an effective and essential tool in the early diagnosis of this pathology

### PA.05.044

#### MR EVALUATION OF THE DIABETIC FOOT: A PICTORIAL REVIEW OF COMMON AND UNCOMMON DISORDERS

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**Introduction:** To present an educational overview of the various appearances of diabetic foot on MR imaging.

**Methods Involved:** A retrospective imaging study of representative cases of diabetic foot was performed on 1.5 Tesla equipment and included the following sequences: T1 FSE, T1 FSE with fat suppression before and after the introduction of intravenous gadolinium, T2 FSE with fat suppression and STIR.

**Discussion:** Foot problems are common causes of disability in diabetic patients. The major diagnostic difficulty is to distinguish bone infection (osteomyelitis) from non-infectious derangements as in neuropathic osteoarthropathy (Charcot foot). By evaluating changes of bone marrow signal intensity, soft tissue abnormalities and anatomic distribution of these conditions the author present characteristic imaging findings that play a key role in discriminating disorders of the diabetic foot.

**Conclusion of the presentation:** MRI is a valuable tool in detecting soft tissue infection, reactive bone marrow edema, osteomyelitis, neuroarthropathy and infected neuroarthropathy. However, diagnostic imaging (even with MRI) without an organized approach can potentially lead to confusion. Abnormal bone marrow signal and its anatomic distribution are the hallmarks when evaluating a complicated diabetic foot with MRI. As a result an erroneous diagnosis, that will adversely affect prognosis, can be avoided.

### PA.05.046

#### MAGNETIC RESONANCE NEUROGRAPHY OF THE LUMBOSACRAL PLEXUS

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**Introduction:** Historically, assessing peripheral neuropathies were exclusively dependent on neurophysiology, consisting only in clinical and electrodiagnostic testing limiting precise disease location. Recent technological advances and acquisition using high-resolution imaging allow consider Magnetic Resonance Neurography Imaging (MRN) as a high accuracy method to study peripheral nerves, depicting details of anatomy and pathology involved.

**Methods Involved:** MRN of the lumbosacral plexus performed in 3.0-T MR scanners at our institution were selected, using Fast Spin Echo, STIR, SPAIR, Diffusion, DTI and Vibe, in 2D/3D high-resolution multiplanar images.

**Discussion:** MRN is able to accurately confirm the peripheral neuropathy presence involving the lumbosacral plexus. The main imaging findings by MRN include abnormal thickness, course or signal intensity of the nerve, and secondary changes such as muscle denervation, as well as extrinsic compressive lesions and neural impingement signs, or even incidental lesions in the region of interest that may mimic neurological symptoms.

**Conclusion of the presentation:** The MRN is a non-invasive method that allows excellent anatomical detailing of pathological conditions, playing a crucial role in lumbosacral plexus neuropathies diagnosis and therapeutic algorithm. In addition, provides information to assist in perineural drug injections and surgical planning.

## PA.05.050

### OSTEOMYELITIS VERSUS BONE TUMORS: DIFFERENTIAL DIAGNOSIS WITH MAGNETIC RESONANCE IMAGING

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**Brief description of the purpose of the Review of Literature:** The aim of this review is to highlight the findings for the differentiation between osteomyelitis and bone tumors illustrated by some cases from our service.

**Description (s) condition (s), method (s) or technique (s):** Differentiating infection from neoplasm can be challenging. In particular, Ewing sarcoma can present symptoms like fever, localized bone pain and elevated inflammatory markers also common in osteomyelitis. Osteomyelitis presenting osteolysis, periosteal reaction and inflammatory soft tissue activity can simulate neoplasm needing biopsy to elucidate the case. Early diagnosis of osteomyelitis is important because delays in the initiation of treatment diminish the cure rate and increase the rate of complications and morbidity. Besides early diagnosis and staging of bone tumors is important for a prompt surgical and medical treatment. The best clue in differentiating between bone tumors and osteomyelitis with MRI is the defined margins of the bone lesion. Ill-defined margins with a hazy and wide transition zone between normal and affected bone, of low to intermediate signal on T1 images is most likely to be osteomyelitis, otherwise the presence of well-defined margins is more frequent in tumors.

**Conclusion:** The valorization of this pattern to differentiate bone tumors and osteomyelitis can be helpful to guide the orthopedist and the oncologist to begin the prompt treatment.

## PA.05.052

### CHRONIC POLYOSTOTIC OSTEOMYELITIS WITH A BRODIE'S ABSCESS

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**Introduction:** The purpose of this paper is to report a case of chronic and sub acute inflammatory multifocal bone lesions caused by pyogenic bacteria, in which unresponsiveness to antibiotic treatment led to surgical debridement.

**Methods Involved:** 14 year old boy with a history of chronic malnutrition, with a five months history of swelling and pain of left thigh and right leg, with purulent discharge due to Staphylococcus Aureus, isolated in cultives. Plain films revealed lytic lesions in femoral diaphysis and contralateral tibia, with loss of trabecular architecture, periostitis, soft tissue swelling and "sequestration". Additionally an oval radiolucent lesion, surrounded by a rim of reactive sclerosis, was found in the proximal tibial metaphysis, corresponding to Brodie's abscess. Bone scintigraphy showed increased radiotracer uptake in the affected bones and in right humerus, which had no x-ray correlation.

**Discussion:** Chronic polyostotic osteomyelitis with a Brodie's Abscess

**Conclusion of the presentation:** Chronic osteomyelitis is an inflammatory condition difficult to treat. The polyostotic type (two or more affected bones) is a common complication during neonatal period but rare in children older than 18 months, due to vessels distribution. The presence of pain, swelling and purulent discharge from fistulas should make diagnosis of this disease a possibility.

## PA.05.054

### GIANT CELL-RICH OSTEOSARCOMA

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**Introduction:** It's been reported a case of a Young woman, with a neoplastic bone lesion with cystic hemorrhagic aspect and signs of radiological malignancy.

**Methods Involved:** Women patient, 11 years old Time of disease, 2 months Diffuse pain on the left leg IMAGES Radiography and Tomography of left lower limb: Expansive cystic lesion proximal of the shinbone with destruction of the cortical, and lacking of periosteal reaction without compromise of soft parts. Magnetic resonance imaging of the left lower limb: Heterogeneous mass with expansive cystic aspect located on the proximal region of the left shinbone, hyper intense images septated on T2 and STIR. BIOPSY Giant Cell-rich Osteosarcoma TREATMENT surgical curettage, sampling and chemotherapy

**Discussion:** Giant Cell-rich Osteosarcoma

**Conclusion of the presentation:** Osteosarcoma with a rich high level of gigantic cells is not too a frequent variety (lower than 3%), it presents a great diagnosis variety in radiological images and anatomicopathological because of no concluding signs like in our case, being really important to define properly the final diagnosis, since the distinguishing diagnosis of this pathology have treatments and prediction with great variety.

## 6 - PEDIATRICS

### PA.06.001

#### RECURRENT RENAL INVASIVE ASPERGILLOSIS IN CHILD UNDERGOING CHEMOTHERAPY

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**Brief description of the purpose of the report:** Even though there's a high improvement in life support of non immunocompetent patients under chemotherapy, invasive fungal infection death rates is really high, mostly affected by *Candida* and *Aspergillus* infection. The invasive aspergillosis is one of the major complications in patients.

**Medical History:** Male, 5 years and 10 months, relapsed from primary abdominal Burkitt's Lymphoma, in chemotherapy cycle. CT study presented hypodense lesion with no contrast enhancement in the superior pole of the right kidney. The antifungal therapy was carried out, but lesion was stable until the nineteenth day, when nodulectomy surgery was suggested. Eight weeks after the surgery a new lesion characterized in the surgical site with the same radiographic characteristics. A new antifungal therapy was added to the initial and another biopsy confirmed the recurrence of infection, which had non response after another week of therapy, when nephrectomy was suggested due to the mortality associated with invasive aspergillosis.

**Diagnosis:** The lesion was biopsied which characterized numerous hyphae suggesting the presence of *Aspergillus* spp.

**Discussion and summary of the case:** Even though the *Aspergillus* an angioinvasive infection, the kidney isn't compromised really often. In this article we describe a renal invasive aspergillosis recurrence

### PA.06.002

#### EVALUATION OF DOSIMETRY OF PEDIATRIC RENAL SCINTIGRAPHY WITH <sup>99m</sup>Tc-DMSA IN A UNIVERSITY HOSPITAL

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**Brief description of the purpose of the study:** Static renal scintigraphy use DMSA (Dimercaptosuccinic Acid) connected to the radiopharmaceutical <sup>99m</sup>Tc-technetium (<sup>99m</sup>Tc). There are no Brazilian guidelines standardizing the dose to be administered to pediatric patients for renal scintigraphy. American and European guidelines suggest 11MBq to 110MBq (1.5-1.9MBq/kg).

**Methods:** We analyzed 26 pediatric renal scintigraphy with <sup>99m</sup>Tc-DMSA between July 2012 and October 2014 (using a single head gamma camera, 24h after injection). Parameters analyzed: age, sex, height, weight, body surface area (BSA), administered and proportional renal uptake activity. We used the t Student test with 5% of statistical significance.

**Main results:** Averages calculated: age: 55 ± 55 months; dose injected: 3.4 ± 2.27 mCi, weight: 21.04 ± 16.8 kg, BSA: 0.74 ± 0.40 m<sup>2</sup>; Dose/ SCA: 181.15 ± 107.64 MBq/m<sup>2</sup>.

51 % of patients received doses above the limits advised by international guidelines.

**Importance of the conclusions:** There was no difference in image quality, independent of dose. Standardized protocols result in substantial reduction in radiation exposure in the pediatric population. Brazilian guidelines would increase the adherence of other imaging protocols with low radiation exposure.

### PA.06.004

#### EPITHELIOID ANGIOSARCOMA OF COLON: A RARE CASE REPORT IN AN INFANT

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**Brief description of the purpose of the report:** Epithelioid angiosarcoma (EA) is a rare tumor. We report the first case of colon EA in the pediatric population emphasizing the radiological features

**Medical History:** A four-month-old girl presented with three-week history of intestinal bleeding associated with paleness, inadequate weight gain and perineal dermatitis. Initially dairy allergy was considered, however, as the intestinal bleeding persisted, the infant was hospitalized for investigation. The imaging findings on US and CT showed a heterogeneous-vascularized mass in the cecum extending into the mesentery. Small liver and lung nodules were also found. Surgery was performed with complete resection of the tumor.

**Diagnosis:** The anatomopathological result showed a 4.5 x 3.5 x 2.0 cm hemorrhagic tumor involving the colon with 60% necrosis. Surgical margin was tumor-free. EA was confirmed by immunohistochemistry tests.

**Discussion and summary of the case:** Angiosarcomas are rare tumors of vascular endothelium cell origin that may occur anywhere in the body. The occurrence in the gastrointestinal tract is quite uncommon with a few cases reported in the medical literature. To our best knowledge, this is the first reported case in pediatric population. The infant has undergone chemotherapy and no signs of tumor were found on second-look surgery. She had an excellent recovery.

### PA.06.005

#### SONOGRAPHIC DIAGNOSIS OF NEONATAL INTESTINAL OBSTRUCTION: RARE CASES AND DEFINITIVE IMAGES

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**Introduction:** There are several causes of neonatal intestinal obstruction. The delay in providing correct diagnosis may complicate the surgical treatment and increase morbimortality. This pictorial essay aims to show radiographic and sonographic features and the surgical findings of uncommon causes of intestinal obstruction, such as duodenal web, thick milk causing obstruction (lactobezoar) and thick meconium associated with intestinal volvulus in neonate with cystic fibrosis.

**Methods Involved:** Plain radiography and ultrasonography  
**Discussion:** Neonatal intestinal obstruction is a frequent cause of intensive care unit admission. Its common causes are duodenal atresia and stenosis, intestinal malrotation, neoplasms, meconium ileus and Hirschsprung disease. In this essay we present rarer causes of neonatal intestinal obstruction. The clinical findings of bilious vomiting, abdominal distension and poor general condition are not sufficient to differentiate frequent from rarer causes of neonatal intestinal obstruction. The radiographic findings, such as gastrointestinal distention, may also be nonspecific. The sonographic features, instead, may help neonatologists and pediatric surgeons infer the etiology of intestinal obstruction and guide to an appropriate treatment.

**Conclusion of the presentation:** The use of non-ionizing radiation imaging methods for achieving early diagnosis should be mandatory in the neonatal intestinal obstruction assessment. Pediatric radiologists are advised to be aware of the possible causes and the key sonographic features of neonatal intestinal obstruction.

### PA.06.006

#### SERIOUS INCIDENTAL FINDINGS IN PEDIATRIC PATIENTS ADMITTED IN EMERGENCY AND NEONATAL INTENSIVE CARE UNIT (NICU)

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**Introduction:** Complementary imaging examinations have been increasingly requested in emergency department. In many cases clinical symptoms may be nonspecific, especially in the pediatric age group. Imaging examinations can guide pediatricians and surgeons for adopting proper treatment. Some rare occasions, however, we have unexpected findings for both radiologist and exam requesting physician. We present cases with severe unexpected incidental findings that have completely changed the therapeutic approach.

**Methods Involved:** Ultrasound in Emergency department and NICU of a private hospital.

**Discussion:** We present cases of patients admitted to the emergency department or the NICU with nonspecific complaints such as abdominal pain and distension, diarrhea, suspected splenomegaly, urinary tract infection, which surprisingly showed up on ultrasound study unexpected findings such as important abdominal lymphadenopathy corresponding to Burkitt's lymphoma, bilateral nefromegalia with typical sonographic findings of leukemia, retroperitoneal mass in a neonate corresponding to neuroblastoma, mass in the chest wall (confused with splenomegaly) with result of myositis.

**Conclusion of the presentation:** The radiologist must be prepared not only for the main causes of complaints from patients admitted to the emergency department, but also to detect and interpret the unexpected and serious findings, which may completely change the therapeutic management in children.

### PA.06.007

#### SONOGRAPHY IN NECK LESIONS IN PEDIATRIC GROUP

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**Introduction:** Cervical lesions are very common in children, being ultrasound, imaging method of first choice, specially in this age group, as it has absence of radiation and no need for sedation, advantageous features over other imaging methods, and often already sufficient for diagnosis. Given the high prevalence of cervical lesions in children, and often the clinical examination is not being sufficient for diagnostic clarification, we consider important the dissemination of sonographic aspects of the changes that we most often find at this age group and that may concern the professional that performs the exam.

**Methods Involved:** Sonographic examinations performed in children from the external units, emergency care and hospitalization sector, attended for cervical ultrasonography will be demonstrated.

**Discussion:** Among the many changes that we can observe in the cervical region in children, we will mention some more frequently observed (lymphadenopathy, congenital cysts, parotiditis) and situations regarding the pediatric population itself (fibromatosis colli, the presence of the thymus). The sonographic findings observed in the aforementioned lesions are often sufficient for the diagnosis and therapeutic management.

**Conclusion of the presentation:** The authors describe the sonographic features of cervical lesions most commonly found in the pediatric population.

### PA.06.008

#### INFANTILE MYOFIBROMATOSIS: REPORT OF TWO CASES IN SIBLINGS AND REVIEW OF THE LITERATURE.

SOARES, G.M.T.; BARROS, A. C.; MOREIRA, R. O.; AMARO, A. P.; MENEZES, T. C. O.; FIGUEIREDO, R.; MATUSHITA, J. P. K.

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**Brief description of the purpose of the report:** The purpose of this report is to provide subsidies for the imaging diagnosis of infantile myofibromatosis.

**Medical History:** C.E.F.R., male, 11 years old, white, residing in Carmo da Mata (MG). From one year of age presenting diarrhea and recurrent episodic abdominal pain. Colonoscopy revealed chronic nonspecific colitis. At age 9 he had a suggestive clinic of pneumonia, when computed tomography (CT) of the chest revealed pulmonary mass infiltrating the left lower lobe bronchus, inferring neoplastic lesion. Abdomen CT showed parietal nodular lesions in the descending and sigmoid colon, with peripheral ring enhancement after contrast administration. In subsequent ultrasound, at least 4 hepatic heterogeneous nodules, predominantly hypoechoic, with regular contours, were identified. Ultrasound of his 9 years old brother identified multiple liver nodules with the same characteristics.

**Diagnosis:** Resection of the lung mass revealed a histopathologic diagnosis of myofibromatosis.

**Discussion and summary of the case:** Infantile myofibromatosis is characterized by proliferation of nodular, solitary or multicentric fibrous tumors in the skin, bones or viscera. The presence of visceral lesions is associated with increased morbidity and mortality. The classic image feature is a solid mass with necrotic center. The differential diagnosis is comprehensive and should include other types of fibroma-



tosis, congenital infantile fibrosarcoma, hemangiopericytoma, myofibroblast tumors, neurofibromas, leiomyomas and nodular fasciitis.

#### PA.06.009

##### MIDDLE LOBE SYNDROME: RADIOLOGICAL FINDINGS AND CLINICAL CORRELATIONS.

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**Brief description of the purpose of the report:** This case report aims at demonstrating the main radiological aspects of the middle lobe syndrome and the importance between the correlation of the clinical history and the previous exams of the patient looking for a definitive diagnosis.

**Medical History:** Female, 6 years old, was referred to our service to do a CT Scan due to persistent cough, recurrent pneumonia and wheezing for 2 years, unresponsive to medical treatment and chest X-ray signs of atelectasis of the middle lobe. The CT scan confirmed the X-ray findings and also showed discrete bronchiectasis in this segment not being identified obstructive factors or pulmonary malformations associated with the previous findings. Also, we got with the familiars a chest radiograph of 1 year ago, taken at another institution, which already showed atelectasis of the middle lobe. Therefore, summing up the clinical history with the radiological evolution, we concluded the diagnosis of middle lobe syndrome .

**Diagnosis:** Middle lobe syndrome

**Discussion and summary of the case:** The middle lobe syndrome represents an unusual disease, being more prevalent in adults. The radiological knowledge and the possibility of this disease manifests in children is essential for the radiologist to confirm the diagnosis and to anticipate the treatment making large difference in the prognosis of these young patients.

#### PA.06.010

##### BILATERAL NEPHROMEALY: MOST IMPORTANT DIFFERENTIAL DIAGNOSES

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**Introduction:** Introduction : Nephromegaly is a unilateral or bilateral kidney enlargement. In this study we will discuss the main etiology of bilateral nephromegaly in children.

**Methods Involved:** Methods involved: We select cases of bilateral nephromegaly from the records of children treated at a private hospital in São Paulo in the last five years, review the medical literature on nephromegaly, and then compile and summarize the main imaging finding for teaching purpose as well as bringing up to date our medical knowledge on this theme.

**Discussion:** Discussion: Among many causes of bilateral nephromegaly, the most important are the dominant and recessive autosomal polycystic kidney disease, the renal vein thrombosis, renal tumors (Wilms tumor, nephroblastomatosis), acute glomerulonephritis and by infiltration of tumor, such as acute lymphoblastic leukemia (ALL).

**Conclusion of the presentation:** Conclusion: Facing a child with bilateral nephromegaly it is essential for the radiologist

to keep the main differential diagnoses in mind for helping to establish an early diagnosis. The nephromegaly may show a wide spectrum of presentation ranging from variations of normality, a primary kidney disease and even secondary to severe systemic disease such as the ALL.

#### PA.06.013

##### MYCOPLASMA PULMONARY INFECTION IN CHILDREN

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**Brief description of the purpose of the study:** Mycoplasma pneumoniae is a usual cause of pulmonary infection in children and adolescents. The aim of this study is to determinate the most common findings in chest radiographs in this population.

**Methods:** We retrospectively reviewed chest radiographs of 20 patients with serologic evidence of M. pneumoniae at our institution, between the years of 2012 and 2013. The images were analyzed separately by two radiologists experienced in pediatric radiology and chest radiology respectively and when there was a disagreement a final decision was reached by consensus.

**Main results:** The main finding was the association of interstitial thickening and opacity / consolidation (45%), followed by peribronchovascular diffuse or focal interstitial thickening (30%). Pleural effusion was found in only 3 cases (15%). As for the distribution, bilateral involvement was the most prevalent (11 patients, 55%), followed by involvement in more than a lobe in the same lung (25%) .

**Importance of the conclusions:** The results of our study differs somewhat from some recently published articles, mainly due to the classification adopted by these authors for chest radiographs findings. Another factor to be considered is the time of disease progression, because the interstitial pattern can develop into a consolidation in the course of infection.

#### PA.06.015

##### THE ROLE OF ULTRASOUND IN THE ASSESSMENT OF COMPLICATED PNEUMONIA IN PEDIATRIC PATIENTS

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**Introduction:** Ultrasound has shown highly effective in evaluating a range of pathologic pulmonary conditions. One of the most widely studied ultrasound role is in the evaluation of pneumonia.

**Methods Involved:** Community-acquired pneumonia in the pediatric population is very common. Half of the hospitalized cases are complicated by parapneumonic effusion, empyema, and pulmonary necrosis or pulmonary abscess. Both the diagnosis and therapy of complicated pneumonia are guided by imaging.

**Discussion:** In the light of increasing awareness of radiation exposure risks, particularly in children, it is mandatory to search for a safer diagnostic tools for patients with pneumonia. Here enters portable bedside ultrasound. Lung scan us-

ing ultrasound can be adopted as a simple and non-invasive method for evaluating children with pneumonia and its complications. It is easy to perform at the bedside, allows close follow-up and avoids the use of ionizing radiation.

**Conclusion of the presentation:** We intend to discuss the ultrasonographic findings in complicated pneumonia, including parenchymal abnormalities, pleural fluid characterization and pulmonary necrosis.

### PA.06.018

#### TRACHEOBRONCHIAL DISORDERS IN CHILDREN: A MULTIMODALITY IMAGING APPROACH SAMESHIMA, Y.T.; SILVA, M.M.A.; FRANCISCO NETO M.J.; FUNARI, M.G.F.

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**Brief description of the purpose of the Review of Literature:** Chest congenital anomalies are important causes of morbidity in infants and children. The evaluation of affected patients often requires multiple imaging modalities to diagnose the anomaly and plan surgical correction.

**Description (s) condition (s), method (s) or technique (s):** There are several imaging techniques suited for airways assessment in children, including ultrasound, frontal and lateral chest X-Ray, airway fluoroscopy, contrasted esophagography, computed tomography and magnetic resonance imaging. By using multimodality imaging approach added with post-processing techniques to study the tracheobronchial disorders in children, one can gather relevant information to assist surgical planning by providing a better three-dimensional anatomic scenario.

**Conclusion:** We reviewed the profile of the multimodality imaging approach in the diagnosis and treatment planning of tracheal stenosis, congenital pulmonary airway malformation, pulmonary sequestration, congenital diaphragmatic hernia, bronchogenic cyst and congenital lobar emphysema.

### PA.06.020

#### INFANTILE MYOFIBROMATOSIS: REPORT OF TWO CASES IN SIBLINGS AND REVIEW OF THE LITERATURE.

SOARES, G.M.T.; BARROS, A. C.; MOREIRA, R. O.; AMARO, A. P.; MENEZES, T. C. O.; FIGUEIREDO, R.; MATUSHITA, J. P. K.

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**Brief description of the purpose of the report:** The purpose of this study is to provide imaging parameters for the diagnosis of infantile myofibromatosis.

**Medical History:** CEFR, male, 11 years old, white, residing in Carmo da Mata (MG). Since one year of age having episodic abdominal pain and diarrhea. Colonoscopy diagnosed chronic nonspecific colitis. Hospitalized at age 9 because of pneumonia, when computed tomography (CT) of the chest revealed pulmonary mass infiltrating the left lower lobe bronchus, inferring neoplastic lesion. CT of the abdomen revealed rounded annular lesions with contrast enhancement in the walls of the descending and sigmoid colon. In subsequent ultrasonography was identified at least 4 hepatic het-

erogeneous, predominantly hypoechoic nodules, with regular contours and limits. Ultrasound screening of his 9 years old brother identified multiple liver nodules with the same characteristics.

**Diagnosis:** Resection of the mass in the left lung presents histopathological diagnosis of myofibromatosis.

**Discussion and summary of the case:** Infantile myofibromatosis is a very rare disorder characterized by the proliferation of fibrous tumors, solitary or multicentric, in the skin, bones or viscera. The presence of visceral lesions is associated with greater morbidity and mortality, whereas in its absence the prognosis is excellent. The image features of the tumors are solid masses with necrotic centers.

### PA.06.021

#### PNEUMATOSIS INTESTINALIS, NOT ALWAYS A WARNING SIGN: MAIN CAUSES AND DIFFERENT IMAGE FEATURES

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**Introduction:** Pneumatosis intestinalis (PI), defined as the presence of bowel wall gas, shows increasing incidence due to increased access to imaging methods, invasive procedures and cancer treatment - directly and indirectly involved in the occurrence of this signal. This work aims to illustrate different image features of pneumatosis intestinalis in pediatric patients, correlating with their different causes.

**Methods Involved:** Pictorial essay with cases of PI cases identified by ultrasonography, plain radiography and computed tomography with known follow-up and outcome.

**Discussion:** The identification of pneumatosis in pediatric patients, particularly neonates, should be a warning sign for the possibility of necrotizing enterocolitis. Among the known patterns of PI, the presence of ovoid pattern and the absence of intestinal wall thickening suggest better prognosis. Linear presentation, presence of gas in the portomesenteric system and pneumoperitoneum are indeterminate. Changes on bowel walls, especially when limited to a specific vascular territory, indicate poor prognosis.

**Conclusion of the presentation:** Several causes may be related to the emergence of PI, especially necrotizing enterocolitis in neonates. As in adults, the value of this finding is directly related to the clinical status of the patient.

### PA.06.022

#### PEANUTS THE GREAT VILLAIN OF FBA (FOREIGN BODIES ASPIRATION) AND OTHERS ASPIRATED OR INGESTED FOREIGN BODIES IN CHILDREN'S.

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**Introduction:** Foreign bodies (FB) may enter the body of children through aspiration or ingestion. Sometimes the FB aspiration is not witnessed and the symptoms are indolent. It is also possible to mimic symptoms of other conditions.

**Methods Involved:** This pictorial essay shows curious findings of FB in children in a private hospital in São Paulo in

the last 5 years.

**Discussion:** The diagnosis of foreign body aspiration is facilitated when an appropriate history is taken. The acute stage symptoms course with cough and respiratory distress. As the FB becomes lodged and reflexes cease, the patient may become asymptomatic (second phase) until complications arise (third phase) There were six cases of FB in various locations of the gastrointestinal tract, from the epigastrium, the gastroesophageal junction, stomach, duodenal bulb to the cecum. In 67% of cases, the objects were coins. In relation to these aspirated objects (4 cases), the most common site to lodge was the main right bronchus (75 %) with peanuts being the most frequent villain.

**Conclusion of the presentation:** Radiologists should be aware of the key imaging findings in cases of FBA in order to make the diagnosis as early as possible and avoid complications

## 7 - BREST IMAGING

### PA.07.001

#### MULTIPARAMETRIC EVALUATION OF BREAST LESIONS WITH PET-MRI: INITIAL RESULTS AND FUTURE PERSPECTIVES.

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**Brief description of the purpose of the study:** To evaluate the diagnostic accuracy of multiparametric evaluation of breast lesions combining information of Magnetic Resonance Imaging (MRI) and 18F-fluoro-deoxy-glucose (18F-FDG) PET-CT.

**Methods:** 31 patients with suspicion breast lesions on MRI performed 18F-FDG PET-CT in prone position, and MRI and PET images were fused (PET-MRI). A lesion was considered positive on multiparametric evaluation if at least one of the following was present: washout / type 3 curve on dynamic contrast evaluation (DCE); restricted diffusion with ADC value  $< 1.00 \times 10^{-3}$  mm<sup>2</sup>/s; or abnormal metabolism on 18F-FDG PET-CT.

**Main results:** 38 lesions were evaluated, with mean diameter of 31.1 mm (range 8-94 mm). On DCE, washout / type 3 curve was present in 15 mass lesions (46.9%). 26 lesions showed restricted diffusion (68.4%). PET-CT showed increased metabolically activity on 30 lesions (78.9%), with a mean maximum SUV of  $4.8 \pm 4.1$  (range 1.1-15.0). Histological evaluation showed 29 (76.3%) malignant lesions and 9 (23.7%) benign lesions. Multiparametric evaluation provided 100% sensitivity and 89.5% accuracy, with 29 true-positives results, 5 true-negatives, 4 false-positives and no false-negative results.

**Importance of the conclusions:** Multiparametric evaluation with PET-MRI showed good diagnostic accuracy to differentiate benign from malignant breast lesions, reducing the number of unnecessary biopsies, without missing any diagnosis of cancer.

### PA.07.002

#### PREOPERATIVE MRI IN PATIENTS WITH BREAST CANCER: IMPLICATIONS IN CLINICAL PRACTICE.

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**Brief description of the purpose of the study:** To assess the role of Magnetic Resonance Imaging (MRI) in the preoperative evaluation of patients with breast cancer.

**Methods:** The study included 49 women diagnosed with breast cancer who performed breast MRI for preoperative staging. The size of the primary tumor evaluated by MRI and by conventional tests (mammography and ultrasound) was compared with pathology (gold standard) using the Pearson correlation coefficient. The presence of additional lesions not identified in previous examinations and its influence on treatment planning was also evaluated.

**Main results:** The mean age of patients was 52 years (range 32-75 years) and the most common histological type was invasive ductal carcinoma (81.6%). The tumor size on MRI had better correlation with pathology (R: 0.76) when compared to ultrasound (R: 0.62) and mammography (R: 0.52) ( $p < 0.01$ ). MRI identified additional lesions in 13 patients (26.5%), including 8 malignant lesions (16.3%), and modified therapeutic planning in 9 patients (18.4%).

**Importance of the conclusions:** Breast MRI proved to be more accurate than conventional tests in the evaluation of the dimensions of the main tumor and was able to identify additional lesions not identified by other methods, which altered the therapeutic plan in a significant percentage of cases.

### PA.07.003

#### ASPECTS OF IMAGES AND CLINICAL PATHOLOGICAL CORRELATION OF IDIOPATHIC GRANULOMATOUS MASTITIS: PICTORIAL ESSAY

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**Introduction:** Idiopathic granulomatous mastitis is a rare disease of unknown etiology. Occurs in young women and often after the lactation period. Although it is a benign entity clinical and imaging findings simulate carcinoma.

**Methods Involved:** Selected 10 cases of mastitis diagnosed at our institution evaluating imaging findings on mammography, ultrasound and MRI, as well as clinical and pathological findings.

**Discussion:** Women are hard, fixed, painful mass, sparing retroareolar region associated with skin thickening and may ulcerate. Nipple discharge may be present and secondary axillary lymphadenopathy may occur in up to 40-60% of cases. The most common findings include focal asymmetry image without distortion or microcalcifications on mammography, and irregular hypoechoic nodule or mass associated with increased echogenicity of the parenchyma without posterior acoustic shadowing on ultrasound and no mass lesion with segmental enhancement pattern on MRI. The diagnosis of this entity is established after exclusion of other known causes of granulomatosa disease and prognosis and treatment depend on the form of the disease.

**Conclusion of the presentation:** Therefore, knowing this pathological entity, its clinical course and imaging findings is important for safe handling, for it is a benign entity.

## PA.07.005

### INTRADUCTAL PAPILLOMA: ACCURACY OF CORE-BIOPSY

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#### **Brief description of the purpose of the Review of Literature:**

The intraductal papilloma is an epithelial proliferation with fibrovascular support, circled by mioepithelial tissue, showing a wide spectrum of lesions. Due to the morphological resemblance between papillary lesions, the histological differentiation is complex. The objective of this study is to review the literature, evaluating the accuracy of the incisional biopsy and the radiological characteristics of the lesions that suggest malignancy.

#### **Description (s) condition (s), method (s) or technique (s):**

Recent studies show contradictory results regarding the management of benign papillomas diagnosed by core-biopsy. Some authors suggest imaging follow-up while others suggest surgery. The underestimation rate for malignancy comparing incisional biopsies and excisional surgery is 6% for benign papillomas, and 36% for atypical lesions. However, when evaluating the inconsistency between imaging (BIRADS®) and pathology, the underestimation rate can be reduced, reaching 3% for lesions without atypia. Patients older than 50 years, lesions bigger than 1,5 cm and more than 3 cm from the nipple seem to be related to a higher malignancy risk.

**Conclusion:** The majority of the studies on the literature suggest surgical excision for atypical papillomas, considering the underestimation rate for core-biopsy. There is a lot of controversy about the management of intraductal papillomas without atypia, however the imaging-pathology concordance can make the imaging follow-up a possible option.

## PA.07.013

### MAMMOGRAPHIC FINDINGS OF STEATOCYSTOMA MULTIPLEX

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#### **Brief description of the purpose of the report:**

Steatocystoma multiplex is a rare cutaneous disorder characterized by multiple asymptomatic intradermal cysts. These lesions are usually seen at mammography. It is important to know common mammographic features of the cysts as well as the most important differential diagnosis.

**Medical History:** A 38 years old woman, with multiple cutaneous lesions, submitted to screening mammography. No previous breast procedure was done.

**Diagnosis:** On digital mammography multiple circumscribed radiolucent nodular images, with thin radiodense rim, projected over the breast and the axillary regions were observed.

**Discussion and summary of the case:** A 38 years old asymptomatic woman submitted to a screening breast mammography. On digital mammography multiple circumscribed radiolucent nodular images, with thin radiodense rim were observed. Diagnosis of steatocystoma multiplex can be done based on lesions aspects on mammography, a clinical setting of multiple asymptomatic small intradermal nodules over

the trunk and proximal extremities and a positive familiar history. The differential diagnosis of radiolucent nodule on mammography includes galactocele, lipoma, fat necrosis, epidermal cyst, severe nodulocystic acne, lipomatosis and xanthomatosis.

## 8 - CHEST

## PA.08.002

### STRONGYLOIDES STERCORALIS HYPERINFECTIO: DIRECT VISUALIZATION OF LARVAE IN PLEURAL EFFUSION.

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#### **Brief description of the purpose of the report:**

Strongyloides stercoralis is a worldwide distributed parasite. This report aims to describe the pulmonary strongyloidiasis in a renal transplant patient.

**Medical History:** Male, 52 years old, brown, from the interior of Paraná, with chronic nephropathy, and underwent kidney transplantation. After 03 months of transplantation, in the presence of immunosuppressive therapy, he had diarrhea and eosinophilia. He was hospitalized and developed respiratory insufficiency. His CT scan showed areas of ground-glass attenuation and pulmonary consolidation in the inferior lobes, pulmonary micronodules with miliar distribution and bilateral pleural effusion. He underwent an open-chest diagnostic lung biopsy and drain of pleural fluid, which showed many larvae of Strongyloides stercoralis. The evolution progressed to sepsis and death.

**Diagnosis:** Strongyloides stercoralis hiperinfection.

**Discussion and summary of the case:** In the strongyloidiasis in immunocompromised patients, the larvae can massively penetrate the intestinal wall, reaching the lungs (hyperinfection), with a high mortality rate. The diagnosis is suggested to patients who inhabited or have travelled to endemic areas, with eosinophilia and also with respiratory and gastrointestinal symptoms. In this case, the findings on imaging studies were characteristic and definitive diagnosis was confirmed by direct visualization of the larvae in the pleural fluid.

## PA.08.003

### PITFALLS IN THORACIC IMAGING

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**Introduction:** To illustrate some of the most common pitfalls in thoracic imaging.

**Methods Involved:** X-ray and computed tomography.

**Discussion:** Illustrative cases of the most common pitfalls in thoracic imaging that leads to a misinterpretation in CT and chest X ray, such as anatomic variations, contrast material artifacts and respiratory motion artifacts (example given: intercostal muscles simulating a pleural thickening, respiratory motion artifact simulating sternal fracture, pericardial recess simulating lymphadenopathy, etc.)

**Conclusion of the presentation:** Radiologists, especially

residents and inexperienced ones, may be trapped in some chest imaging's pitfalls. Being aware of these most common traps, may avoid some misdiagnosis and even unnecessary further exams.

#### PA.08.004

##### **PULMONARY ARTERIOVENOUS MALFORMATIONS: WHAT TO REPORT?**

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**Introduction:** To illustrate pulmonary arteriovenous malformations cases and conduct a brief review of the literature.

**Methods Involved:** X ray, computed tomography and arteriography

**Discussion:** Pulmonary arteriovenous malformations are rare and are an abnormal communication between a pulmonary artery and a pulmonary vein, resulting in a right-to-left shunt. It may be congenital (related to hereditary hemorrhagic telangiectasia) or acquired (example given: hepatopulmonary syndrome), simple or complex. Some cases are easily diagnosed but others require clinical and serological correlation and may be a diagnostic challenge.

**Conclusion of the presentation:** Despite pulmonary arteriovenous malformations are a rare entity, it is important to know its features, both to aid diagnosis and to help plan the treatment and follow up.

#### PA.08.009

##### **PROGRESSIVE IMAGING FINDINGS IN HANTAVIRUS CARDIOPULMONARY SYNDROME, REPORT OF A CASE**

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**Brief description of the purpose of the report:** Conduct a literature review of the imaging findings of Hantavirus infection in relation of a case.

**Medical History:** Male patient, 22 years, no history, febrile, tachycardic, dyspneic, tachypneic. Is admitted in critical care unit for imminent respiratory failure. Initial chest radiography shows bibasal interstitial opacities with septal pattern. In the chest CT appears multiple diffusely bilateral pseudonodular ground-glass opacities, septal and peribronchovascular thickening, besides bilateral pleural effusion. Serial radiographic controls shows progression of interstitial shadows to a diffuse alveolar filling pattern, coinciding with patient's clinical progression to respiratory failure. The patient deceased 7 days after admission.

**Diagnosis:** Serological tests of hantavirus infection was performed and confirmed suspected imaging diagnosis.

**Discussion and summary of the case:** The hantavirus infection is commonly caused by the "Sin Nombre Virus" (SNV) the most frequent contagion way is the inhalation of particles of rodent feces. The incubation period is 9-35 days, with nonspecific prodrome symptoms followed by a cardiopulmonary phase characterized by dyspnea lately reaching respiratory failure, the mortality in this phase can be as high as 50%. The most common radiographic finding is interstitial edema which may progress to alveolar filling, reaching a high mortality in this group.

#### PA.08.010

##### **ANGIOTOMOGRAPHY CHEST DUAL ENERGY IN THE DIAGNOSIS OF PULMONARY THROMBOEMBOLISM**

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**Brief description of the purpose of the Review of Literature:** CT angiography (CTA) of the chest has become widely used as a complementary means of diagnosis of pulmonary thromboembolism (PTE). The most recent recommendations of the Brazilian Society of Cardiology place it at the forefront of diagnostic algorithms in non- high-risk PE. This method allows the diagnosis of intraluminal thrombi in the pulmonary arteries and their segmental and sub-segmental (more accurately be made in multislice unit). It also provides, although indirect, information on the impact of thromboembolism of the right ventricle, and this is the main factor influencing the prognosis. However, the conventional CTA does not allow evaluation of the functional consequence of the pistons in pulmonary perfusion compared, for example, by scintigraphy ventilation/perfusion radionuclide.

**Description (s) condition (s), method (s) or technique (s):** Equipment for computed tomography (CT) equipped with dual bulb enable the development of techniques for using different energies in each ampoule. The dual energy acquisition provides information on lung perfusion.

**Conclusion:** Using the technique of dual energy allows to document the presence of perfusion defects that can not be evaluated in conventional CT.

#### PA.08.012

##### **DIAGNOSTIC VALUE OF THE CT HALO SIGN: COMPARISON BETWEEN IMMUNOCOMPROMISED AND IMMUNOCOMPETENT PATIENTS**

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**Brief description of the purpose of the study:** The study aims to investigate whether there are differences in the incidence of diseases with halo sign (SH) between immunocompromised and immunocompetent patients.

**Methods:** An observational, retrospective cohort study was conducted. The study population consisted of 84 patients who underwent computed tomography of the chest, from January 2010 to October 2013, in which the HS has been observed. The final patient diagnosis was confirmed by serology, microbiology, histology or autopsy.

**Main results:** Among immunocompetent patients, 45.2% were diagnosed with adenocarcinoma (24/53) and none had diagnosis of aspergillosis, while 77.4% of immunocompromised patients had aspergillosis (24/31) and none had diagnosis of adenocarcinoma. Statistically significant difference was found in the incidence of diseases which manifest with HS between these two groups ( $p < 0.001$ ). Other diagnoses in immunocompetent patients were metastasis (24.5%), carcinoma of unspecified non-small cell (9.4%), squamous cell carcinoma (7.5%), tuberculosis (3.7%), staphylococcal pneumonia (1.8%), actinomycosis (1.8%), cryptococcosis (1.8%), neuroendocrine carcinoma (1.8%), and histiocytosis

(1.8%). Other diagnoses found in immunocompromised patients were lymphoproliferative diseases (9.6%), metastasis (6.4%) and plasmacytoma (6.4%).

**Importance of the conclusions:** The HS can aid in the differential diagnosis of lung diseases if the immune status of patients is taken into account.

### PA.08.013

#### PICTORIAL ESSAY OF CHEST RADIOGRAPHY IN THE EMERGENCY ROOM

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**Introduction:** Chest radiography is the image method widely used in the emergency department (ER), complementing the clinic and contributing to confirming pre-test diagnosis, or exclude them and motivating other reasoning.

**Methods Involved:** Explore relevant chest radiographic findings correlating with relevant clinical data.

**Discussion:** Chest radiography is a complementary investigation that requires careful use, following the principles of radiological protection. The radiographic findings in patients with acute illnesses admit various diagnoses such as infectious inflammatory diseases, autoimmune, vascular and poisoning. They may present with similar patterns, making the job of the radiologist, often uninformed of the clinic, difficult. Moreover, clinical, is usually no particular skill for radiological relevant details. Our goal is to illustrate the main relevant radiographic findings in nontraumatic patients in ER, emphasizing clinical aspects in differential diagnoses of certain image patterns and correlate with the CT findings. Didactically, the findings will be separated into mediastinal, pulmonary, pleural, chest wall and upper abdomen.

**Conclusion of the presentation:** Chest radiography is a widely used diagnostic method. Then, it's necessary that clinicians and radiologists are properly trained to identify significant radiological details and, comparing them to clinical aspects, elaborate the differential diagnosis for each situation.

### PA.08.014

#### MAJOR INDICATIONS FOR CHEST RADIOGRAPHY IN THE EMERGENCY DEPARTMENT AND ITS RELEVANT FINDINGS

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**Brief description of the purpose of the Review of Literature:**

Chest radiography plays a central role in emergencies, however, based on the radiological protection and economic principles, it is essential to request it carefully, so the benefits can outweigh the risks and costs. For this reason, it is necessary a further exploration of the clinical signs and predictors to request this diagnostic method, avoiding unnecessary costs and exposure to radiation.

**Description (s) condition (s), method (s) or technique (s):**

A literature review was conducted using the following databases: PUBMED, ScieLO and LILACS. Search terms: "chest radiography", "emergency room", "thoracic" were used.

**Conclusion:** Our literature review showed an excessive number of radiological exams with normal results or abnormalities not associated with patients' complaints, indicating an error in the use of this diagnostic tool and breaking principles of radiologic protection. A retrospective statistical analysis of the studies determined a list of clinical predictors, like advanced age, chest pain associated with dyspnea, previous significant medical history (COPD, cancer, asthma or CHF) and tachypnea, as simple, but efficient clinical criteria to optimize the use of chest radiography. It is necessary to emphasize that the studies reviewed suggested the need of analyzing a greater number of individuals and recommended that these criteria are not used one to decide when to request a chest radiography.

### PA.08.015

#### SILICONE EMBOLISM SYNDROME: CASE REPORT.

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**Brief description of the purpose of the report:** The objective is to report a case of pulmonary silicone embolism.

**Medical History:** A 39-year-old nonsurgical transexual was admitted at the hospital complaining of dyspnea for the past 3 days, associated with dry cough, palpitations, blurred vision and fever. One week before admission, he had undergone subcutaneous silicone injection on the buttocks. The physical examination was remarkable only for tachypnea and tachycardia. ECG showed sinus tachycardia and ventricular extrasystoles; arterial blood gases showed mild hypoxemia (pO<sub>2</sub>: 75.99mmHG; reference range = 80-100mmHg). A chest x-ray showed diffuse bilateral peripheral infiltrates, and a chest CT showed bilateral diffuse ground-glass opacities at a subpleural/peripheral localization. The patient was submitted to supportive treatment, with a good outcome. Another CT performed two weeks later showed no abnormalities.

**Diagnosis:** The presumed diagnosis was silicone pulmonary embolism.

**Discussion and summary of the case:** Liquid silicone (Polydimethylsiloxane) has been used for cosmetic procedures since the 1960s, not only by physicians, but also by nonmedical personnel. Common symptoms of silicone embolism include hypoxemia (92%), dyspnea, tachycardia, tachypnea, fever, pleuritic chest pain and hemoptysis. The treatment is supportive (oxygen therapy and corticosteroids), and usually has a self limited course, even though a little number of deaths have been reported following massive embolism.

### PA.08.016

#### MILIARY TUBERCULOSIS : AN UNUSUAL PRESENTATION OF A COMMON DISEASE IN OUR ENVIRONMENT

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**Brief description of the purpose of the report:** The military disease affects between 1% and 7% of patients with all forms of tuberculosis. Computed tomography with multiple detectors is the most efficient method of image in diagnosing this form of presentation, which is characterized by the ran-

dom distribution of micronodules. This case report aims to demonstrate that, although miliary tuberculosis is an unusual presentation of pulmonary tuberculosis, the characterization of its typical finding facilitates the diagnosis.

**Medical History:** Male, 27 years, with progressive dyspnea for 4 months, productive cough and weight loss of 23 kg, nonsmoker and occupational history of working in foundry. The computed tomography scan showed mediastinal lymphadenopathy and multiple random lung micronodules. Biopsy was performed with histopathologic diagnosis of miliary tuberculosis.

**Diagnosis:** Miliary Tuberculosis.

**Discussion and summary of the case:** Classic tomographic findings are 2-3 mm micronodules with random distribution and a slight predominance in the lower lobes, seen in 85% of cases. But often biopsy or culture are essential for the definitive diagnosis, it is essential that the radiologist and the clinician understand the distribution pattern of micronodules in the suspicion of miliary tuberculosis.

## PA.08.020

### DEADLY THORACIC DISEASES: ASPECTS IN POST MORTEM COMPUTED TOMOGRAPHY

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**Brief description of the purpose of the report:** Several types of diseases, including the most common causes of death in our population, as coronary ischemic diseases, lung cancer, pulmonary infections, and pulmonary embolism can affect the thoracic segment. In general, the cause of death can be determined by the set of basic diseases and clinical events. However, it may not be clinically evident in a great number of cases. Therefore, conventional autopsy is considered to be the gold standard in determining the cause of death.

**Medical History:** The images were collected from a post mortem imaging platform. All of the scans were obtained previously to the conventional autopsy, according to a research protocol approved by the institutional ethics committee. After, imaging findings were correlated to autopsy findings. Illustrative cases of fatal thoracic diseases were selected, and radiologic images (including multiplanar and 3D reconstructions) are displayed in association with the corresponding microscopic and macroscopic photographs of the autopsy specimens.

**Diagnosis:** This scientific exhibit demonstrates the potentiality of this novel method in determining some of the most common fatal diseases in the thoracic segment.

**Discussion and summary of the case:** Post mortem CT is capable of demonstrating some of the most common causes of death in the thoracic segment.

## PA.08.021

### PULMONARY MANIFESTATIONS OF TUBEROUS SCLEROSIS

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**Introduction:** Tuberous sclerosis is a rare autosomal dominant congenital syndrome characterized by the presence of

hamartomas in multiple organs. The pulmonary involvement is uncommon, with the lymphangiomyomatosis the most commonly recognized pulmonary manifestation. Recently, some reports have associated another entity to this syndrome, the multiple micronodular pneumocyte type II hyperplasia (MMPH).

**Methods Involved:** We analyzed in our digital archive chest computed tomography (CT) of patients with diagnosed tuberous sclerosis, from September 2009 to October 2013.

**Discussion:** Lymphangiomyomatosis is a disease which affects young women with progressive dyspnea, characterized by multiple thin wall cysts distributed uniformly by the lungs. MMPH is another pulmonary manifestation of tuberous sclerosis that has recently been reported. On chest CT, MMPH present as multiple stable ground-glass pulmonary micronodules, in a diffuse distribution. The differential diagnosis includes infectious processes, neoplastic and pre-neoplastic lesions.

**Conclusion of the presentation:** The knowledge of the different types of pulmonary involvement by tuberous sclerosis is important because it might aid in the initial diagnosis of this syndrome and help avoid misinterpretation with other diseases that have same radiological findings.

## PA.08.022

### REVERSED HALO SIGN - ADVANCING THE DIFFERENTIAL DIAGNOSIS OF ITS MANY CAUSES

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**Introduction:** The reversed halo sign, also called atoll sign, is characterized by a complete or incomplete consolidation halo surrounding an area of ground-glass opacity. Initially described as pathognomonic for organizing pneumonia, it has been shown in other conditions.

**Methods Involved:** Pictorial essay with high resolution computed tomography (HRCT) scans of cases presenting the reversed halo sign, and subsequent analysis of additional findings that help narrow the differential diagnosis, with a flowchart that aids this differentiation.

**Discussion:** The disease most associated with the reversed halo sign is organizing pneumonia, where it was initially described. Along with reversed halo sign, the presence of consolidation with peripheral and peribronchovascular distribution points to this diagnostic hypothesis. Another associated condition is pulmonary infarction, and the presence of a reticulated interior of the lesion favors this diagnosis, in addition to the findings of thromboembolism. Infectious conditions such as tuberculosis, aspergillosis and paracoccidioidomycosis have also been associated with the reversed halo sign.

**Conclusion of the presentation:** The reversed halo sign can have many causes, but a systematic analysis of HRCT findings and history data can lead to the correct diagnosis in most cases.

## PA.08.023

### USE OF ANGIOGRAPHY TOMOGRAPHY IN THE DIAGNOSIS OF PULMONARY EMBOLISM THROMBUS

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**Brief description of the purpose of the study:** The throm-

bus pulmonary embolism (PE) is the obstruction of the pulmonary arterial circulation with reduction or cessation of blood flow being a direct cause of death. Correlate the side lobe and damaged with age and sex of patients.

**Methods:** We analyzed CT angiography examinations in 40 (H: 20, M: 20) positive patients undergoing TEP protocol, from May to December 2013 in two hospitals in the city of São Paulo.

**Main results:** In female patients (24-80 years, mean  $50.23 \pm 18.08$ ). TEP presented in 49% of cases on the right, 16% left and 35% bilateral. The most affected lobe was lower (49%). In males (72-31 years, mean  $46.80 \pm 11.79$ ) presented in 11% of cases on the right, 8.5% left and 80.5% bilateral. The most affected was the lower lobe (57%). In relation to age, with over 40 years (M: 55%) with 25.5% of the cases right, 10.5% left and 64% bilateral. The most affected was the lower lobe (51%) and those less than 40 (M: 61.5%). Had a thrombus in 38.5% right, 15.5% left and 46% bilateral. The most affected was the lower lobe (54%).

**Importance of the conclusions:** The most affected was the lower lobe regardless of age and sex. Have bilateralism was statistically significant ( $p < 0.05$ ) for male patients over 40 years.

#### PA.08.024

##### **INFLAMMATORY PSEUDOTUMOR OF THE LUNG (IPT-L): A CASE REPORT WITH UNUSUAL RADIOLOGIC FINDINGS AND SUCCESSFULLY TREATED WITH CORTICOSTEROIDS**

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**Brief description of the purpose of the report:** To describe and discuss a case of IPT-L with atypical radiologic features and successfully treated with corticosteroids.

**Medical History:** A 55-year-old male presented with forty five days of dry cough, low fever and malaise. The patient had hypertension and a past smoking history. His physical examination was unremarkable.

**Diagnosis:** Chest computed tomography showed a 5,5 cm right perihilar mass, other smaller bilateral pulmonary nodules and enlarged mediastinal and hilar nodes up to 1.1 cm in size. Besides, CT scan also demonstrated discrete bronchovascular interstitium and interlobular septa thickening. The final diagnosis of IPT-L was then made by percutaneous image-guided biopsy of the mass.

**Discussion and summary of the case:** The PTI-L is a rare disease of unknown cause with neoplastic and inflammatory theories. Most patients are less than 40 years of age with no gender preponderance. Approximately 70% of cases are asymptomatic. So, many PTI-Ls are discovered incidentally on radiological examination as a solitary peripheral mass or nodule, a nonspecific finding. In our case, there were multicentric disease, hilar involvement and enlarged lymph nodes. Each one of those imaging features are described in less than 16% of patients. Furthermore, despite the more established surgical treatment, the patient continues to be in remission one year after treatment with corticosteroids.

#### PA.08.025

##### **PRELIMINARY FINDINGS IN A BRAZILIAN LUNG CANCER SCREENING PROGRAM WITH LOW-DOSE CT**

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**Brief description of the purpose of the report:** Lung cancer screening with low-dose CT has been shown to reduce mortality in high-risk patients, in comparison with standard chest X-ray, according to the results of the National Lung Screening Trial (NLST). In order to evaluate the validity of these results in a high-risk Brazilian population, we have implemented a lung cancer screening program, supported with grants from the Ministry of Health. To our knowledge, this research represents the first large study in our country attempting to detect early-stage lung cancers with low-dose CT.

**Medical History:** We aim to comment the initial experience of the study and to describe and illustrate its first results, including some cases of proven lung cancer, as well as other findings like benign neoplasms, pulmonary infections, coronary atherosclerosis and aortic aneurysms.

**Diagnosis:** According to our first results, as it was already demonstrated by the NLST, low-dose CT has the capability of detecting early-stage lung cancers in a high-risk population. The prevalence of lung nodules in our population may be higher than that of developed countries, which could be related to a higher prevalence of granulomatous disease in our population.

**Discussion and summary of the case:** Our initial experience with low-dose CT screening showed the detection of early lung cancer and other benign findings.

## 9 - CARDIOVASCULAR

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#### PA.09.001

##### **ROLE OF NURSING IN CARDIAC MAGNETIC RESONANCE**

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**Brief description of the purpose of the Review of Literature:** The cardiac MRI is a diagnostic method, which provides information morphofunctional in a wide range of pathologies of the cardiovascular system. Being a complex examination of various stages becomes relevant the role of nursing in cardiac MRI. This study aims to demonstrate the duties of nurses in cardiac MRI exams in order to guarantee a specific and safe patient care.

**Description (s) condition (s), method (s) or technique (s):** The methodology used was an integrative review of exploratory and descriptive. The study set in a period of one year using scientific databases LILACS, SCIELO, MEDLINE, PUBMED and BDNF, extracting journals published recently fully available in Portuguese and English.

**Conclusion:** In conclusion, the nurse plays a key role in ensuring the quality of care and patient safety in all aspects related to the examination of cardiovascular magnetic resonance.



### PA.09.003

**CORONARY ANGIOTOMOGRAPHY AND MYOCARDIAL SCINTIGRAPHY: COMPLEMENTARY STUDIES**  
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**Brief description of the purpose of the study:** the objective of this study is to assess whether the existence of DAC and the degree of coronary obstruction evaluated by Angio CT associate with changes to the CPM exam

**Methods:** we included 329 patients who underwent coronary angiotomography for the period April 2009 to April 2013 These were selected patients who presented results considered changed and analyzed how the achievement of CPM. Were excluded from the work those undergoing angioplasty, prior revascularization surgery and those who performed only the calcium score.

**Main results:** of the 329 patients performed coronary CT Angiography, 77 (23.4%) of them were considered bearers of DAC, these 22 (28.5%) underwent examination of myocardial perfusion scintigraphy.

**Importance of the conclusions:** CT Angio and CPM provide complementary information on DAC, the first about the morphological aspects and the second about the functional aspects.

### PA.09.004

**3D MODELS RAPID PROTOTYPING BASED ON CARDIOVASCULAR COMPUTED TOMOGRAPHY IMAGES**

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**Brief description of the purpose of the study:** Introduction: 3D models representing patient-specific cardiovascular anatomy may help to take treatment decision. This work aims to show the feasibility and clinical potential of creating 3D models from computed tomography data.

**Methods:** Methods: Computed tomography data in DICOM format of selected patients were converted in 3D data using dedicated software (Mimics). This data served for prototyping 3D models with a 3D printer (Objet350). Different material compositions and model sizes were tested. Measurements from anatomical landmarks of the models and the original CT exams were correlated. We presented the models to cardiovascular surgeons to assess the model's utility and accuracy.

**Main results:** Results: Eleven 3D models were successfully created including aortas, hearts with transpositions of the great arteries and hearts with pulmonary atresia using transparent rigid material (FullCure 720), hemitruncus using rubber-like material (TangoBlack) and coronary arteries using both. There was excellent correlation between dimensions measured on models and CT images. Cardiovascular surgeons confirmed accuracy of the models and underlined utility for cases with complex anatomy.

**Importance of the conclusions:** Conclusion: 3D printing of cardiovascular structures is feasible and useful in communicating complex anatomy and may be helpful for choosing treatment strategies, plan surgery or test device implantation.

### PA.09.008

**MITRAL-AORTIC PSEUDOANEURISM: DIAGNOSIS ROLE OF CARDIOVASCULAR MAGNETIC RESONANCE**

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**Brief description of the purpose of the report:** Pseudoaneurysm of left ventricular outflow (PLVO) is a potentially fatal surgery for cardiac valve replacement complication and infective endocarditis.

**Medical History:** CASE REPORT: A 35 year old woman, with background of rheumatic valvulopathy and three surgeries for mitral valve replacement, for the last 2 years with dyspnea on exertion and constrictive chest pain with left superior limb irradiation and no relation to physical effort. Of note, blood pressure 90/60 mmHg, pulse rate 63/min, respiratory rate 17/min; systolic murmur III/VI at mitral and tricuspid focus. Transthoracic echocardiogram with highlighted important dilation of both atriums and left ventricle diameters, patent oval foramen (POF) and an undefined rounded image at mitral-aortic junction. Transesophageal echocardiogram showed coronary sinus aneurism and a LV-aneurism fistule. Cardiovascular Magnetic Resonance (CMR) showed a PLVO between right cuspid and non coronary cuspid with contact with both atriums. Patient did not undergo surgery due to pre operative high risk, opted for conservative treatment.

**Diagnosis:** MITRAL-AORTIC PSEUDOANEURISM

**Discussion and summary of the case:** DISCUSSION: PLVO is a complication of high risk of rupture and has to be evaluated to the indication for surgery. CMR played an important role at diagnosis definition and has high spatial resolution allowing accuracy in this lesion that was unidentified by other methods.

## 10 - INTERVENTIONAL

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### PA.10.001

**SCAR PREGNANCY ECTOPIC CHEMOEMBOLIZATION**

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**Brief description of the purpose of the report:** Describe chemoembolization of ectopic pregnancy as a feasible, safe and effective treatment option according to the literature review and clinical outcome of our case. outcome of our case.

**Medical History:** Female 35 years old, white, administrative secretary, pregnant (7 6/7 weeks) referred to the emergency room of our hospital with a suspected ectopic pregnancy in the uterine scar. First pregnancy by cesarean section with no other. She was admitted for investigation and direction of conduct. From the radiological laboratory evaluation by ultrasound and magnetic resonance imaging was performed by the obstetric staff attempted to treat multiple doses of methotrexate without technical success. Because of high risk of hemorrhagic complications for primary surgical approach, we chose to perform chemoembolization this ectopic preg-

nancy, from the super-selective uterine artery embolization with microspheres loaded with methotrexate.

**Diagnosis:** Performed laboratory and radiological evaluation by ultrasound MRI pelvis with contrast, diagnose ectopic pregnancy was diagnosed in the uterine scar.

**Discussion and summary of the case:** The uterine scar is perfused primarily by uterine arteries, so the procedure of chemoembolization enable high concentration of methotrexate in ectopic pregnancy, with low toxicity and few adverse events due to lower overall concentration of the drug possible from the upstream arterial embolization.

## PA.10.002

### CORE BIOPSY OF THYROID NODULES: WHEN AND HOW TO DO?

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**Brief description of the purpose of the Review of Literature:**

Thyroid nodules are a common finding in adult population, but only a small part of these have neoplasm origin. When they show any malignance characteristics, it's indicated a puncture with fine needle aspiration (FNA) guided by ultrasonography. However, up to 20% of these exams aren't diagnostic. The core biopsy method is widely used in different parts of the organism, but poorly in the thyroid. In the last few decades, it's been explored to help in the investigation of the thyroid nodules. This paper has the purpose of providing relevant information about this method, based in a literature review.

**Description (s) condition (s), method (s) or technique (s):**

The first reports of core biopsy in thyroid nodules were in the 90's, proposed as a complementary procedure in cases with unsatisfactory samples, inconclusive results or discordant results between FNA and ultrasound findings. The core biopsy has high sensibility and specificity, it's a safe and well tolerated method. Nowadays, the American, European and Italian Societys of Endocrinologists suggest his uses as a complementary tool in specific cases.

**Conclusion:** Core biopsy is a safe and efficient method, however shouldn't be seen as a substitute to FNA, but a complementary tool in the diagnoses investigation of some specific cases, avoiding unnecessary surgery approach.

## PA.10.009

### PROCEDIMENTOS MINIMAMENTE INVASIVOS GUIADOS POR IMAGEM PARA O CONTROLE OU REDUÇÃO DA DOR EM PACIENTES ONCOLÓGICOS: O QUE PODEMOS FAZER?

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**Brief description of the purpose of the Review of Literature:**

O controle da dor é muito importante no tratamento de pacientes oncológicos e tem igual importância para o tratamento real da doença. O principal objetivo deste estudo é compartilhar com radiologistas, intervencionistas especialmente, a nossa experiência em procedimentos minimamente invasivos guiados por imagem focados em controle terapêu-

tico da dor.

**Description (s) condition (s), method (s) or technique (s):** Foram selecionados casos didáticos e ilustrativos realizados em nossa instituição dos seguintes procedimentos: neurólise do plexo celíaco; ablação térmica de lesões ósseas secundárias usando ultrassom de alta frequência focalizado guiado por ressonância magnética (HIFU-MRI), radiofrequência e crioablação, vertebroplastia e infiltração de raízes nervosas guiadas por tomografia computadorizada (TC). Os pacientes tratados apresentavam dor não responsiva a outras terapias e muitas vezes apresentavam efeitos colaterais do tratamento em vigência.

**Conclusion:** A radiologia intervencionista é fundamental no tratamento multidisciplinar para o controle da dor nestes pacientes. Ao lado de procedimentos estabelecidos, como a neurólise do plexo celíaco, a infiltração de raízes nervosas, a vertebroplastia percutânea, a ablação térmica de lesões ósseas primárias ou secundárias, novas abordagens terapêuticas como a ablação térmica por HIFU-MRI estão ganhando espaço na condução destes pacientes, apresentando um futuro promissor.

## PA.10.010

### INTERVENÇÕES GUIADAS POR IMAGEM NO BAÇO: DERRUBANDO MITOS E PRECONCEITOS

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**Brief description of the purpose of the Review of Literature:**

Procedimentos percutâneos guiados por imagem no baço raramente são realizados devido ao receio de complicações, principalmente hemorragia. No entanto, as taxas de complicações são semelhantes aos de outros órgãos abdominais e tais procedimentos são uma excelente opção, particularmente naqueles pacientes com comorbidades clínicas. O objetivo deste trabalho é proporcionar ao radiologista um guia sobre as técnicas intervencionistas corretas e suas limitações, visando um desempenho seguro destes procedimentos.

**Description (s) condition (s), method (s) or technique (s):**

Vamos rever a anatomia relevante para facilitar a seleção de técnicas adequadas para acessar o baço e vamos descrever os vários tipos de intervenções percutâneas esplênicas, incluindo biópsia, drenagem de abscesso e ablação por radiofrequência (RFA), mostrando as complicações e resultados.

**Conclusion:** A opinião generalizada de intervenções no baço entre os médicos é que há um alto risco de morbidade, principalmente por causa do desempenho pouco frequente destes procedimentos em comparação com os de outros órgãos abdominais. A literatura sugere taxas muito mais baixas de complicações e o que vemos é que os procedimentos no baço podem ser usados com segurança, fornecendo um diagnóstico definitivo e, algumas vezes, com objetivo terapêutico, sendo uma alternativa eficaz a cirurgia.

## PA.10.011

### RADIOFREQUENCY ABLATION AS AN ALTERNATIVE IN THE PALLIATIVE TREATMENT OF FUNCTIONAL LUNG METASTASES OF THE PARATHYROID CANCER

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**Brief description of the purpose of the report:** The purpose of this presentation is to demonstrate that radiofrequency ablation of metastatic pulmonary nodules of parathyroid cancer resulted in significant reduction in serum calcium and PTH levels. In our experience, radiofrequency ablation of pulmonary nodules has provided adequate control of hypercalcemia and resulted in better quality of life and survival of patients.

**Medical History:** Parathyroid cancer is a very rare disease and represents less than 1% of primary hyperparathyroidism cases. PTH levels are typically extremely high and the increased bone resorption results in hypercalcemia and skeletal manifestations that range from asymptomatic bone loss to the development of fractures and brown tumors. Hypercalcemia is severe and complications such as pancreatitis and renal insufficiency are common.

**Diagnosis:** Radiofrequency ablation of functional lung metastases of parathyroid cancer.

**Discussion and summary of the case:** The severe symptomatic refractory hypercalcemia, the presence of multiple unresectable pulmonary metastasis and the absence of conventional treatment options led us to investigate the possibility of performing radiofrequency ablation in our patients. In the literature, there are few cases of parathyroid carcinoma treated with radiofrequency ablation. We report 3 cases of metastatic parathyroid carcinoma with refractory symptomatic hypercalcemia admitted to University of São Paulo Cancer Institute between 2010 and 2013.

### PA.10.019

#### REAL-TIME TRANSRECTAL ULTRASONOGRAPHY/MAGNETIC RESONANCE IMAGING GUIDED PROSTATE BIOPSY: TECHNIQUE, DIFFICULTIES AND FIRST RESULTS

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**Introduction:** Transrectal US (TRUS)-guided biopsy is considered the standard approach for prostate cancer diagnosis despite it is randomic, with no assurance of sampling tumoral lesions, which are normally indistinguishable from normal tissue. The extended (10-14 cores) systematic technique yields higher negative predictive value in comparison to the original 6-cores biopsy adopted in the past, but also leads to increased detection of low-volume/low-risk disease. In addition, the poor sampling of certain gland areas (anterior/midline/apex) still underdiagnose clinically significant cancer.

**Methods Involved:** All these limitations claim for an imaging modality that could not only improve prostate cancer depiction but also enable targeted biopsies. In this context, multiparametric prostate MRI has been earning a prominent role allowing MRI-directed/cognitive fusion (based on the review of MR images before biopsy), MRI-guided (performed within a MR tube) and MRI/TRUS fusion (coregistration of previously acquired MRI and real-time TRUS images based on electromagnetic signals) to orientate needle biopsy toward prostate regions with suspicious MRI appearances.

**Discussion:** This pictory essay aimed to illustrate the initial

experience with MRI/TRUS fusion modality, just recently introduced in Brazil, focusing on technique, practical difficulties and histopathological correlation.

**Conclusion of the presentation:** Although further studies are necessary, the first 45 cases performed in our interventional radiology service reveal a promising tool.

### PA.10.021

#### ALTEPLASE AS PART OF IMAGE-GUIDED PERCUTANEOUS DRAINAGE OF COMPLEX COLLECTIONS: A SUCESSFULL EXPERIENCE

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**Introduction:** Image-guided percutaneous drainage yields very high successful treatment rates for the management of intracavitary collections but, in some cases it may fail, frequently due to the complex (loculated, with debris and dense contents) characteristics of the target. In this context, a few studies have demonstrated favorable clinical outcomes when a fibrinolytic agent is instilled, leading to decreased viscosity of the collection and increased drainage flow rates for all sizes of catheters, preventing, thus, surgical interventions.

**Methods Involved:** The first one fibrinolytic agent used (urokinase) has been virtually replaced by the widely available tissue-type plasminogen activator (tPA). Despite the majority of available data have evaluated the role of tPA for draining thoracic empyemas, rare data also have reported its abdominopelvic use.

**Discussion:** Based on a pictory essay of cases performed in our interventional radiology service, this study aimed to report our initial experience with alteplase - a recombinant tPA - as part of image-guided percutaneous drainage of complex collections, emphasising on indications, techniques and associated complications.

**Conclusion of the presentation:** We achieved great results, especially when alteplase was administered earlier in relation to the day the drainage was realized, and, although further studies are necessary, it seems to be a very safe tool.

### PA.10.025

#### ULTRASOUND GUIDED LUNG BIOPSY: A REALITY

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**Introduction:** Image guided lung biopsy is a relatively common procedure, providing well-established benefits in the management of patients. Computed tomography (CT) and ultrasound (U.S.) have been used to guide these procedures.

**Methods Involved:** CT is considered the main method to be used in lung biopsies, with vast literature data on this topic. Ultrasonography, in turn, arises in recent years as an alternative method with precise indications for which has been preferred over computed tomography due to the low cost, equipment availability, mobility, speed and image acquisition in real time.

**Discussion:** Due to the increasing amount of procedures for image guided lung biopsy, ultrasound has come to play an important role in our flow diagnosis of patients with periph-

eral pulmonary lesions, pleural base. In this essay we discuss about the technique and results.

**Conclusion of the presentation:** Ultrasonography is now a reality in our service, and it was shown as the best and most effective when the target lung lesions present accessibility criteria required for the method.

### PA.10.026

#### A NEW METHOD OF PREOPERATIVE MARKING FOR METASTATIC LIVER INJURIES

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**Brief description of the purpose of the study:** The neoadjuvant chemotherapy is increasingly used before resection of metastatic liver lesions. However, this treatment may lead to the disappearance of some of these lesions or hinder their detection with intraoperative ultrasound. Incomplete surgical resection of lesions absent in patients treated preoperatively can lead to inadequate hepatic resection

**Methods:** Here we describe a new technique, guided by computed tomography, to mark small lesions using silver clips McKenzie - Diener and co-axial needle. This marking technique applied before patients start systemic chemotherapy, facilitates resection of small lesions that may disappear or become difficult to characterize intraoperatively.

**Main results:** Two cases in which patients were referred for neoadjuvant chemotherapy and subsequent to surgical resection of the marked lesions were performed. Histologic examination of the surgical specimen showed: Case 1: tubular adenocarcinoma metastatic bowel pattern, with surgical margins free of neoplasia and viable tumor cells in 80% of the sample. Case 2: presence of lake acellular mucus and absence of residual tumor.

**Importance of the conclusions:** Preoperative localization with metal clip is a simple, useful, versatile and cheap in an attempt to avoid the difficulty in locating the liver injury in patients who will go to preoperative chemotherapy tool.

### PA.10.029

#### IMAGE GUIDED INTERVENION IN ADENOMATOSIS

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**Introduction:** First described in 1985 by Flejou, hepatic adenomatosis (HA) is defined by the presence of multiple adenomas (> 10), involving both lobes, with no correlation with deposit diseases or previous therapy with steroids. These injuries by risk of bleeding, rupture or malignant transformations are commonly treated. Although surgical resection is the traditional therapeutic modality, minimally invasive techniques (MIT) has recently gained relevance as an elective treatment possibility. In the context of acute ruptures and bleeds bulky, treatment by endovascular embolization has support by the literature for its good results and considerable reduction in morbidity.

**Methods Involved:** Pictorial essay describing case series of patients with HA treated by MIT.

**Discussion:** Team preparation and structural conditions are required for good performance at the management of HA by MIT. Although patients, eventually, need to be retreated with

new ablation or endovascular embolization session, no significant increase in morbidity of treatment is observed.

**Conclusion of the presentation:** The management of HA by MIT is feasible and with good outcomes, reduce morbidity compared to surgical resection and reduction of hospitalization time. Based on this good results, whenever possible, treatment by interventional radiology should be the first therapeutic option for these patients.

### PA.10.030

#### PERCUTANEOUS ETHANOL ABLATION OF NECK METASTATIC LYMPH NODES IN THYROID TUMORS

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**Introduction:** Most patients with well-differentiated thyroid cancer whether derived from papillary or clear cell subtype, has only focal thyroid lesions as the initial presentation. However, in a considerable percentage of cases, the occurrence of lymph node metastases (LM) is already present at diagnosis, and may be diagnosed weeks/months after surgical resection. Approaching these lymph nodes during surgery is sometimes technically difficult, especially in patients with previous surgery. In this context ultrasound guided percutaneous ethanol ablation (PEA) is an excellent therapeutic option.

**Methods Involved:** Pictorial essay with cases of patients with LM treated by PEA (absolute alcohol - 99.9%), using 21 or 22 Ga needle under ultrasound guidance with a brief discussion of the technique, effectiveness and complications related to the method.

**Discussion:** The PEA of LM in thyroid neoplasms has gained support in the literature as a therapeutic option, especially in cases with few lesions. This method is quite effective, with fewer procedure-related symptoms (moderate pain is the most frequent complaint) and with the possibility of outpatient treatment.

**Conclusion of the presentation:** The ultrasound guided PEA of LM is an effective option, with low cost and no need for hospitalization. Pain is the most commonly observed complication during the procedure, but rather minimized by performing the proper technique.

### PA.10.031

#### DIFFICULT ACCESS AND ALTERNATIVE TECHNIQUES TO MEDIASTINAL BIOPSIES FOR CORE BIOPSY GUIDED BY COMPUTED TOMOGRAPHY - PICTORIAL ESSAY

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**Introduction:** The biopsy guided by computed tomography (CT) is a safe alternative method with high accuracy in the diagnosis of mediastinal lesions. The objective of this pictorial essay is to discuss the types of access and different techniques for percutaneous CT-guided mediastinal biopsy.

**Methods Involved:** Percutaneous CT-guided mediastinal biopsies performed at a cancer referral center were reviewed.

**Discussion:** The majority of CT-guided mediastinal biopsies

can be performed through direct access to the lesion. However, mediastinal space is small in some cases, forcing the interventional radiologist to use techniques such as hydro and pneumodissection for creating space before or after the target lesion, allowing secure and representative sample collection. Another difficulty is the use of saline, associated or not to iodinated contrast, as dissection material, which often overflows into adjacent spaces and does not produce the desired effect. To solve this issue, one solution is the use of thicker dissection materials such as Xylocaine gel® or a mixture of saline with Gelfoam®.

**Conclusion of the presentation:** The core needle biopsy guided by CT is safe method for histological confirmation of mediastinal lesions, showing low complication rates and high diagnostic accuracy.

### PA.10.032

#### COMPUTED TOMOGRAPHY (CT) GUIDED CORE BIOPSIES OF SUSPICIOUS LESIONS IN THE DEEP SPACES OF THE HEAD AND NECK: NEW PERSPECTIVES AND ADVANCES.

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**Brief description of the purpose of the study:** Evaluate the safety and efficacy of CT guided core biopsies in the diagnosis of suspected lesions in the deep spaces of the head and neck.

**Methods:** We retrospectively analyzed data from 26 patients who underwent 29 CT-guided core biopsies of suspicious lesions in the deep spaces of the head and neck, from march 2012 to August 2013, in a reference cancer center.

**Main results:** We reviewed data from 18 men and 8 women, between 14 and 79 years old. The majority (85 %) had received prior cancer treatment. The biopsies were performed under conscious sedation, with technical success in 100 % of cases. The gauge needle 18 was the most used in 27 of the 29 procedures. There were two complications related to the procedure, a temporary paralysis of the facial nerve and other persistent pain at the puncture site, responsive only to opioids. Both were considered minor complications.

**Importance of the conclusions:** Our recent series of CT-guided core biopsies of suspicious lesions in the deep spaces of the head and neck is consistent with data reported in the literature in terms of safety and efficacy, representing a great alternative to traditional surgical techniques.

### PA.10.033

#### PERCUTANEOUS CHOLECYSTOSTOMY: EFFECTIVE OPTION AND MINIMALLY INVASIVE IN CRITICAL PATIENTS

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**Introduction:** Percutaneous cholecystostomy is a minimally invasive technique that involves puncturing the gallbladder with fine gauge needle, guided by ultrasound, and drainage tube placement in its lumen. Serves as a definitive treatment or to improve the clinical condition of the patient before the

cholecystectomy. Our aim is to illustrate and describe the technique of percutaneous cholecystostomy in our Intervention department.

**Methods Involved:** Will be exposed ultrasound images showing the stages of the procedure, CT images pre-and post-procedure (follow-up) as well as information on recovery time, materials used and techniques possible.

**Discussion:** The main indications are: patient with acute cholecystitis (calculous / acalculous) with high surgical risk, biliary obstruction, access for extraction or dissolution therapy calculations, access drainage of the biliary tract after failure of ERCP or transhepatic cholangiography. The main complications are: displacement catheter (most common), bile leakage and biliary peritonitis, bleeding, bowel injury (transperitoneal puncture), bradycardia and hypotension (manipulation of the gallbladder).

**Conclusion of the presentation:** Percutaneous cholecystostomy guided by ultrasound is a procedure with a good cost-effective, safe, and easy to perform with high success rate. Basically, presents as a therapeutic procedure in critically ill patients wherein cholecystectomy is contraindicated, or failure of drug therapies.

## 11 - ULTRASOUND

### PA.11.002

#### ROLE OF ULTRASONOGRAPHY IN THE EVALUATION OF THE DISTRIBUTION OF ABDOMINAL ADIPOSITY AS PREDICTOR OF CARDIOVASCULAR RISK

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**Brief description of the purpose of the Review of Literature:** In Brazil, the current data indicate that obesity had its increased prevalence. Given this context, it becomes necessary to use methods for investigation of abdominal adiposity, an important factor for the increased cardiovascular risk and metabolic syndrome. The image method considered the gold standard for quantification of visceral fat is computerized tomography, but presents high cost, radiation exposure and limited use. The ultrasound (US) is useful method, radiation-free, affordable and low cost that determines good accuracy of distribution of abdominal adiposity.

**Description (s) condition (s), method (s) or technique (s):** This study is of bibliographic character, accomplished through information gained from articles published in scientific journals, classical references and graduate theses. Articles, predominantly, have been identified from the databases of the Scielo (Scientific Electronic Library Online) and Medline (Medical Literature Analysis and Retrieval System Online), spanning the years 1956 to 2013.

**Conclusion:** It was concluded that US is a method of easy running, absent of radiation, which can assist in the measurement of the measures of abdominal fat, and thus, associate and investigate the pathophysiology of obesity, chronic disease that became a public health problem.

**Brief discussion of the case**

### PA.11.003

#### ULTRASOUND IN DENTAL PRACTICE: A REVIEW OF THE LITERATURE

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**Brief description of the purpose of the Review of Literature:** Ultrasonography (USG) is an omnipresent tool for medical diagnosis, but has never been used routinely in dental practice. A variety of techniques have been investigated for the application of ultrasound in the assessment of the tooth and its surrounding structures. The techniques that use ionizing radiation are most used by dentists to diagnose various dentomaxillofacial diseases. Ultrasonography is a non invasive, safe, inexpensive technique and becomes an important tool for the diagnosis and evaluation of oral pathologies. The objective of this review is to disseminate and demonstrate the potential applications of USG in dental routine valuing their advantages over other techniques.

**Description (s) condition (s), method (s) or technique (s):** Periapical lesions and carie lesions are very common diseases in the population and given special attention by engaging dental vitality. The USG helps in the differential diagnosis between cysts and granulomas in periapical lesions and evaluate enamel demineralization, allowing early detection of caries

**Conclusion:** Ultrasonography is an important tool for the diagnosis of intra-oral diseases by assessing soft and calcified tissues, in addition to evaluating dental health and vitality without the use of ionizing radiation, and should be stimulate among dentists for dental practice.

### PA.11.004

#### KLIPPEL-TRENAUNAY SYNDROME: CASE REPORTS AND REVIEW OF THE LITERATURE

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**Brief description of the purpose of the Review of Literature:** Purpose: This poster intends to review the Klippel-Trenaunay syndrome and its imaging findings, focusing both on Doppler ultrasound, as well as Radiographs and Magnetic Resonance Imaging.

**Description (s) condition (s), method (s) or technique (s):** Methods: Cases from the author's teaching files will be shown to emphasize the major imaging findings of this disease.

**Conclusion:** Discussion: Klippel-Trénaunay syndrome is a rare disorder characterized by the triad of vascular malformations, venous varicosities, and bone and soft-tissue hypertrophy. Port wine stains, angiokeratoma and venous varicosities in the affected limb are frequent. Complications such as bleeding, deep vein thrombosis and embolism can occur. The treatment's aims are to control varicose veins, to prevent complications and to preserve aesthetic and functional prognosis of the leg.

### PA.11.005

#### OVARIAN ECTOPIC PREGNANCY WITH TWINS: REPORT OF A RARE CASE

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**Brief description of the purpose of the report:** The study in question (ovarian ectopic pregnancy with twins) shows a case report of an association with very rare, with few cases described in the literature.

**Medical History:** We present a case of a patient of 34 years without comorbidities who presented with abdominal pain associated with irregular vaginal bleeding. Qualitative analysis of the plasma fraction was positive for beta human chorionic gonadotropin and the transvaginal ultrasound revealed the presence of two gestational sacs with embryos inside left ovary. The patient was referred to the surgery department and underwent left oophorosalingectomy.

**Diagnosis:** Ovarian ectopic pregnancy with twins

**Discussion and summary of the case:** Ectopic pregnancy is defined as the implantation and development of the fertilized ovulum outside the uterine cavity. It is the leading cause of maternal death in the first trimester of pregnancy. Ovarian localization is a very rare presentation of ectopic pregnancy (1.4%) and often associated with significant morbidity and compromised future fertility.

### PA.11.006

#### PENILE MONDOR'S DISEASE: A CASE REPORT.

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**Brief description of the purpose of the report:** The objective is to report a case of penile Mondor's disease.

**Medical History:** A 34-year-old-man presented with a 4-days-history of progressive pain on the dorsum of the penis, which had worsened during the last day and while having an erection and sexual intercourse. He denied other symptoms or past medical history. On physical examination there was a palpable painful cord-like structure on the dorsum of the penis, without local inflammatory signs. At ultrasound examination, the dorsal vein of the penis had a dilation of its proximal segment, hyperechoic material inside its lumen and no flow at Doppler examination.

**Diagnosis:** A diagnosis of superficial vein thrombosis (penile Mondor's disease) was made, a rare condition, first described by Mondor in 1939 on the thoracic wall, and in 1955, Braun-Falco described penile participation as a superficial phlebitis.

**Discussion and summary of the case:** This condition has an unknown pathogenesis, and it might be related to trauma, intense sexual activity, pelvic and genital surgeries and tumors and thrombophilias. The age ranges from 15 to 57 years, and the diagnosis is made by history and physical examination, being confirmed by ultrasound and Doppler examination. The treatment is supportive, with anti-inflammatory drugs and topical anticoagulant agents, thrombectomy being reserved for refractory cases.

### PA.11.007

#### ULTRASONOGRAPHY IN SHOCK AND CARDIO-PULMONARY ARREST: A COMPLEMENT METHOD TO PHYSICAL EXAMINATION.

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**Introduction:** In critically ill patients, ultrasonography (U.S.) is often the initial imaging test, having an important role both in the context of emergency response as in intensive care units and semi-intensive. Some characteristics, as portability and absence of invasiveness make the U.S. the method of choice in most several conditions, like a cardiorespiratory arrest, shock and trauma.

**Methods Involved:** Comprehensive literature review and retrospective study of clinical cases of HIAE about the applicability of the U.S. in em critical patients.

**Discussion:** The scope of ultrasound in medicine is virtually unlimited. Several protocols being developed for auxiliary the use this examination in the emergency room, between them, it's possible cite the inclusion of U.S. in resuscitation's protocols (RUS) and in the shock (RUSH). This protocol seeks the aid of this noninvasive method in the institution of ACLS maneuvers.

**Conclusion of the presentation:** With the evolution of equipment and greater availability of the method, the U.S. has played an important role in the initial care of critically ill patients, often being considered extension of the clinical examination. For the establishment of a proper treatment protocol and reduction of mortality in these patients, radiologists should be increasingly familiar with the use and indications of this diagnostic modality.

#### PA.11.008

##### SONOGRAPHIC FINDINGS IN THE COURSE OF NIEMANN-PICK DISEASE

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**Brief description of the purpose of the report:** Niemann-Pick (NP) is a rare autosomal recessive disease with deposition of sphingomyelin due to insufficient production of the sphingomyelinase enzyme. There are six subtypes: subtype A or acute neuropathic form, subtype B or visceral form, subtype C or chronic neuropathic form, subtype D or new Scottish form, subtype E or adult form and subtype F or sea-blue histiocytes. Type B disease involves especially the spleen, liver and lungs and does not affect the neurological system at the beginning, thus allowing the persistence until adulthood.

**Medical History:** The purpose of this study is to analyze the sonographic findings of abdominal viscera in a patient with NP disease.

**Diagnosis:** The main sonographic findings in the course of the disease are hepatosplenomegaly and intracellular fat accumulation of abdominal viscera. Other changes include growth retardation and respiratory symptoms due to interstitial pulmonary infiltrates.

**Discussion and summary of the case:** Detailed anamnesis and physical examination are required for diagnosis, besides determining the sphingomyelinase activity and a bone marrow biopsy, revealing typical sea-blue histiocytes. The sonographic follow-up is mandatory, especially to evaluate the disease progression.

#### PA.11.009

##### BUDD-CHIARI SYNDROME MEMBRANOUS TYPE: CASE REPORT AND LITERATURE REVIEW

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**Brief description of the purpose of the report:** The purpose of this study is to report a rare case of Budd-Chiari syndrome membranous type and provide parameters for ultrasound diagnosis.

**Medical History:** Male, 40 years old, with severe pain in the xiphoid appendix since childhood. In 2009 routine tests showed thrombocytopenia. In January 2010 abdominal ultrasound diagnosed chronic Budd-Chiari syndrome with intrahepatic collaterals. Research of thrombophilia was negative.

**Diagnosis:** We performed an ultrasound in February 2013 which diagnosed Budd-Chiari syndrome with chronic obstruction membranous type - deviation of hepatic flow to the inferior vena cava, then into the left renal vein, which anastomoses with the azygos vein. Patient referred for interventional treatment, which opened a route between the hepatic vein in the caudate lobe and the juxtacardiac portion of the inferior vena cava (IVC). Patient reported disappearance of symptoms after one week of treatment.

**Discussion and summary of the case:** In Western countries the Budd-Chiari syndrome is predominantly secondary to thrombosis of the hepatic veins, usually related to myeloproliferative disorders or thrombophilia. The membranous type has distinct morphological features such as the cause of the obstruction and the level at which the hepatic veins are affected. The differential diagnosis is imperative, since the interventional treatment can be effective in membranous obstruction.

#### PA.11.010

##### OVARIAN INGUINAL HERNIA AND MRKH: A RARE COINCIDENCE?

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**Brief description of the purpose of the report:** Rare case report of ovarian inguinal hernia in fertile age, highlighting the importance to proceed the investigation for urogenital anomaly, principally for de Mayer-Rokitansky-Küster-Hausler Syndrome (MRKH)

**Medical History:** Twenty-eight years old woman with primary amenorrhea and dyspareunia with previous vaginal dilatation complains about bilateral groin bulging since childhood.

**Diagnosis:** Patient underwent a bilateral groin ultrasound, which confirmed the presence of both ovaries into the hernia sac. The exam extended to a urinary tract and a pelvic ultrasound demonstrating uterine absence, right kidney agenesis and pelvic left kidney. Complementary exams confirmed the MRKH diagnosis.

**Discussion and summary of the case:** Ovarian in the hernia sac is an uncommon finding. It's even more rare when you restricts to the adult population. The literature shows an association with urogenital malformation, mainly the MRKH.

This association's etiology is still unknown, but Fedele et al (2007) demonstrated an increased hiatus of the internal inguinal ring incidence in these patients. A literature review of the best diagnostic and evaluation method to investigate MRKH and other feminine urogenital malformations was performed in this case report.

#### PA.11.012

##### **PATOLOGIAS AGUDAS DA REGIÃO INGUINOES-CROTAL: PAPEL DOS MÉTODOS DE IMAGEM NA DEFINIÇÃO DA MELHOR CONDUTA**

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**Introduction:** A região inguino-escrotal representa sítio de inúmeras patologias cujas apresentações clínicas por vezes se sobrepõem, sendo os exames de imagem frequentemente definidores da melhor conduta. Destaca-se a ultrassonografia com Doppler como método de escolha na avaliação inicial deste grupo. Nosso objetivo é mostrar casos das principais patologias desta região, com suas características clínicas e imagiológicas.

**Methods Involved:** Os casos foram diagnosticados no departamento de radiologia de emergência de um grande hospital privado de São Paulo, sendo submetidos à avaliação clínica prévia e avaliados inicialmente por ultrassonografia. A região inguino-escrotal foi avaliada por transdutores de alta frequência, utilizando o modo B, Doppler colorido e espectral, com comparação contralateral.

**Discussion:** Hérnias inguinais direta, indireta, inguino-escrotal encarcerada, Síndrome de Fournier, orquiepididimites, varicoceles, trombozes do plexo pampiniforme, hidroceles, hematomas escrotais, torções e tumores testiculares são algumas das patologias exemplificadas neste pôster, através de ultrassonografias e complemento tomográfico quando necessário.

**Conclusion of the presentation:** Ultrassonografia modo B e Doppler é o método de escolha na avaliação inicial da região inguino-escrotal na emergência, sendo os principais elementos favoráveis baixo custo, boa acurácia, ampla disponibilidade, definindo a conduta na maioria das patologias da região inguino-escrotal.

#### PA.11.013

##### **ULTRASOUND AND CHEST ON DAILY**

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**Brief description of the purpose of the Review of Literature:** Literature review attempts to demonstrate and revisit multiple applications and techniques of this method in various thoracic diseases in daily of Radiology and Diagnostic Imaging speciality.

**Description (s) condition (s), method (s) or technique (s):** The Ultrasound is widely used in the thoracic region to identify the presence, to feature, quantify pleural effusions and guide procedures such as thoracentesis, pleural drainage and biopsies, both diagnostic and therapeutic purposes. Although the chest is a region that has locks on ultrasound due to air-filled lungs, ribs and spine, the presence of lung diseases

such as pleural effusions, tumors, consolidation or atelectasis provide ample acoustic windows for the ultrasound examination. Further pleural effusions, this method is able to detect pathological changes associated: atelectasis partial or total, tumors, infectious processes, pleural thickening, complicated effusions, diaphragmatic elevation (paralysis, eventration, hernia), mediastinal tumors, subphrenic abscesses, etc.

**Conclusion:** This method is widely used as a diagnostic method of the hospital routine and is known to have low cost, low risk to the patient, as well as being easily accessible, portable and can be used at the bedside in critically ill patients.

#### PA.11.015

##### **THE ROLE OF DOPPLER ULTRASOUND IN THE INTERNAL CAROTID ARTERY DISSECTION**

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**Introduction:** Cervical artery dissections (CAD) are more common in the internal carotid arteries (ICA), 70% in the cervical and petrous segments, mainly 2-3 cm distal to the carotid bulb. These segments are easily accessible by ultrasound. The Doppler ultrasound (Doppler US) can make initial screening, diagnosis and monitoring of dissection in the proximal segments of the ICA. Computed tomography (CT) and magnetic resonance imaging (MRI) are the best methods in the evaluation of CAD.

**Methods Involved:** The present study aims to describe by practical cases the role and major abnormalities in the Doppler US of ICA dissections.

**Discussion:** Doppler US is a low cost exam that can assist in the diagnosis and monitoring of CAD. That can demonstrate the tapering column flow with abnormal pulsed wave Doppler up to 90% of cases of dissection. Moreover, it is able to determine the flow dynamics of the dissection. CT and MRI do not allow determining the flow dynamics

**Conclusion of the presentation:** It is important for all radiologist know the majors abnormalities in carotid artery dissection on the Doppler US.

### 13 - EMERGENCY

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#### PA.13.002

##### **OVARIAN HYPERSTIMULATION SYNDROME (OHS) AS PRESENTATION OF ACUTE ABDOMEN IN EMERGENCY: SONOGRAPHIC SIAGNOSIS**

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**Introduction:** The OHS is a differential diagnosis in cases of acute abdomen, sometimes overlooked by clinicians and radiologists, because the prevalence of these serious cases is low, in the emergency department of gynecology, especially in the medical clinic. The principal differential diagnoses in cases of acute abdomen are linked to gastrointestinal or urinary tract. The use of gonadotrophin (ovulation inducer) and high estradiol levels contribute to the hypothesis of OHS.

**Methods Involved:** Illustrate the main sonographic features of OHS, especially the moderate/severe subtype.



**Discussion:** OHS is a complication of hormonal ovarian stimulation by FSH. There is an increased ovarian volume and capillary permeability with fluid and protein shifted to the third space. It occurs in approximately 1% of cycles by induction. Can be classified into three grades, depending mainly off the clinical findings, size of the ovaries and the amount of fluid in the third space. The main complications are thromboembolic phenomenon and hypotension.

**Conclusion of the presentation:** The prevalence of such cases has reduced, because in women using FSH, the ultrasound control of the growth ovarian follicles and serum estradiol control is rigorous, especially in specialized centers. Ultrasonography is the method of choice for diagnosis, prediction of prognosis and follow-up.

#### PA.13.004

##### **HYPERTENSIVE PNEUMOPERITONEUM TREATED WITH MINIMALLY INVASIVE PERCUTANEOUS DRAINAGE**

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**Brief description of the purpose of the report:** A 44 year-old male patient, with diagnosis of pancreatitis performed a cholangioMRI that demonstrates dilation of intra and extra-hepatic biliary ducts with slight hyper-enhancement of distal common biliary duct, along the papilla. ERCP reveals an exofitic mass at the great papilla and the patient underwent a gastricpancreaticoduodenectomy for a tubular adenocarcinoma. After the surgery, he developed recurrent abdominal pain and repeated episodes of pancreatitis. A CT shows dilation of the main pancreatic duct.

**Medical History:** Due to the symptomatic dilation of the pancreatic duct, in which the conventional approach for the placement of an endoscopic transpapillary drainage catheter isn't possible, an Endoscopic Ultrasound-Guided Pancreaticogastrostomy was performed. After a few hours, he complained about severe abdominal pain, distension and developed hypotension.

**Diagnosis:** Another CT scan demonstrates large amounts of gas within the peritoneal cavity characterizing a tension pneumoperitoneum. A percutaneous drainage guided by CT was performed to aspirate the gas, with reversal of abdominal distention and hypotension. A drain was fixed to the skin and connected to a Heimlich valve without complications.

**Discussion and summary of the case:** This case describes a complication of an endoscopic Ultrasound-Guided pancreaticogastrostomy as well the aim of interventional radiology to perform a quick, accurate and secure treatment of this rare but life threatening condition.

## 14 - NUCLEAR MEDICINE

#### PA.14.001

##### **USE OF PERFUSION SPECT/CT IN LUNG PRE-SURGERY EVALUATION OF SEGMENTAL FUNCTION AND QUANTIFICATION**

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**Brief description of the purpose of the report:** Report the use of <sup>99m</sup>Tc-MAA SPECT/CT lung perfusion in quantification of segmental function and surgery planning

**Medical History:** A 59-year-old male diagnosed with malignant pleural mesothelioma and recurrent pleural effusion. Right pneumonectomy was proposed and he was referred to Nuclear Medicine department to evaluate lung function.

**Diagnosis:** Malignant pleural mesothelioma

**Discussion and summary of the case:** Perfusion SPECT images were obtained in a Siemens Symbia equipment, immediately after intravenous [<sup>99m</sup>Tc]-MAA injection. Noncontrast Computed Tomography (CT) was performed immediately after. Multiplanar images reconstruction was performed using OsiriX software. Regions Of Interest (ROIs) were defined in each lung segment, and the quantification of each ROI volume activity was performed. Pulmonary function quantification was also evaluated by planar imaging using a geometric model, in which each lung is divided into three sections. Percentage results and impact on the therapeutic decision were compared to those obtained with SPECT/CT. In the case presented, SPECT/CT didn't show an incremental value over planar images, probably due to the disease extension. Nevertheless, lung perfusion SPECT/CT allows volume calculation and its higher accuracy for segmental and lobar assessment can become an important lung performance quantification tool pre- and post-lung surgery, as well as expand to other clinical applications of this method.

#### PA.14.004

##### **IMAGE SIGNS WITH THE POTENTIAL TO HELP IN THE DIFFERENTIAL DIAGNOSIS OF PARKINSON'S DISEASE AND ATYPICAL PARKINSONIAN SYNDROMES**

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**Brief description of the purpose of the Review of Literature:** Parkinson's disease(PD) is a progressive disease of the Central Nervous System, leading to misdiagnosis rate of up to 25%. The evaluation of the striatum with [<sup>99m</sup>Tc]-TRODAT-1 has contributed in the diagnosis, however, alterations are described in PD and some Atypical Parkinsonian Syndromes(APS), one of the main differential diagnostics. Our goal is to present signals in SPECT studies with [<sup>99m</sup>Tc]-TRODAT-1, which may help in the differentiation between PD and Progressive Supranuclear Palsy(PSP), Corticobasal Dementia(CBD) and Multiple System Atrophy(MSA).

**Description (s) condition (s), method (s) or technique (s):** The studies showed hypouptake of [<sup>99m</sup>Tc]-TRODAT-1 in striatum in PD, PSP, CBD and MSA. In DP was find: hypouptake in the posterior putamen contralateral to the symptoms, progressing to ipsilateral posterior putamen, anterior putamen and caudate contralateral, and after ipsilateral. In PSP-parkinsonism: asymmetric uptake in the striatum, but with greater putamen/caudate ratio comparing with PD. In PSP-Richardson syndrome: symmetrical involvement of the striatum and more homogeneous involvement of caudate and putamen. In MSA-cerebellar: preferential involvement of

the caudate. In MAS-Parkinsonian: greater involvement of putamens, with lower striatal asymmetry. In CBD: asymmetry of the striatum and similar involvement of the putamen and caudate.

**Conclusion:** SPECT with [99mTc]-TRODAT-1 may be useful in the differential diagnosis of PD and APS under discussion.

#### PA.14.009

##### THE IMPORTANCE OF BONE SCAN WITH MDP-99MTC IN IDENTIFYING MYELODYSPLASIA IN STAGING OF PROSTATE CANCER: CASE REPORT AND LITERATURE REVIEW

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**Brief description of the purpose of the report:** Share a common case of investigation by nuclear medicine with typical scintigraphic images of myelodysplasia, discarding bone metastases in staging of prostate cancer

**Medical History:** Male, 60-year-old with benign prostatic hyperplasia had increased total PSA indicating transurethral resection two years ago and it developed with significant bleeding. There was weight loss, anemia, thrombocytopenia, and leukopenia. Upon reference, his evaluation in Hematology demanding abdominal ultrasonography and computed tomography showed splenomegaly and enlarged prostate and increased bone density. After the initial hypothesis of chronic myeloid leukemia, the bone marrow biopsy showed myeloproliferative neoplasm subtype myelofibrosis. The prostate biopsy demonstrated neoplasia Gleason 6. For staging, bone scan showed heterogenous diffuse uptake in the axial skeleton, humerus, and femurs with no habitual viewing of the kidneys compatible with myelodysplasia, and no obvious signs of bone metastases by prostate cancer.

**Diagnosis:** Myelodysplasia

**Discussion and summary of the case:** Myelodysplasia is a syndrome that comes from either the bone marrow or the autoimmune disease and neoplasia, and develops into acute myeloid leukemia. This report aimed at sharing a case with an uncommon investigation by nuclear medicine and with typical presentation in bone scan. It shows how important knowing the scintigraphy aspect of such pathology is to discard bone metastases in prostate cancer.

#### PA.14.012

##### CLINICAL PREDICTORS OF MYOCARDIAL ISCHEMIA SUBMITTED TO MYOCARDIAL PERFUSION IMAGING: WICH ARE THEM?

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**Brief description of the purpose of the study:** Myocardial perfusion scintigraphy (MPS) is one of the most used techniques for evaluation of myocardial ischemia. The scintigraphic images show excellent correlation with coronary angiography. The identification of clinical predictors that are associated with myocardial ischemia helps to select patients

for application of MPS. Objective: To identify clinical predictors of myocardial ischemia in patients undergoing MPS. **Methods:** Retrospective analysis of MPS (univariate and multivariate analysis by logistic regression) had been performed between December/2011 May/2012 in hybrid SPECT - CT equipment with 99mTc - sestamibi. Clinical, demographic, scintigraphic stress testing (ET) and scintigraphic findings were the main issue.

**Main results:** Evaluated 843 examinations, mean age 64 +/- 12 years, 63.5 % men. Physical stress was the most commonly used ( 64 % ). Myocardial ischemia present in 208 examinations ( 25 % ). Independent predictors ( p < 0.05 ) of myocardial ischemia were : age > 65 years, hypertension, male gender, previous myocardial infarction, revascularization, angioplasty and chest pain in TE.

**Importance of the conclusions:** Myocardial ischemia was associated with hypertension, male gender, history of coronary disease and angina symptoms. The presence of these factors can contribute to the decision by the ischemia research with MPS.

#### PA.14.013

##### LINFANGITE CARCINOMATOSA DE OSTEOSARCOMA VISTA NA CINTILOGRAFIA ÓSSEA COM MDP

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**Brief description of the purpose of the report:** Paciente J.L.B, masculino, 49 anos, recebido no serviço apresentando há 3 meses dor em articulação coxofemoral esquerda, progressiva. Exame tomográfico da origem demonstrou lesão lítica na medula óssea do colo do fêmur. Realizou cintilografia óssea (CO) para investigação do caso, com de hiperconcentração na cabeça femoral de aspecto insulflativo, além de múltiplas áreas de captação anômala do MDP-99mTc de aspecto confluyente, predominantemente na região peri-hilar pulmonar bilateral. Biópsia da lesão femoral confirmou diagnóstico de osteossarcoma.

**Medical History:** Em seguida realizou tomografia computadorizada de tórax (TC) com grande acometimento pulmonar metastático, caracterizado por espessamento do interstício peribroncovascular, predominantemente com calcificações de permeio, definido como linfangite carcinomatosa (LC).

**Diagnosis:** A metástase pulmonar no osteossarcoma é comum e sua apresentação é definida, geralmente, por nódulos ressecáveis no parênquima pulmonar. Sítios anômalos podem ocorrer em menos de 10% dos casos, sendo a LC uma delas.

**Discussion and summary of the case:** Na revisão da literatura, apenas um caso de linfangite carcinomatosa no osteossarcoma foi descrito com diagnóstico pela TC. Apresentamos um caso de LC vista primeiramente pela CO e comprovada pelo TC.

#### PA.14.018

##### SCINTIGRAPHIC EVALUATION OF CARDIAC PARAGANGLIOMA: A CASE REPORT

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**Brief description of the purpose of the report:** Emphasize the importance of nuclear medicine in the diagnosis of neuroendocrine tumors.

**Medical History:** Male patient, 27 year-old, history of typical chest pain without irradiation, diaphoresis, dyspnea and blurred vision.

**Diagnosis:** Negative investigation for coronary syndrome. Echocardiogram showed encapsulated image below posterior leaflet of the mitral valve. MRI showed paracardiac mass at the heart base. Histopathology suggested paraganglioma, and a 131I-MIBG whole body scan (WBS) was requested. It revealed the presence of abnormal uptake in the projection of the left anterior mediastinum, without other abnormal uptakes. Single Photon Emission Computed Tomography/Computed Tomography (SPECT/CT) found MIBG uptake in correspondence with the tumor in the left atrium.

**Discussion and summary of the case:** The 131I-MIBG WBS is the most specific imaging test to be requested in suspected paraganglioma, because MIBG is selectively uptaken by tumor. The use of SPECT/CT images allows the correlation between anatomical and functional data, revealing the exact location and extension of the lesion, increasing the information reliability. It is non-invasive, so reduces the risk of complications in the evaluation of cardiac tumors. The monitoring of these patients is essential, once paragangliomas can reappear after initial diagnosis/treatment.

#### PA.14.019

**USE OF 123I-MIBG TO EVALUATE THE CARDIAC AUTONOMIC DYSFUNCTION IN CHAGAS DISEASE.** SANCHES, SMD; MARINO, VSP; MOTA, LG; NUNES, SS; BARRAL, CM; ANDRADE, GS; LOURENÇO, MBS; FREITAS, SS; SILVA,MM

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**Brief description of the purpose of the study:** To evaluate the role of 123I-MIBG images in the early diagnosis of sympathetic autonomic dysfunction and its prognostic value in Chagas disease.

**Methods:** Nineteen patients with Chagas heart disease were studied. Examinations performed in the evaluation: measurement of neurotransmitters (brain natriuretic peptide (BNP), renin activity, angiotensin II and noradrenaline), Holter (heart rate variability); Doppler echocardiogram (ejection fraction - LVEF); Radionuclide Myocardial Perfusion (99mTc-MIBI); tomographic images with 123I-MIBG. The scintigraphic images were compared and the cardiac uptake (C/M) and wash-out rate (WR%) of 123I-MIBG were estimated.

**Main results:** The early and late C/M was 1.62 (1.46 to 1.71) and 1.46 (1.38 to 1.65), respectively, and WR was 30% (25-37); 70% of the patients demonstrated more extensive defects in innervation (123I-MIBG) than in perfusion. LVEF was 35% (30-42%). A simple linear regression analysis showed that the WR% showed a significant negative correlation with LVEF. Moreover, there is strong negative correlation between LVEF and BNP and the extent of 123I-MIBG uptake by left ventricle walls.

**Importance of the conclusions:** This study suggests that cardiac innervation is closely related to ventricular function and has prognostic value in Chagasic heart disease.

#### PA.14.026

**METABOLIC SUPERSCAN IN PET/CT. A RARE CASE OF 18F-FDG UPTAKE PATTERN IN METASTATIC GASTRIC ADENOCARCINOMA. CASE REPORT AND LITERATURE REVIEW**

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**Brief description of the purpose of the report:** Reporting a rare case of metabolic superscan due to diffuse metastatic infiltration of gastric adenocarcinoma

**Medical History:** Male, 70 years old, with gastric cancer 20 years ago, underwent gastrectomy at the time, with complete symptom improvement and apparent cure. Remained asymptomatic until a year ago when he presented abdominal pain and was diagnosed with local tumor recurrence and underwent total gastrectomy, chemotherapy and radiotherapy. Two months ago started with diarrhea, rapidly progressive mental confusion and severe lumbar pain. With hypothesis of vertebral metastases he underwent bone scintigraphy that confirmed ribs and vertebral bodies metastasis. The PET/CT re-staging, one hour after 18F-FDG injection, showed a marked hypermetabolism in the bone marrow, liver, peripancreatic lymph nodes and super diaphragmatics, with maximum SUV of 13.8. Antagonistically, there was no metabolic activity in the brain, mediastinum, bowel and bladder, suggesting metabolic superscan by diffuse metastatic disease and low cerebral metabolism.

**Diagnosis:** Metabolic Superscan recurrence in gastric adenocarcinoma

**Discussion and summary of the case:** The superscan PET/CT is mostly associated to prostate, breast, lung and gastric cancers. Such a pattern may occur due to intense 18F-FDG uptake by metastatic bone and hepatic lesions. It's a rare manifestation with typical pattern and should be described.

#### PA.14.029

**MAIN APPLICATIONS OF PET / CT AND DEMOGRAPHICS OF 2828 PATIENTS**

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**Brief description of the purpose of the study:** Show data collected from 2828 examinations in the years 2011 to 2013 about the main clinical applications and profile of patients who underwent PET / CT.

**Methods:** Data were collected using the medical claim and clinical history data, performed by a nuclear medicine physician in all patients before the study.

**Main results:** Regarding age, the majority is in the age group of the sixth / seventh decade of life. The sex distribution was 1590 (56.22%) for women and 1238 (43.78%) for men. Among the ten main indications are cases of lymphoma, lung and breast cancer. 108 different indications were registered.

**Importance of the conclusions:** The role of PET / CT in clinical practice in cancer patients is well established, especially in cases of lymphoma, lung cancer and bowel cancer. The gender distribution shows a greater number of female patients. The age profile of patients probably relates to the decades of increased incidence of cancer. It is expected that

with the spread of technology and clarification of the executors of PET / CT to allow applicants to conduct tests with more precise information, avoiding unnecessary examinations, generating high cost to patients and health plans.

## 15 - PET-CT

### PA.15.002

#### HERNIA URETERAL SIMULATING LYMPHADENOPATHY RETROCRURAL IN PET/CT WITH 18-FDG: REPORT OF CASE AND LITERATURE REVIEW

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**Brief description of the purpose of the report:** Short description of the proposed of the case: Report a rare entity that can be show up like potential a false-positive on PET/CT with 18-FDG.

**Medical History:** Clinical History: A.D.A.S., 82 years old, female, smolker, asymptomatic, held PET/CT for lung nodule solitary. At the exam, observed hyperfocus focal area of 18-FDG at topography from right retrocrural region, simulating lymphadenopathy, that after careful analysis of CT images in multiple planes, was best characterized as creeping segment of the ureter by small diaphragmatic hernia.

**Diagnosis:** Diagnosis: Herniated for ureteral retrocrural space.

**Discussion and summary of the case:** Brief discussion of the case: ureteral hernia is a rare entity with few cases reported in the literature. Hernias of the ureter into the sciatic foramen, inguinal or femoral canals, space between the psoas and iliac vessels (internal hernia) and retrocrural space have been described. The latter occurs by protrusion of a segment of the ureter by a defect in the diaphragm (foramen of Bochdalek), forming a loop in retrocrural space. Most patients are asymptomatic, however, strangulation of the herniated segment of the ureter may occur, causing hydronephrosis and lumbar pain. The diagnosis can be confirmed by intravenous excretory urography or computed tomography (CT).

### PA.15.004

#### METASTATIC LUNG CA: COMPLETE RESPONSE TO PET-CT

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**Brief description of the purpose of the report:** The objective of this report is to present the importance of PET-CT in the evaluation of therapeutic response in advanced lung cancer .

**Medical History:** 49 years old female patient presenting cold and persistent cough.

**Diagnosis:** Adenocarcinoma of the lung metastatic to lymph nodes , bones and liver.

**Discussion and summary of the case:** Nonsmoker female patient of 49 years. Had cold and persistent cough treated as flu. Not held imaging. Evolved with dyspnea . Performed X- ray of the chest that suggested pneumonia. Antibiotic prescribed for home use . After 10 days , kept the dyspnea when CT scan of the chest showed a mass lesion paramediastinal/parahilar, multiple bilateral pulmonary nodules and lymph-

adenopathy . Transbronchial biopsy identified small cell carcinoma and immunohistochemical defined as primary adenocarcinoma of the lung. The search resulted in the presence of EGFR mutation in exon 19 (del E746 - A750). Performed PET - CT staging showed that areas of anomalous concentration of 18F - FDG in numerous ganglion chains , bilateral pulmonary nodules , hepatic nodules and bone structure. The patient received treatment with erlotinib 150mg and Zometa for 2 months. The PET - CT performed to evaluate the therapeutic response did not identify areas of abnormal metabolic activity, characterizing as a complete metabolic response .

### PA.15.005

#### INCIDENTAL FINDING OF DIFFUSE ARTERITIS IN 18F-FDG PET/CT FOR STAGING AN COLON ADENOCARCINOMA CANCER. CASE REPORT AND LITERATURE REVIEW

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**Brief description of the purpose of the report:** To report a case of fortuitous diagnosis of arteritis in 18F-FDG PET/CT for staging a colon cancer patient

**Medical History:** Female, 87 years old, relating chronic constipation and diffuse abdominal pain for two months. Colonoscopy biopsy identified adenocarcinoma in transverse and sigmoid colon. 18F-FDG PET/CT staging showed hypermetabolic areas in the colon, with a SUVmax= 9.4, without metastatic sites. It showed diffuse thickening across the whole aorta, subclavian, vertebral, internal and common iliac arteries, with a SUVmax= 7.5, suggesting diffuse arteritis. Patient refused surgical management of carcinoma. She was treated with analgesics with complete improvement of symptoms, indicating nonmalignant etiology of the pain. A directed interview identified history of a temporal arteritis from 11 months ago, whose symptoms were headache, dizziness and vomiting. It was treated with steroid cycles and the symptoms ceased.

**Diagnosis:** Incidental diffuse arteritis in staging of adenocarcinoma of the colon by 18F-FDG PET/CT

**Discussion and summary of the case:** Vasculitis is an inflammation that affects small to large vessels. Histology is considered the gold standard for diagnosis however, it is highly invasive. 18F-FDG PET/CT is added like a functional method for mapping and detection of metabolically active processes, proving more effective in the group of large vessels, such as giant cell arteritis and Takayasu arteritis

### PA.15.006

#### CARDIAC METASTASIS FROM SQUAMOUS CELL CARCINOMA OF THE TONSIL: DETECTION BY 18F-FDG-PET/CT.

COSTA, T.O.; SANTOS, A.O.; AMORIM, B.J.; MOSCI, C.; ETCHEBEHERE, E.C.S.C.; LIMA, M.C.L.; SOUZA, T. F.; RAMOS, C.D.

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**Brief description of the purpose of the report:** INTRODUCTION: Squamous cell carcinomas (SCCs) include the majority of head and neck tumors (HNT). Malignant HNT

usually metastasize to cervical lymph nodes, followed by hematogenous dissemination. Cardiac metastasis is a rather rare occurrence.

**Medical History:** CASE REPORT: A 45-year-old man, alcoholic and cigarette smoker, with a tumor in the left tonsillar pillar, was referred to the HNT surgery group. A biopsy specimen showed a moderately differentiated SCC. CT of the neck detected an enlarged submandibular lymph node. A 18F-FDG-PET/CT was performed and demonstrated hypermetabolic lesions in: left tonsillar pillar; multiple muscular groups; cervical, mediastinal and external iliac lymph nodes; multiple pulmonary nodules and myocardial focal areas in the left ventricle.

**Diagnosis:** The focal cardiac lesions were considered as metastatic despite the lack of histological confirmation, which would be of little therapeutic value for this patient, who was submitted to radio and chemotherapy.

**Discussion and summary of the case:** DISCUSSION: The heart is a rare location of metastasis from HNT. Heart metastasis in adults usually come from melanoma, breast cancer, lung cancer and leukemia. This is one of the few reports in literature describing cardiac metastasis from HNT detected by 18F-FDG-PET/CT, which contributed to a better patient's staging.

### PA.15.008

#### THE INFLUENCE OF TSH LEVELS ON PET/CT 18F-FDG SENSITIVITY IN DIFFERENTIATED THYROID CANCER – A CASE REPORT.

COSTA, T.O.; AMORIM, B.J.; SANTOS, A.O.; MOSCI, C.; ETCHEBEHERE, E.C.S.C.; LIMA, M.C.L.; SOUZA, T.F.; ARAUJO, M.L.C.M.; ALMEIDA, L.S.; ASSUMPÇÃO, L.V.M.; ZANTUT-WITTMAN, D.E.; TREVISAN, T.L.; RAMOS, C.D.

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**Brief description of the purpose of the report:** INTRODUCTION: Radioiodine therapy (RIT) is the treatment of choice for differentiated thyroid cancer (DTC). However, when 131I-iodine whole body scan (131I-WBS) is negative with increasing thyroglobulin levels (Tg), it's indicated a positron emission tomography with 18F-FDG (PET/CT 18F-FDG).

**Medical History:** CASE REPORT: 49-year-old male submitted to total thyroidectomy after papillary thyroid carcinoma and RIT. In follow up, 131I-WBS became negative, however Tg was increased. PET/CT 18F-FDG was performed in use of levothyroxine (suppressed TSH), which showed nodular hypermetabolic lesion in thyroid bed.

**Diagnosis:** Patient performed a PET/CT 18F-FDG after 30 days of levothyroxine suspension (elevated TSH) which showed the same lesion and others in a cervical and perihilar pulmonary lymph nodes.

**Discussion and summary of the case:** DISCUSSION: PET/CT 18F-FDG study has been established as an indispensable tool in monitoring and restaging patients with thyroid cancer with negative 131I-WBS and elevated Tg. The influence of TSH levels in its sensitivity is not well established in literature. This case clearly demonstrates the increased sensitivity after levothyroxine suspension. The impact in detecting more lesions reflects not only in correct patient's restaging, but also on best treatment decision. Further studies should be developed in order to establish the ideal TSH levels to a good PET/CT 18F-FDG sensitivity in patients with DTC.

### PA.15.013

#### APPLICATIONS OF PET / CT WITH 18F-FDG IN THYROID CANCER IN 21 STUDIES IN THE PRIVATE SERVICE OF BRASÍLIA-DF

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**Brief description of the purpose of the study:** To show scintigraphic findings and epidemiological data of patients who underwent PET / CT held in 2013 in a private clinic in Brasília-DF for detection of metastases of differentiated thyroid carcinoma (DTC) with elevated thyroglobulin and negative Iodine Wholebody Scintigraphy

**Methods:** Twenty-one patients were evaluated, their medical indications, case histories and previous results of PET / CT examinations

**Main results:** Seventeen patients were female and four male. Patients with DTC (eighteen patients), sixteen for restaging, one for staging and one for evaluation of therapeutic response. In the group of restaging of DTC, five was negative and eleven positive, these eight underwent FNA, with six positive for malignancy, one insufficient sample. Three continue the investigation. Four patients with medullary carcinoma, three for restaging showed negative PET / CT, and one to assess therapeutic response was noted progression of the disease.

**Importance of the conclusions:** In DTC group the incidence of women to men was 5:1 and in medullary cancer 2:1. In the group of DTC where PET / CT was diagnostic, the specificity was 85%. Findings similar to that reported in the literature

### PA.15.014

#### FDG-PET/CT AND PARATHYROID ADENOMA SESTAMIBI IN CASE REPORT

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**Brief description of the purpose of the report:** Use of PET / CT and sestamibi scintigraphy in search PARATHYROID ectopic.

**Medical History:** 80 years old patient presenting osteopenia and hypercalciuria surgically treated in 2007 with the hypothesis of parathyroid adenoma. Keeping the symptoms was referred to our clinic for performing FDG - PET / CT for detection of probable ectopic parathyroid.

**Diagnosis:** Performed FDG - PET / CT showed that oval lesion in the posterior mediastinum without hypermetabolism. The patient then underwent parathyroid scintigraphy with SPECT - SESTAMIBI associated with CT area whose evaluation revealed abnormal accumulation in the lesion topography described the PET / CT, suggesting the presence of parathyroid hyperfunctioning.

**Discussion and summary of the case:** The FDG-PET/CT is a modality that has been very widespread in recent years. Parathyroid adenomas and incidentalomas are infrequent. In medical literature contains a report by KYM et al, which demonstrated a parathyroid adenoma discovered the thoracic FDG - PET. The 99mTc -Sestamibi is the method of choice for detection of parathyroid adenoma, using the technique of SPECT - CT allows a better diagnostic accuracy, revealing a more precise anatomical localization of lesions.

## PA.15.015

### DETECTION OF LUNG METASTASES OF 18F-FLUORIDE OSTEOSARCOMAS

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**Brief description of the purpose of the report:** The purpose of this report is to demonstrate the simultaneous detection of pulmonary metastases of osteosarcoma during cancer restaging with PET-CT with 18F-Na.

**Medical History:** Female, 34 year old, treated for 14 months of Osteosarcoma in the right Tibia and 7 months studying with pain continues and progressive right leg after stenting withafter stent placement, being then referred for orthopedic and oncologic reassessment.

**Diagnosis:** Tibia Osteosarcoma metastatic to the right into the lungs.

**Discussion and summary of the case:** Female patient of 34 years, without comorbidities, denies smoking and drinking. In consultation with orthopedics still reports pain and progressive right leg. X-ray identified the proximal Tibia lesion with subsequent biopsy site that identified high-grade Osteosarcoma of malignancy, rich in Giant Cells was requested. Performed surgery and seven months after stent placement. At the moment, it makes adaptive phase of walking. In oncologic follow-up study was prompted PET-CT of the total skeleton with 18F-Fluoride which revealed no evidence of active disease in bone structure. However this same study demonstrated: Multiple areas of anomalous 18F-fluoride distributed pulmonary nodules bilaterally, consistent with pulmonary metastases.

## 16 - IT/MANAGEMENT/EDUCATION

### PA.16.001

#### RADIOLOGY SERVICE IMPROVEMENT WITH IT PROCESS AUTOMATION MONITORING TOOLS: EXPERIENCE OF A LARGE HOSPITAL USING NAGIOS AND CACTI®

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**Introduction:** Nagios and Cacti® are open source softwares for network monitoring by graphics and alerts. They monitor systems and consumption tendencies, detecting bottlenecks in the network. They alert about exceptions inside the ambient, generate availability reports on dashboards for the systems and services that orbit RIS/PACS, anticipating impacts on applications.

**Methods Involved:** Installation and customization of the applications on RIS/PACS servers and nodes. Monitoring of disk occupancy, network and database listener, RAM consumption, processor consumption, port and interface verification, inbound and outbound rates (maximum and average).

**Discussion:** Installation on host or modalities machines is easy. Validation with the vendor is necessary, avoiding problems with service levels previously accorded. Real time monitoring data of critical mission parameters allow problems to

be followed, raising availability of applications. Open source licenses allow applications to be specifically adjusted without propriety concerns.

**Conclusion of the presentation:** Proactive monitoring of radiology systems seems effective for evaluating network and services availability, allowing quick identifications of failures, so that the IT staff can work preventively and avoid the system to go down.

### PA.16.003

#### AUTOMATIC RADIATION DOSE EXTRACTION AND PUBLICATION: AVAILABLE ARCHITECTURES AND SOLUTIONS

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**Brief description of the purpose of the Review of Literature:** We will review the main methods and initiatives in the market for automatic extraction of radiation doses directly from DICOM images in PACS systems, how to publish them and the involved architecture.

**Description (s) condition (s), method (s) or technique (s):** Existing softwares in the market use several data for the calculation of effective dose exposure. Its measurement is indirect, by the means of extraction of DICOM data related to dose, number of slices, patient weight and area volumetric models. Besides that, it is problematic the lack of standards between ionized radiation measures unities among different modalities, demanding different ways of calculation according to each equipment/vendor.

**Conclusion:** The utilization of diagnostic tests with ionized radiation (specially CT) undergoes major discussion on its excessive use and ways of controlling exposure. Repeated realization of tomographic exams of the same body region may raise de incidence of cancer. It becomes then a necessity to inform the public and ordering physician the accumulative exposure ofpatients, in order to guide future examinations.

## 17 - PHYSICS, QUALITY CONTROL

### PA.17.003

#### DOSE OPTIMIZATION IN COMPUTED TOMOGRAPHY USING THE AMERICAN COLLEGE OF RADIOLOGY CRITERIA

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**Brief description of the purpose of the study:** To evaluate dose index (CTDIvol) and image quality in a sixteen channel Computed Tomography (CT) equipment regarding skull and abdomen scans in a typical adult considering de American College of Radiology (ACR) Accreditation System.

**Methods:** CTDIVol and image quality parameters were assessed by a pencil like ionizing chamber with 10 cm length connected to a TNT12000 Fluke and a Gammex 464 phantom, respectively.

**Main results:** All CTDIVol were under specifications. The skull protocol showed dose index and image quality values according to the ACR criteria. Thus, we reduced mAs keeping the image quality and achieved 28,5 mGy. The abdomen protocol showed contrast to noise ratio under ACR specifica-

tion. Thus, we increased mAs till we achieve specified values for image quality, increasing the CTDIvol from 8,125 to 19,652 mGy.

**Importance of the conclusions:** The protocols evaluated were adjusted for the image quality and radiation dose. The use of quality parameters suggested by the ACR allow an assessment of CT images in a less subjective way.

#### PA.17.004

##### COMPARATIVE STUDY OF THE IPADS PERFORMANCE WITH PRIMARY CLASS DISPLAYS USED IN REPORTS OF RADIOGRAPHIC IMAGES

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**Brief description of the purpose of the study:** Objective: To evaluate the portable devices for viewing images, iPads model 2 and 3, through quality control tests and compare the results with primary class displays, 2, 3 and 5 megapixels.

**Methods:** Methodology: The quality control tests recommended by the American Association of Medical Physicists (AAPM) for evaluation of displays of radiological reports, were conducted following the Task Group 18. Then the results of the evaluations of iPads 2 and 3 were compared with the results of tests performed on displays of 2, 3 and 5 megapixels, so as to check the behavior of iPads regarding displays.

**Main results:** Results: It was verified that the iPads 2 and 3 were close to the performance of the display of 2 megapixels, and far below the displays of 3 and 5 megapixels.

**Importance of the conclusions:** Conclusion: It was observed that the iPads, despite the ease and practicality of its use, do not offer sufficient quality for X-ray analysis, harming the report for not having quality parameters within what is recommended, but can be an important tool when used as display monitors, for their portability and mobility.

#### PA.17.005

##### THE EVOLUTION OF QUALITY CONTROL IN DIGITAL MAMMOGRAPHY

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**Brief description of the purpose of the study:** The aim of this work is to evaluate digital image quality and entrance skin dose (ESD) for different breast thickness and for different target-filter combinations, suggesting an optimized protocol for automatic and semi-automatic operation of digital mammographic equipment.

**Methods:** It was used CDMAM 3.4 and its software to analyze two mammographic equipments Siemens with three target-filter combinations. It was used PMMA plates to simulate different breast thickness. CDMAM software evaluated image quality determining a quality parameter: IQFinv. To measure ESD it was used an ionization chamber 96035B of Fluke's TNT 12000.

**Main results:** For the analyzed equipments, it was found a better possibility of IQFinv (around 20%) in relation to the automatic configuration made by the manufacturer for 20mm PMMA thickness. For 10mm and 40mm the improvement was about 15%. For 30mm, the automatic configuration was fitted. ESD was maintained constant or lower for all cases.

**Importance of the conclusions:** Manufacturer configurations made during equipment installation did not offer an optimized process. Tungsten-Rhodium combination was the best for all breast thickness, offering the best relation between image quality and ESD.

#### PA.17.007

##### MRI SAFETY PRACTICES IN A HOSPITAL IN SÃO PAULO

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**Brief description of the purpose of the study:** Describe and think about the security methods of the MRI from a specific hospital from São Paulo.

**Methods:** The potential risks at the environment of the MRI affect more than patients, the risk is companion, health professionals, and any other people that interact with the MR area, thought. The ACR publish frequently the Guide of safe practices at the MR environment for clinics and research, from that guide we have developed the system of security of the MRI department of the hospital.

**Main results:** Safety areas were created, access-controlled doors installed at the dangerousness zone, and training schedule. Surveys and orientation of safety about the examination are given to the patients before they came to the risks surroundings. Although the high technology protheses and metallic appliances compatible with MRI, the attention to perform the examination of a patient which have any kind of this issues will be very high, than the hospital hand out a list of contraindication and attention to oriented the stakeholders of allowed and not allowed.

**Importance of the conclusions:** An very high level of security working together with safety practices ensure the safety of ours patients and professionals, besides ensure the security of the operation reducing the cost of maintenance to the MRI equipment.

#### PA.17.008

##### PROJECTION OF ENVIRONMENTAL EXTERNAL DOSE IN NUCLEAR MEDICINE DEPENDENCIES

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**Brief description of the purpose of the study:** Describe the levels of occupational and environmental exposure of the Division of Nuclear Medicine

**Methods:** Radiometric measurements of the levels of strategically defined points in all room and in many points into the rooms for a period of 6 months were performed, sampling different days and times, in normal functioning of the routine in the Nuclear Medicine Division. For each point was determined mean, standard deviation and confidence interval of 95% and posterior projection of the spatial dose

**Main results:** The results allowed to estimate the expected dose for each room, confirming the higher dose in the manipulation room and in the waiting room for injected patients, and especially the dose variation into each room, comparing them with the dose limitation established by the CNEN.

**Importance of the conclusions:** Creating a visual map of the dose distribution in the room allows better targeting of occupationally exposed individuals, indicating the points where the occupation should be the minimum required in each work room, enabling the reduction of risk to potential exposures

## **18 - RADIOLOGICAL TECHNIQUES**

### **PA.18.003**

#### **THE USE OF MAXIMUM INTENSITY PROJECTION IN IDENTIFYING LUNG NODULES.**

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**Brief description of the purpose of the Review of Literature:** The maximum intensity projection (MIP, its acronym in English) is a method of data visualization that allows the detection of high-density structures. The algorithm uses all data in a volume of interest to generate a single two-dimensional image. This algorithm is quite simple: only XY coordinates for each pixel with the highest Hounsfield along the Z-axis is represented so that in a single two-dimensional image every dense structures in a given volume are observed.

**Description (s) condition (s), method (s) or technique (s):** The use of images with MIP is diagnostically useful because it can readily distinguish structures that are hyperdense relative to surrounding tissues, by significantly reducing the time required to analyze complex structures in different planes. This method is particularly useful in daily practice to detect small lung nodules, which can be easily distinguished from other dense structures in the lungs, the alveoli with this acting as a contrast agent for natural air.

**Conclusion:** The use of images with MIP assists the diagnostic radiologist. It is important that professionals who carry out reconstructions using this technique when there is suspicion of pulmonary nodules, among other injuries.

### **PA.18.004**

#### **USING THE MINIMUM INTENSITY PROJECTION IN THE STUDY OF THE CHEST**

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**Brief description of the purpose of the Review of Literature:** Minimum intensity projection (MinIP) is a data visualization method that allows the detection of low density structures. The algorithm uses all data in a volume of interest to generate a single two-dimensional image.

**Description (s) condition (s), method (s) or technique (s):** The MinIP algorithm is almost identical to the algorithm MIP, MinIP but if, for each XY coordinate only the lower Hounsfield value along the Z axis is represented. Thus, only the most volume hypodense structures are represented, regardless of their location plan. For example, by performing a mapping MinIP an image of the chest of the bronchial tree can be generated as the bronchi, being filled with air, are less dense structures of the chest. The ability to highlight regions Hypodense aid the radiologist to better understand the extent and morphology of some types of structures (airway vessels, from entrapped air ducts, etc.), often significantly reducing the time required to analyze multiple planes or structures complex nonlinear.

**Conclusion:** The use of images MinIP assists with the diagnosis of the radiologist. It is important that professionals who carry out reconstructions using this technique when necessary.

### **PA.18.005**

#### **SEARCH METASTASIS BONE IN PATIENTS WITH PROSTATE CANCER THROUGH BONE SCINTIGRAPHY**

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**Brief description of the purpose of the Review of Literature:** This paper aims to present bone scintigraphy as a method of extreme importance in the evaluation of patients with prostate cancer with metastatic spread.

**Description (s) condition (s), method (s) or technique (s):** Prostate cancer is the third most common type of cancer in masculine sex, being considered a public health problem. Being located next to the rectum the prostate can be easily assessed by digital rectal examination. Clinical staging of the patient is done by TNM classification, making biopsy last step of it. Complementing the evaluation framework of symptomatic or asymptomatic, both in staging and in monitoring the course of the disease the patient is included mapping of the skeleton by bone scintigraphy.

**Conclusion:** Currently the importance of bone scintigraphy in the evaluation of the framework of symptomatic or asymptomatic diagnosed with prostate cancer, the patient is still a topic of much discussion and controversy, both in its staging as in monitoring the course of the disease. Many studies focus on the very question of cost / benefit ratio, especially American studies.

### **PA.18.013**

#### **MAIN ASPECTS, INDICATIONS AND EXECUTION METHOD OF ENTEROGRAPHY COMPUTED TOMOGRAPHIC**

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**Brief description of the purpose of the Review of Literature:** The present study has as purpose, by means of a literature review, to initially present the main aspects, indications and execution method of enterography computed tomographic (CT enterography).

**Description (s) condition (s), method (s) or technique (s):** The CT enterography is a used method in the clarification of "inflammatory and neoplastic" diseases of small bowel (D'Ippolito et al., 2012), "mostly in the evaluation of patients with Crohn's disease and diarrhoea from unknown origin" (Costa-Silva et al., 2010). The method consists of the volumetric acquisition in equipment of multidetector CT, that allows reconstruction on coronal and sagittal planes. This, "differs from conventional studies of multidetector CT of abdomen and pelvis for presenting neutral oral contrast preparation – polyethylene glycol (PEG) – associated with iodinated contrast agent intravenous administration" (Costa-Silva et al., 2010).

**Conclusion:** The CT enterography emerges as a valuable technique for the evaluation of small bowel structures that are not shown by other techniques.



### PA.18.014

#### IMAGING METHODS IN THE DIAGNOSIS AND PROGNOSIS EVALUATION OF RHEUMATOID ARTHRITIS

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**Brief description of the purpose of the Review of Literature:**

The purpose of this literature review article is to produce a reference basic material for technologists and technicians in radiology, about the usage of modalities of diagnosis and prognosis of rheumatoid arthritis.

**Description (s) condition (s), method (s) or technique (s):**

The rheumatoid arthritis is an inflammatory systemic disease (Brenol et al., 2007), chronic and progressive (Mota et al., 2011), which affected individuals can develop: coronary, cardiovascular diseases and involvement of "mainly synovial membrane of the joints, that may result in bone and cartilaginous destruction" (Mota et al., 2011) or synovitis. Although essentially clinical, no method can singly diagnose the rheumatoid arthritis, however, we can point out as important role for it the ultrasonography (Fernandes et al., 2008), conventional radiography and magnetic resonance (Mota et al., 2012), as well as laboratory tests (Mota et al., 2010).

**Conclusion:** The knowledge of rheumatoid arthritis etiology, of the main affected structures by the disease and the mastery of the used modalities for diagnosis, will serve as a support so that the technologist and technician in radiology back up the rheumatologist in the diagnosis and prognosis evaluation of rheumatoid arthritis.

### PA.18.017

#### DUST TO PIXEL - SECRETS OF THE VIRTUAL POST-MORTEM AUTOPSY.

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**Introduction:** Computed tomography has proven to be an effective method in centers autopsy. The changes observed in post mortem should be recognized and not confused with pathological events causing death. The objective of this study is to demonstrate the spectrum of findings commonly found in post-mortem report and model of CT used in the center of autopsy.

**Methods Involved:** Computed tomography (CT).

**Discussion:** Radiological examinations have been used in the autopsy centers worldwide. The CT has increasing importance because it is fast and have good resolution especially when intra-arterial and intravenous contrast material is used. In addition, CT allows the elucidation of cause of death non-invasively thus has less social and religious impact. Findings at post-mortem as the hematocrit effect and autolysis determine multisystemic alterations which are proportional to the time of death. For proper interpretation of the images the radiologist should recognize changes that are usual in post mortem. It is used a structure radiological report to facilitate communication between professionals.

**Conclusion of the presentation:** The knowledge of the spectrum of findings in post-mortem is essential for proper interpretation of computed tomography.

### PA.18.019

#### PISA (IMAGING PLATFORM IN THE AUTOPSY ROOM): HOW TO MAKE POST-MORTEM COMPUTED TOMOGRAPHY WITHOUT CONTRAST, WITH CONTRAST, ANGIOGRAPHY-CT AND PERFUSION. CHAIM, K.T.; DOS SANTOS, G.A.B.; PICKA, M.C.M.; GONÇALVES, D.; SALDIVA, P.H.N.; PASQUALUCCI, C.A.; SILVA, L.F.F.; KAY, F.U.; AMARO JR., E.

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**Introduction:** The PISA project involves studies with different imaging modalities in the Death Verification Service of the Capital (SVOC), allowing analysis of correlation between radiology and pathology post-mortem. This work intends to show the methods currently used to conduct studies with computed tomography (CT).

**Methods Involved:** We will show the technique using CT and angiography-CT in post-mortem cases. The exam consists in four volumetric acquisitions in the following phases: pre-contrast, arterial phase, venous phase and perfusion. For these, we make an access into artery and femoral vein, inserting cannulas to inject iodinated contrast solution with polyethylene glycol. Acquisition parameters are optimized for the best compromise between speed of acquisition, the integrity of the x-ray tube and image quality. Cardiopulmonary bypass pump was used to infuse the contrast.

**Discussion:** The method used has been proven effective for the evaluation of findings, allowing the patho-radiological correlation, and allowing new proposals for research and teaching.

**Conclusion of the presentation:** It is possible to obtain excellent quality images post-mortem and thus the comparison of angiographic exams and CT perfusion with micro and macro pathological analysis. This possibility enables important applications in teaching and research.

# PD – Scientific Papers – Digital Presentation

## 1 - ABDOMINAL/GASTROINTESTINAL

### PA.01.003

#### **RETRORECTAL CYSTIC HAMARTOMAS: CASE REPORT AND MRI FINDINGS**

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**Brief description of the purpose of the report:** This case report aims at demonstrating the literature review of the retrorectal cysts (Tailgut cysts), its main radiological aspects emphasizing the MRI findings, signs that could be associated with malignant degeneration and its main differential diagnoses.

**Medical History:** Female, 28 years old, complaining of infertility with no personal or family comorbidities. The patient brought previous and recent transvaginal ultrasound exams accusing intramural leiomyoma without discrepancies between the reports and demonstrating previous hysterosalpingography with pervious oviducts. One MRI of the pelvis was requested and confirmed the leiomyoma without other relevant adnexal findings. Additionally, we characterized a multiloculated cystic lesion in retrorectal space with low signal intensity on T1-weighted sequences and high intensity on T2 without signal loss in fat saturation. The lesion had fine and regular walls, peripheral enhancement after the administration of the paramagnetic contrast media, no signs of internal solid content or communication with adjacent structure. It was characterized as an incidental retrorectal cystic hamartoma without associated suspicious signs for malignancy.

**Diagnosis:** Retrorectal cystic hamartoma (Tailgut cyst)

**Discussion and summary of the case:** This case illustrates the importance of knowing the retrorectal space, their possible cystic lesions, imaging features that give them begin aspects which can help in the treatment planning and follow-up of these patients.

### PA.01.015

#### **ACUTE PANCREATITIS AND REVISED ATLANTA CLASSIFICATION: PICTORIAL ESSAY**

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**Introduction:** INTRODUCTION The 1992 Atlanta classification of acute pancreatitis (AP) was revised in 2012 to establish definitions of terminology, types and complications of AP for universal interpretation between radiologists and others physicians for better prognosis interpretation and treatment.

**Methods Involved:** METHODS A retrospective study of cases of AP assessed by multidetector computed tomography (MDCT) correlating with revised Atlanta classification.

**Discussion:** DISCUSSION The AP is divided into early phase (occurs within 1st week of onset of disease) and late

phase (after the 1st week of onset). The first phase is evaluated with clinical and laboratory parameters, while in the second phase morphological aspects are evaluated by MDCT. The late phase takes 4 weeks to split AP in interstitial edematous pancreatitis (IEP) and necrotizing pancreatitis (NP). However, complications are called acute peripancreatic fluid collection (APFC) and pancreatic pseudocyst in the IEP and acute necrotic collection (ANC) and walled-off necrosis (WON) in NP.

**Conclusion of the presentation:** CONCLUSION It is essential the radiologist adapt to the new concepts and terminology for universal interpretation of AP and optimize the assessment of prognosis and treatment.

### PA.01.017

#### **SOLITARY FIBROUS TUMOR OF THE MESENTERY DIAGNOSIS: CASE REPORT WITH REVIEW OF THE LITERATURE**

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**Brief description of the purpose of the report:** Solitary fibrous tumors (SFT) are rare mesenchymal neoplasms, usually located in the pleura; being the abdominal location, rare. Most are benign, with only 10% evil.

**Medical History:** LFS, male, 38, started with pain and a feeling of "heaviness" in the lower abdomen fortnight ago. Ultrasound revealed heterogeneous mass in the pelvic cavity. Computed Tomography: large heterogeneous lesion, hypervascular, with areas of necrosis measuring up to 8.5 cm. Pathology: nodule formation, spindle-shaped mesenchymal cells, collagen fibers and hemangioperic structures with areas of hemorrhage and necrosis. Immunohistochemistry: Confirmed markers for Mesentery Solitary Fibrous Tumor.

**Diagnosis:** Mesentery Solitary Fibrous Tumor.

**Discussion and summary of the case:** The TFS were asymptomatic, with nonspecific symptoms such as fullness, obstruction, or as in the case; dragged with abdominal pain. The image are characterized as well-defined masses, multilobulated, heterogeneous, with areas hyper and hypoattenuating represented by calcifications, areas of necrosis and cystic degeneration or myxoid; hypervascular, showing enhancement in the arterial phase and portal with washing in the late phase; characteristics observed in our patient. Do not infiltrates, but tend to invade adjacent structures. The differential diagnosis includes benign tumors (desmoid, inflammatory pseudotumor, mesenteric fibromatosis, leiomyoma) and malignant as sarcomas, lymphoma, metastases, gastrointestinal stromal tumors. It is therefore of great importance that radiologists are aware of this entity and include it in the differential diagnosis of expanding hypervascular abdominal lesions.

### PA.01.022

#### **GIANT RETROPERITONEAL LIPOSARCOMA: ON PURPOSE OF A CASE.**

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**Introduction:** The purpose of this paper is to report a

case of a Giant Retroperitoneal Liposarcoma with no renal displacement.

**Methods Involved:** 34 years-old man who, for eight months, presented abdominal mass sensation, abdominal girth increase, abdominal pain and constipation. The Abdominal Computerized Tomography Scan showed a very wide solid lesion, heterogeneous, with fat density areas (-53 UH), with moderate contrast enhancement, with no calcifications, regular and lobulated borders, that occupies a great part of the abdominal cavity and presents a close contact to the retroperitoneum, in the intersection of L2 level and the para-aortic zone. It displaces the abdominal aorta and other structures to the right, with no signs of infiltration, probably Liposarcoma. Kidneys were not involved. The anatomic-pathological diagnosis was Myxoid Liposarcoma with dedifferentiation areas.

**Discussion:** Giant Retroperitoneal Liposarcoma.

**Conclusion of the presentation:** The most common location of Retroperitoneal Liposarcoma is the posterior perirenal space, with the natural forward movement of the kidney, which does not occur in this case. This is an unusual presentation of this kind of neoplasm and that is why we report it.

### PA.01.031

#### PI-RADS: A CASE-BASED REVIEW OF THE NEW CATEGORIZATION.

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**Brief description of the purpose of the Review of Literature:** multi-parametric MRI (mpMRI) of the prostate is an useful method for evaluation of patients with prostate adenocarcinoma, because it provides information of the prostate gland anatomy, the tumor aspect, allowing local staging. Currently, prostate mpMRI has also been used in the detection of prostate cancer in patients after prostatectomy with increasing PSA levels, and in those with prior negative biopsies and abnormal PSA levels. Although accumulating evidence supported the relevance of mpMRI in prostate adenocarcinoma diagnosis, the widespread acceptance of this method was hampered by the absence of consensus on diagnostic criteria. Recently, the European Society of Urogenital Radiology (ESUR) has published a structured reporting scheme for MRI of the prostate called PI-RADS, based on the BI-RADS classification for breast imaging. The goal of this initiative is to reduce interobserver variability, provide standardized communication of findings and improve communication between clinicians and radiologists and providing statistically relevant data for other studies of this pathology.

**Description (s) condition (s), method (s) or technique (s):** The PI-RADS system scores the individual risk for the absence or presence of clinically relevant disease.

**Conclusion:** The aim of this article is to perform a literature review of the PI-RADS score, to describe its advantages and limitations, as well as the obstacles for its implementation and acceptance in large scale.

### PA.01.037

#### APPROACH ON ACUTE ABDOMEN IMAGING

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**Introduction:** Introduction The acute abdomen is one of the main causes of admission to the emergency department, and includes self-limited and potentially surgical causes. Its high prevalence and unspecific clinical manifestations leads to requests for additional imaging evaluation. In this context, it is crucial to know how to balance the risk-benefit ratio offered by imaging methods in different presentations of acute abdomen.

**Methods Involved:** Methods Review of images of different diagnostic methods illustrating the hierarchical indication and expected findings in acute abdomen.

**Discussion:** Discussion The implementation of protocols for choosing adequate imaging evaluation on acute abdomen has been a successful experience at reference centers. It is essential to take into account availability of methods, cost, patient age, principles of radiation protection and accuracy, all confronted with the clinical suspicion. Computed tomography is highly accurate in different types of acute abdomen, but promotes ionization. Therefore, radiography is safer, being an useful method in cases of obstruction / bowel perforation. Ultrasonography stands out in the evaluation of right upper quadrant and pediatric patients.

**Conclusion of the presentation:** Conclusion of the presentation The hierarchical indication of imaging evaluation must be based on a data set, with diagnostic suspicion as its main component, without underestimating the risk-benefit ratio.

### PD.01.001

#### ABDOMINAL ANGIOTOMOGRAPHY IN PATIENTS WITH ACTIVE GASTROINTESTINAL BLEEDING

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**Brief description of the purpose of the Review of Literature:** The gastrointestinal bleeding represents a common medical emergency, with considerable morbimortality rates. The prompt diagnosis is essential for a better prognosis of these patients.

**Description (s) condition (s), method (s) or technique (s):** Endoscopy is the main diagnostic tool in this context, however, when the gastrointestinal hemorrhage is massive, the bleeding site can be obscured during endoscopy; in addition, endoscopy is not always available and a trained professional might not be present. Bowel preparation is necessary for colonoscopy, which doesn't evaluate the most part of small intestine. Scintigraphy does not allow precise anatomic localization of the bleeding and it's unavailable in the emergency setting. The use of capsule endoscopy is inappropriate in the acute setting, particularly in the emergency department and it has high costs. Digital angiography is invasive, has risks associated with vascular access, besides little availability in the emergency setting. On the other hand, angiotomography is fast, highly available and minimally invasive. It is a promising alternative in these patients algorithm, being capable to determine the localization and the cause of bleeding with high accuracy and guide treatment.

**Conclusion:** Basing in a critical literature review and our own experience, we propose an angio-CT's protocol for the patient with gastrointestinal bleeding.

## PD.01.002

### DIFFERENTIAL DIAGNOSIS OF ABDOMINAL CYSTIC LESIONS

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**Introduction:** The differential diagnosis of abdominal cystic lesions includes a variety of conditions, such as variations of normality, inherited or acquired cystic lesions as infectious, traumatic, post-traumatic and neoplastic.

**Methods Involved:** The clinical and imaging findings can assist in the development of differential diagnosis, considering the anatomical location and characteristics in ultrasound (U.S.), the attenuation in computed tomography (CT) and the signal in different Magnetic Resonance (RM) sequences.

**Discussion:** Purpose is to discuss the main imaging findings of U.S., MR and CT, which allow us to define the various etiologies of abdominal cystic lesions of the liver, spleen, kidneys, pancreas, biliary tract and peritoneal cavity.

**Conclusion of the presentation:** For diagnosis, prognosis and therapeutic monitoring of abdominal cystic diseases, several image methods can be used. The radiologist must know how to choose the appropriate methods for the diagnosis and the particular characteristics of each cystic lesions.

## PD.01.004

### DISSEMINATED HISTOPLASMOSIS IN IMMUNOSUPPRESSED: A CASE REPORT AND LITERATURE REVIEW

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**Brief description of the purpose of the report:** Discuss and conduct a literature review of disseminated histoplasmosis with atypical presentations immunosuppressed patient.

**Medical History:** Male patient with wasting syndrome and a palpable mass in the right iliac fossa. Additional diagnostic tests were performed during hospitalization. Colonoscopy detected vegetative stenotic lesion in the ascending colon, ulcers in the transverse colon and rectum suggestive of Kaposi. The Multidetector Computed Tomography (MDCT) of the chest showed pulmonary embolism, pulmonary infarction and dissemination of miliary pattern.

**Diagnosis:** Disseminated Histoplasmosis

**Discussion and summary of the case:** Histoplasmosis is a systemic fungal infection, and its clinical presentation varies from an asymptomatic infection to a disseminated form of the disease, usually observed in patients with severely impaired cellular immunity, such as those receiving immunosuppressive drugs, patients with hematologic malignancies and patients with Acquired Immune Deficiency Syndrome (AIDS). In these last, Histoplasma capsulatum cause disseminated disease in 95% of cases, evolving as acute, subacute or chronic disseminated disease. Symptomatic primary infection can mimic a variety of opportunistic infections such as Pneumocystis jiroveci, Tuberculosis and Mycobacterium avium complex infection, making diagnosis more difficult.

## PD.01.005

### GASTRIC VOLVULUS, CASE REPORT AND LITERATURE REVIEW

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**Brief description of the purpose of the report:** Report diagnosis by multidetector CT scan of a case of gastric volvulus with literature review.

**Medical History:** Female, aged 43, who came to the emergency room, with abdominal pain for one month, which worsened in the last 24 hours, accompanied by nausea. Performed chest X-ray which showed pleural effusion on the left, being punctured with output loads of enteric material. She underwent CT which showed gastric Volvo.

**Diagnosis:** Gastric Volvulus organoaxial and mesenteroaxial

**Discussion and summary of the case:** Gastric volvulus is a rare condition in adults is associated with diaphragmatic defects (paraesophageal hernia / incisional) is rare before age 50. The presentation may be acute (acute intestinal obstruction) or chronic. Acute usually presents with the triad of Borchartd: abdominal pain, intractable vomiting and inability to pass a nasogastric tube. Chronic may be asymptomatic or have nonspecific symptoms. The most common complications include gastric emphysema, displacement of other abdominal organs, drilling, ischemia, infection. There are two main types: the more common organoaxial in which the twist occurs around the long axis of the stomach and mesenteroaxial type in which the twist occurs around the short axis perpendicular to the plane.

## PD.01.006

### NONINVASIVE ASSESSMENT OF PORTAL VENOUS SYSTEM

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**Introduction:** Considering the heterogeneity of the abnormalities that may affect the portal venous system, the correct diagnosis becomes a challenge, being necessary to the doctor radiologist a thorough knowledge of normal anatomy and variants, as well as congenital and acquired disorders.

**Methods Involved:** Different methods of noninvasive imaging enable the study of portal vein and assist in the detection of various diseases, they are the color Doppler ultrasound (U.S.), computed tomography (CT) and magnetic resonance imaging (MRI).

**Discussion:** The aim of this study is to correlate the findings with the major diseases that affect this system. The different imaging modalities have advantages and disadvantages that should be considered before choosing the most appropriate method. Imaging methods are important in detecting aneurysms and portal vein thrombosis, the study of collateral vessels resulting from portal hypertension and cavernomatous transformation.

**Conclusion of the presentation:** Knowledge of the typical appearances of abnormalities of the portal venous system provides a more reliable diagnosis, allowing a treatment at

the correct time, better targeting of surgical and percutaneous interventions and ultimately improve the bottom line.

#### PD.01.007

##### **BOERHAAVE'S SYNDROME. TOMOGRAPHIC FINDINGS CONCERNING A CASE**

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**Brief description of the purpose of the report:** Describe and discuss the CT findings in Boerhaave's syndrome.

**Medical History:** Male patient, 60 years, with epigastric pain, vomiting and dyspnea one week ago, which worsened in the last 24 hours. Chest radiography showed massive pleural effusion on the right. Thoracic puncture performed with output suggestive of enteric fluid content. Computed tomography of the chest / abdomen showed continuity solution in the transition from middle / distal esophagus with extravasation of contrast into the posterior mediastinum and hydro-pneumothorax. The patient underwent surgery, confirming the CT findings.

**Diagnosis:** Boerhaave's syndrome

**Discussion and summary of the case:** Boerhaave syndrome (BS) is the complete transmural laceration of the esophagus resulting from a sudden increase in intraesophageal pressure caused by vomiting after heavy drinking or overindulgence of food. Esophageal tears are most commonly located in the left posterior wall of the lower one-third of the esophagus. The classical symptoms of this syndrome are vomiting, sudden severe chest pain, and subcutaneous emphysema (Mackler triad). Odynophagia, dyspnea, cyanosis, fever, pleural effusion with food residue and chock may develop later. CT findings include esophageal wall thickening, periesophageal air collections and extravasation of contrast material. Differential diagnosis include Mallory Weiss syndrome, neoplasms and traumatic rupture of the esophagus.

#### PD.01.009

##### **INTESTINAL DUPLICATION CYST MIMICKING PANCREATIC MASS**

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Labs D'or Volta Redonda

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**Brief description of the purpose of the report:** Intestinal duplication is an uncommon congenital anomaly with the majority of cases clinically presenting during the first year of life in which there can be found a palpable abdominal mass, distention and recurrent pain. Reported cases of asymptomatic patients who reach adulthood are less frequent, as in the case of our patient, 53 years old. Clinical symptomatology is nonspecific and additional diagnostic means have a low accuracy.

**Medical History:** Patient referred to postprandial fullness and distention in the epigastric region. A palpable mass was found. An CT scan revealed a voluminous and expansive formation in the left flank region. A tumor in the pancreatic was hypothesized. During surgical inventory the mass did not appear to stem from the pancreas but the transverse mesocolon. The specimen was sent for histopathological examination

thereby diagnosing the case of an intestinal duplication.

**Diagnosis:** Intestinal Duplication

**Discussion and summary of the case:** In CT, these lesions may present the appearance of a cystic mass adjacent to the gastrointestinal tract. The pre-operative diagnosis is quite rare and most often only recognized during the act of a surgery being performed under the assumption of a more common problem. The treatment is always surgical, even when the patient is asymptomatic, mainly due to the possibility of eventual complications.

#### PD.01.010

##### **INTESTINAL PERFORATION BY FOREIGN BODY INGESTION - CASE SERIES, LITERATURE REVIEW AND DIAGNOSIS BY CT.**

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**Brief description of the purpose of the Review of Literature:** This study aims to describe four cases of intestinal perforation by foreign body (FB) (fish bone, chicken bone and toothpick), conduct a review of the literature and relate the findings of computed tomography (CT).

**Description (s) condition (s), method (s) or technique (s):** Accidental ingestion of FB is a common clinical problem in emergency services. The clinical is varied and generally patients do not refer to the possibility of ingestion of a FB, which slows and creates confusion with other diagnostic possibilities. The CT has contributed greatly to the diagnosis, the best imaging method for the evaluation, able to identify FB's slightly radiopaque, with the exact location of drilling and precise orientation of the surgical treatment.

**Conclusion:** Although the accidental deglutition of a FB is frequent, bowel perforation is an uncommon finding. However when it occurs, is manifested by a acute abdomen and constitutes a diagnostic challenge in the emergency services, being extremely important to recognize recognize the tomographic signals for a correct diagnosis and treatment.

#### PD.01.011

##### **MR AND PET-CT EVALUATION OF PATIENTS WITH RECTAL ADENOCARCINOMA AFTER NEOADJUVANT CHEMORADIOTHERAPY TREATMENT**

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**Introduction:** Neoadjuvant chemoradiotherapy for rectal cancer may result in complete pathological response. In these selected patients, a non-operative approach can preclude sphincteric, urinary and sexual dysfunction. Therefore, identification of these patients prior to surgery is important in order to select patients that may have surgery deferred. The purpose of this study is to illustrate the roles of imaging modalities in the selection of good clinical responders, who may be suitable for a non-operative approach.

**Methods Involved:** MR and PET-CT

**Discussion:** High-resolution MRI evaluates the tumor re-

gression grade within the rectal wall and the presence of mesorectal lymph nodes or extraluminal foci of disease. PET-CT evaluates the presence or absence of FDG uptake within the rectal wall or lymph nodes. Residual FDG uptake indicates incomplete PET/CT response. Absence of FDG uptake indicates complete PET/CT response.

**Conclusion of the presentation:** MR and PET/CT are useful tools in evaluating patients with complete clinical response after neoadjuvant chemoradiotherapy treatment for rectal adenocarcinoma.

### PD.01.013

#### INITIAL EXPERIENCE WITH THE USE OF GADOXETIC ACID AS A SPECIFIC HEPATOBILIAR CONTRAST AGENT IN MAGNETIC RESONANCE

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**Introduction:** With the relatively recent introduction into clinical practice in our country, studies have demonstrated the use of gadoxetic acid as a specific hepatobiliary contrast agent - (AHBE) in magnetic resonance imaging (MRI). The purpose of this study is to demonstrate the typical image patterns of primary benign and malignant liver lesions, metastases, and in the evaluation of biliary tract, emphasizing the advantages of using ABHE in daily clinical practice, briefly describing its mechanism of action.

**Methods Involved:** Cases performed at two institutions using the AHBE in liver MRI images were used, and didactically different diagnoses were collected.

**Discussion:** The agent of hepato-specific contrast are those specifically captured by the liver cells, being compounds by gadolinium with fat soluble properties Gadoxetic acid, the AHBE approved for clinical use in Brazil, has an estimated 50% excreted via renal and biliary 50% in healthy patients, enabling the execution of routine at first, followed by the hepatobiliary -phase dynamic studies.

**Conclusion of the presentation:** The late stages using gadoxetic acid as AHBE, in very specific situations, are additional tool in characterization and detection of focal liver lesions, to be analyzed in conjunction with conventional images.

### PD.01.014

#### CROHN'S DISEASE: IMPORTANT'S SIGNS ON ENTERO- RESSONANCE: PICTORIAL ESSAY.

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**Introduction:** Crohn's disease, chronic granulomatous inflammatory disease that can affect any part of the gastrointestinal tract, usually discontinuously, more frequently affects small intestine, mainly the terminal ileum. Front recurrent disease, magnetic resonance, through directed study- entero-ressonance (entero- MRI) has proved very useful to not use ionizing radiation and to obtain high resolution images, providing precise information on the extension, complications and characterization of the activity disease, which are crucial especially for therapeutic planning. The objective of this work is to show the main findings of Crohn's disease that

can be observed in the study by entero- MRI.

**Methods Involved:** From personal series of authors and from the institution were selected entero- MRI examinations from patients referred with a diagnosis of Crohn's disease. The most significant findings were documented for presentation.

**Discussion:** Discussion: The entero- MRI proved to be very accurate and allowed adequate characterization of various situations of Crohn's disease such as abscesses, fibrosis, stenosis, entero-cutaneous fistula, wall thickening, signs of disease activity, separation of small bowel loops, fibroadipose proliferation the mesentery, among others.

**Conclusion of the presentation:** The entero- MRI in the assessment of Crohn's disease enables detailed and essential information for therapeutic planning.

### PD.01.015

#### PANCREATIC AND EXTRAPANCREATIC ABDOMINAL MANIFESTATIONS OF IGG4 RELATED-DISEASE

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**Brief description of the purpose of the report:** We present a case of IgG4 related disease with pancreatic and extrapancreatic abdominal involvement including biliary system and kidneys. Given the importance of imaging methods for diagnosis and differentiation from malignancy, we emphasize the most typical abdominal findings in computed tomography and magnetic resonance imaging of this recently recognized systemic autoimmune disease.

**Medical History:** Male patient, aged 49, with itching, abdominal discomfort, jaundice, dark urine, and fecal hypocholia, slimming 13Kg in 5 months. Physical examination: jaundiced, afebrile, with flabby and painful on palpation in the right flank abdomen. Laboratory tests with elevated liver enzymes and bilirubin with obstructive pattern. It was realized computed tomography, magnetic resonance imaging of the abdomen and cholangioressonance

**Diagnosis:** IgG4 - related disease

**Discussion and summary of the case:** The IgG4-related disease is a systemic autoimmune disorder with abdominal pancreatic and extrapancreatic manifestations and can affect bile ducts, kidneys, lymph nodes, prostate and retroperitoneum. The diagnostic criteria are based on clinical, radiological and pathological findings. How it can simulate neoplastic lesions, more aggressive interventions may be taken if this diagnosis is not confirmed. It is essential that radiologists be aware of these events reported here, thus contributing to the proper diagnosis and management.

### PD.01.017

#### HEPATOCELLULAR CARCINOMA OCCURRING IN ECTOPIC LIVER TISSUE IN THE PANCREAS: A CASE REPORT.

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**Brief description of the purpose of the report:** The incidence of ectopic liver tissue varies from 0.24 to 0.47%, there are reports of ectopic liver to the gallbladder, spleen, retro-

peritoneum, pancreas, adrenal, portal vein, diaphragm, chest, gastric serosa, testes and umbilical vein. Reports show the occurrence of benign lesions and hepatocellular carcinoma in ectopic liver.

**Medical History:** Male patient, 65 years old, with a history of epigastric pain, exacerbated after eating, feeling of fullness and loss of weight of about 5 kg in the last 2 months. Alcoholic and former smoker. On examination: flaccid abdomen, flat, painless on palpation, a tumor in the right upper quadrant about 6 cm, fixed to the deep layers, hardened. Pursued with complementary examinations, computed tomography and magnetic resonance imaging. Gastroduodenopancreatotomy held, with pathological and immunohistochemical analysis.

**Diagnosis:** Hepatocellular carcinoma occurring in ectopic liver tissue in the pancreas

**Discussion and summary of the case:** The dorsal pancreatic bud and liver diverticulum have a common embryological origin, developing from the foregut, almost simultaneously in the fourth embryonic week. It is suggested that liver tissue may migrate during embryogenesis to various organs, which could explain the occurrence of ectopic pancreas liver. In heterogeneous abdominal mass, if the alpha-feto-protein is positive, can aid in the diagnosis of this rare occurrence. Immunohistochemistry is essential today in evaluating of many injuries.

### PD.01.018

#### POLYSPLENIA SYNDROME

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**Brief description of the purpose of the report:** Female patient, 31 years old. Patient complains about diffuse abdominal pain with 1 month duration. Pain is identified as being intermittent, pulsatile, and progressively worse as time goes on. Patient denies having fever, nausea or vomiting, and has irregular bowel movements. Personal Background: 1 Caesarean section, 4 years ago.

**Medical History:** CT scan performed in our service showed: multiple splenic nodules in the left upper quadrant, characterizing polysplenia syndrome, associated with the interruption of the hepatic segment of the inferior vena cava which has its flow continue through the enlarged azygos vein. There is the absence of the pancreatic tail that the appearance of a semi annular pancreas, associated with gut malrotation.

**Diagnosis:** Polysplenia Syndrome A rare congenital disease diagnosed in infancy. It has a predominance with the female sex. There are multiple splenules, pancreatic tail is absent, interruption of the hepatic segment of the inferior vena cava which continues through the enlarged azygos vein, associated with gut malrotation. There might be other findings as well.

**Discussion and summary of the case:** Among the differential diagnosis we can find: Dorsal pancreatic agenesis, pancreatic divisum, chronic pancreatitis, splenosis, lymphoma, and accessory spleens.

### PD.01.021

#### IMAGING FINDINGS IN ATYPICAL EVOLUTION OF HEPATOCELLULAR CARCINOMA.

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**Introduction:** Hepatocellular carcinoma (HCC) is the most common primary malignant tumor of the liver, being the world's third cause of cancer-related death and constitutes a public health problem. Although their imaging appearance is well known and studied, the radiologist must be aware of the existence of some atypical evolutions of this neoplasm.

**Methods Involved:** A search for patients with diagnosed HCC was held at XXXX Hospital with the goal of selecting cases that have presented any unusual developments.

**Discussion:** Among these cases, were selected patients with tumor rupture with bleeding into the abdominal cavity, accelerated growth, atypical metastasis like orbit and thyroid, gastric infiltration and spontaneous tumor regression, which will be illustrated in this study.

**Conclusion of the presentation:** Although the imaging features of HCC are well established, there are some atypical evolution that should be recognized, since they can make diagnosis difficult, with consequential impact on survival and therapeutic management of these patients.

### PD.01.022

#### HEPATIC INFLAMMATORY PSEUDOTUMOR AND THEIR DIFFERENT ASPECTS OF IMAGE

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**Introduction:** Inflammatory pseudotumor (IPT) is a rare benign lesion that may be confused with a malignant lesion. Liver involvement was first described in 1957 and since then several cases were reported in the literature that show the spectrum of the image, including it in the differential diagnosis of several lesions, such as hepatocellular carcinoma, cholangiocarcinoma, abscesses, among others. The etiology is controversial and usually has a benign course.

**Methods Involved:** Methods involved: Demonstration of different imaging findings of hepatic IPT several cases studied through by CT and MRI.

**Discussion:** Discussion: The radiological diagnosis of IPT is a challenge because the lesion does not have a typical aspect of the image, mimicking lesions of another etiology. It is usually solitary hypovascular and can reach large dimensions and often without significant mass effect, but aspects such as hypervascularity and presence of capsular retraction already have been reported. Despite the clinical and laboratorial framework be essential for diagnostic elucidation, the study histopathology is often indispensable.

**Conclusion of the presentation:** Conclusion: Hepatic IPT presents itself in of several forms, simulating other injuries and makes it difficult the radiological diagnosis.

### PD.01.023

#### ABDOMINAL VASCULAR SYNDROMES: A PICTORIAL ESSAY

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**Introduction:** The abdominal vascular syndromes can be divided into two major distinct groups according to its congeni-

tal or compressive etiology. Among the congenital syndromes there are the hemangiomas and malformations, usually related to clinical bleeding complications. On the other hand, the compressive syndromes are due to vascular entrapment, usually associated with anatomic abnormality that may result in significant hemodynamic changes as ischemia and thrombosis, especially in young and healthy patients.

**Methods Involved:** We included patients with the following syndromes: Blue Rubber Bleb Nevus, Klippel-Trenaunay, Rendu-Osler-Weber, Nutcracker, Median Arcuate Ligament, Cockett and Superior Mesenteric Artery. We selected some characteristic radiological findings of ultrasound, angiography, computed tomography and magnetic resonance imaging.

**Discussion:** The most representative radiological findings were selected in order to illustrate each condition, once the correct diagnosis often depends on a proper analysis of the images.

**Conclusion of the presentation:** Although rare, knowledge of the presentations of various vascular syndromes allows the radiologist to contribute for proper diagnosis and consequent therapeutic management of these patients.

### PD.01.024

#### IMAGING FINDINGS IN PAROXYSMAL NOCTURNAL HEMOGLOBINURIA: CASE REPORT

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**Brief description of the purpose of the report:** To identify typical imaging findings that, with the combination of clinical data, could lead to the Paroxysmal Nocturnal Hemoglobinuria (PNH) diagnosis.

**Medical History:** Thirty six years old male patient, complaining about weakness, dizziness and macroscopic hematuria persisting for three days, previously hospitalized twice due to anemia and hepatosplenomegaly to be investigated. A month ago, he had a stroke.

**Diagnosis:** Paroxysmal Nocturnal Hemoglobinuria

**Discussion and summary of the case:** The PNH is defined as a rare chronic hemolytic anemia acquired disease caused by mutations that promote the inability of glycosyl-phosphatidylinositol anchors synthesis, resulting in complement-mediated intravascular hemolysis. Classically presented with triad of hemolytic anemia, pancytopenia and thrombosis, and the symptoms are variable and non-specific, for instance, abdominal pain and asthenia. The typical imaging findings include low signal intensity in the renal cortex on Magnetic Resonance Imaging, and thrombotic events, as in this case, in which hepatic perfusional and morphological alterations are compatible with hepatic veins thrombosis (Budd-Chiari Syndrome). The definite diagnosis is performed by flow cytometry studies and its importance consists of dealing with this patient in the best way in order to reduce the risks of serious damage and to improve his quality of life.

### PD.01.025

#### T2\* QUANTIFICATION OF LIVER, SPLEEN AND PANCREATIC IN OPEN DEVICE WITH HIGH GRADIENT.

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**Brief description of the purpose of the study:** Identify the

values of normal hepatic, spleen and pancreatic T2\* in a MRI open device with high gradient and assess the reproducibility of these measurements between observers.

**Methods:** Volunteers studied at 0.35 T unit with GE sequences with varying TE: 3.28, 5.0, 6.9, 8.8, 10.7, 12.6, 14.5, 16.4, 18.3, 20.2, 22.1, 23.3 and 24.7 in inspiration. Two observers made blindly quantified.

**Main results:** Hepatic T2\* hepático was  $23,7 \pm 2,6$  ms (IC95%=21,6-25,8ms), pancreatic  $21,5 \pm 3,0$  ms (IC95%=19,1-23,9ms) and the spleen  $26,8 \pm 3,5$  ms (IC95%=24,0-29,6ms). Maximum values: liver, 26,3 ms; pancreas, 25,0 ms; spleen, 31,25 ms. Minimum values: liver, 18,87 ms; pancreas, 17,86,0 ms; spleen, 21,28 ms. The intraclass correlation coefficient for the data inter-and intraobserver agreement was excellent (ICC = 0.96 and ICC = 0.98, respectively).

**Importance of the conclusions:** Measurement of T2\* in MRI open device with high gradient is reliable and reproducible for inter-and intraobserver assessment. The normal values were presented in this paper. Study to detection iron deposits should be evaluated in the future.

### PD.01.027

#### INSUFFICIENT WEIGHT LOSS AFTER BARIATRIC SURGERY: ROL OF MULTIDETECTOR COMPUTED TOMOGRAPHY

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**Brief description of the purpose of the report:** The gastric bypass procedure is an effective surgical intervention that can achieve an important weight loss in morbidly obese patients. There are three main causes of gastric bypass failure, resulting in patients weight regain: pouch distention, dilation of gastro-enteric anastomosis and gastro-gastric or gastro-enteric fistula. The aim of this essay is to serve as guidance to radiologists who face the task of identifying a possible reason for gastric bypass failure.

**Medical History:** Abdominal MDCT was performed immediately after oral administration of an iodine contrast agent solution. Indications were insufficient weight loss after primary operation or even weight regain. 3-D semi-automatic volume quantification of gastric pouch and the proximal part of the Roux limb volume as well as diameter and area of gastrojejunostomosis were measured on CT images.

**Diagnosis:** The increasing number of patients referred for failure after bariatric procedures has generated the need for an adequate imaging method. MDCT allows crucial anatomical measurements and provides helpful information for selecting the appropriate revisionary operation when needed. Dimensions of gastrojejunostomosis, and volumes of the Roux limb and gastric pouch, are easily evaluable in CT exams.

**Discussion and summary of the case:** MDCT has become a most effective tool as a decision-making aid in patients with failure after bariatric surgery.

### PD.01.031

#### A PRACTICAL GUIDE TO EVALUATE RESPONSE TO ONCOLOGIC TREATMENT THROUGH RECIST 1.1

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**Introduction:** RECIST is a set of published rules that define the types of response after oncologic treatment. Radiologists should be familiar with this tool. The purpose of this study is to illustrate pearls and pitfalls, limitations, tips and challenges when using RECIST 1.1.

**Methods Involved:** CT and MR

**Discussion:** An objective evaluation of treatment response is fundamental in clinical research. RECIST is useful in standardizing response reports. Limitations include non-measurable lesions and new drugs with anti-angiogenic effect. Even though there is limitation in clinical practice, researchers may benefit from objective measures.

**Conclusion of the presentation:** RECIST is frequent in radiologists daily practice. Radiologists should be familiar with this kind of reports. Limitations exist and should also be known.

### PD.01.032

#### SANT (SCLEROSING ANGIOMATOID NODULAR TRANSFORMATION OF THE SPLEEN)

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**Brief description of the purpose of the report:** Report a rare benign vascular splenic lesion recently described.

**Medical History:** Female patient of 40 years, asymptomatic, came to realize MRI control for splenic nodule.

**Diagnosis:** SANT (Sclerosing Angiomatoid Nodular Transformation of the Spleen)

**Discussion and summary of the case:** SANT (abbreviation for Sclerosing Angiomatoid Nodular Transformation of the Spleen) is a rare benign lesion of the spleen, first described in 2004. The pathogenesis is unknown, but it is believed that it represents an abnormal reaction of the spleen's red pulp of a vascular or inflammatory. Given the small number of lesions described in the literature, there is no known characteristic imaging findings, however most of the lesions are circumscribed and hypodense on computed tomography (CT), maintaining hypoenhancing in portal venous phase and gradually becoming isodense in delayed phases. An early peripheral enhancement with centripetal progression of radiated aspect is one of the patterns of enhancement of the lesion. At MRI, it tends to be hypointense on T2 with the same pattern of enhancement of CT. The differential diagnosis includes other benign lesions such as lymphangioma, littoral cell angioma, hemangioma, hamartoma. When large, they may be indistinguishable from malignant lesions such as lymphoma, metastasis or angiosarcoma.

### PD.01.033

#### SECONDARY BILIARY CIRRHOSIS INTRAHEPATIC LITHIASIS

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**Brief description of the purpose of the report:** Our objective was to report a case of a patient with intrahepatic stones, as well as conduct a brief literature review on the topic because it is rare in the Western world, difficult and important surgical treatment mortality.

**Medical History:** Two years ago laparostomy patient underwent colectomy for enteric fistula post to Hartmann, this due to complications of diverticulitis. Has already undergone cholecystectomy and several papilotomias. Admitted for drainage of abdominal wall abscess and developed cholangitis.

**Diagnosis:** Biliary cirrhosis secondary to intrahepatic stones.

**Discussion and summary of the case:** The intrahepatic lithiasis is divided into two types: Eastern (calculations originated primarily in intrahepatic bile ducts, usually no association with cholelithiasis and in most cases the calculations are located in the left hepatic lobe) and western (calculations arising from the gallbladder that migrate to the liver). The pathophysiology is not well established and seems to be related to infection, protein-calorie malnutrition and biliary stasis. The main diagnostic imaging methods include ultrasound, computed tomography, magnetic resonance cholangiography, endoscopic retrograde cholangiopancreatography and cholangiography transperieto. The definitive treatment is liver resection.

### PD.01.036

#### THE MULTIPLES "RADS" IN NEOPLASM DIAGNOSIS

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**Introduction:** The BI-RADS (Breast Image Reporting and Data System) proved very successful as the classification system and risk stratification for diagnosis of breast cancer. His good results and their clinical impact encouraged the development of similar systems for other cancers, such as TI-RADS for thyroid cancer, LI-RADS for liver lesions, GI-RADS for adnexal lesions, and PI-RADS for prostatic evaluation. This study present and illustrate the main reporting systems for cancer based on imaging methods.

**Methods Involved:** Through our teaching file cases and review of the literature, we present the main imaging findings of BI-RADS, LI-RADS, TI-RADS, GI-RADS and PI-RADS based on MRI, CT and U.S.

**Discussion:** Analogously to the BI-RADS, other classification methods assign scores to lesions, usually ranging from 1 to 5, trying to correlate them with the risk of cancer, or clinically significant tumor.

**Conclusion of the presentation:** These classification systems are designed to standardize the description of imaging findings in several neoplasias, facilitate teaching and improving the detection of lesions. Some of these systems are still under development, but will soon be in use in clinical practice.

### PD.01.038

#### HYPERVASCULAR SUBEPITHELIAL GASTRIC MASSES: WHAT THE RADIOLOGIST NEEDS TO KNOW

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**Brief description of the purpose of the Review of Literature:** In this work we present the main imaging findings that help in differentiation of gastric lesions, with special attention to the subepitelias intramural hypervascular lesions, such as Gist, neuroendocrine tumor, glomus tumor, Kapo-

si's sarcoma, hypervascular metastases, heterotopic tissues, among others.

**Description (s) condition (s), method (s) or technique (s):**

Faced with a gastric disorder, detected by Computed Tomography, we try to make the differential diagnosis of epithelial origin or possibly a subepithelial, the latter being subdivided into intramural and extramural. As an example of types of epithelial lesions we cite polyps and gastric adenocarcinoma and subepithelial types of lesions, tumors of mesenchymal origin, as well as non-neoplastic lesions. CT is limited to appropriate differentiation between the layers of the stomach wall compared to endoscopic ultrasonography. However with the recent advances in tomography, proper staining techniques and multiplanar reformatting has helped a lot in the differential diagnosis of the lesions described above, as well as the appropriate location, extension and evaluation of metastases.

**Conclusion:** It is extremely important that the radiologist be familiar with the possible diagnoses described above, for a relevant therapeutic approach is taken.

### PD.01.039

#### REVISITING HYPERVASCULAR LIVER LESIONS: A PICTORIAL ESSAY

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**Introduction:** The liver has the major occurrence of malignant and benign tumors, whose characterization can be a challenge for radiologists. The objective of this paper is to review the image aspect of the most common hypervascular liver lesions through several methods: ultrasonography (U.S.), computed tomography (CT) and magnetic resonance imaging (MRI).

**Methods Involved:** In this pictorial essay, we review the radiographic aspects of the main hypervascular liver lesions (hemangioma, focal nodular hyperplasia, adenoma, hepatocellular carcinoma, intrahepatic cholangiocarcinoma and liver metastasis) emphasizing differential characteristics and illustrating several cases from our archive service.

**Discussion:** The evolution of diagnostic imaging equipment and its increasing use have allowed early and incidental recognition of smaller and smaller hepatic nodules, which may hinder its characterization. In this context, several methods take different and important roles, complementing the differential diagnosis.

**Conclusion of the presentation:** The identification of the most common liver tumors main aspects and peculiarities can help the radiologist to contribute concretely and positively to diagnostic approach and management of this group of patients.

### PD.01.041

#### TECHNIQUES FOR DETECTION AND QUANTIFICATION OF HEPATIC IRON BY MRI

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**Introduction:** Review and present techniques for detection and quantification of iron in the liver parenchyma by MRI.

**Methods Involved:** A detailed description of sequences that can be used for the measurement of liver iron, for example,

measures based on the ratio signal / intensity (comparing the liver with muscle) and relaxometry measurement of the hepatic parenchyma by T2\*. Will be explored both physical properties and technical aspects that are relevant to each of them, as well as their advantages and disadvantages.

**Discussion:** Hepatic deposition diseases are increasingly gaining importance in clinical practice, especially those related to iron. Detection and especially monitoring posttreatment become challenging due to lack of definitive and non-invasive methods.

**Conclusion of the presentation:** In this context, MRI has brought impressive results and is being increasingly used for these purposes, making it essential to the radiologist the knowledge of the examination techniques for their correct interpretation.

### PD.01.042

#### THE ROLE OF MRI IN HEPATIC FAT DEPOSITION SAAD, L.S.; ROCHA, L.G.S.; TRIDENTE, C.F.; BARONI, R.H.; FUNARI, M.B.G.

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**Introduction:** A Review of the technical aspects in the assessment of hepatic fat deposition by MRI

**Methods Involved:** A demonstration of the advantages and disadvantages of the main techniques for the detection and measurement of liver fat by MRI study with a brief review of the physical bases involved. The techniques discussed are those based on gradient echo sequences in phase and out of phase Dixon and spectral saturation of fat, in addition spectroscopy.

**Discussion:** Hepatic steatosis is among the most common findings in routine examinations due to its increasing prevalence in the general population. This is a frequent finding in asymptomatic patients and of great clinical importance, not only because of its relationship with metabolic syndrome and the development of hepatic adenomas, but mainly because of its potential progression to nonalcoholic steatohepatitis (NASH) the latter may be associated with more significant complications such as liver failure and the development of hepatocellular carcinoma.

**Conclusion of the presentation:** Despite the random biopsy of the liver parenchyma is considered the gold standard for its measurement, some MRI techniques have been gaining ground in clinical practice, enabling measurement and quantification of liver fat by a non-invasive method and devoid of ionizing radiation.

### PD.01.045

#### THE VALUE OF "HIGHLY ACCELERATED HIGH-RESOLUTION T1W 3D GRE" SEQUENCES (VIBE CAIPIRINHA ©) IN SOLVING PROBLEMS IN GD-EOB-DTPA (PRIMOVIST ©) ENHANCED MRI OF THE LIVER

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**Introduction:** Gd-EOB-DTPA (Primovist ©, Bayer) is a liver-specific contrast medium for MRI. The main indications for its use are: the characterization of nodules in cirrhotic patients, differentiation between hypervascular liver nod-

ules, the detection of liver metastases, and the evaluation of biliary complications. Here we present the imaging findings of the main indications for this contrast medium, underscoring the importance of post-contrast high resolution images (VIBE-Caipirinha ©).

**Methods Involved:** The complete imaging protocol will be reviewed, showing the main differences from routine examinations of the upper abdomen, based on a teaching file of about 90 cases with the use of Gd-EOB-DTPA.

**Discussion:** On observation of teaching file cases, the Caipirinha-VIBE sequence allowed the detection of more lesions, and with greater conspicuity compared to the routine VIBE protocol. In patients with dyspnea, it was also possible to obtain images with similar quality to VIBE routine in less than 2/3 of the time of apnea.

**Conclusion of the presentation:** Given the complexity and technical demand of MRI with Gd-EOB-DTPA, is crucial to perform the examination in good quality equipment and protocols. In this context, the post contrast high resolution sequences play an important role and should be employed in clinical practice.

### PD.01.051

#### IMAGE FINDINGS OF CROHN DISEASE IN COMPUTED TOMOGRAPHY ENTEROGRAPHY AND MAGNETIC RESONANCE ENTEROGRAPHY

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**Brief description of the purpose of the Review of Literature:** Crohn disease is a complex pathologic process which has an unpredictable course, including the recurrence of symptoms. In the last 40 years, epidemiologic studies indicate that the incidence of such disease has been increasing. The small bowel is commonly affected and not easily accessible via endoscopic methods, therefore computerized tomography and magnetic resonance enterography became first choice exams, allowing the study of the small bowel in its entire length, a more accurate evaluation of the wall thickness, as well as related extra-intestinal complications in a non-invasive way.

**Description (s) condition (s), method (s) or technique (s):** The principal image findings of the Crohn disease include thickening of the small bowel, mucosal hyper-enhancement, mural stratification, skip lesions, luminal narrowing, stenosis and fistulas, thus allowing the detection of indicators suggestive of diseases in progress, as well as chronic diseases.

**Conclusion:** Therefore, it is important that the radiologist have an adequate knowledge and fair interpretation of the images, in order to determine the severity and extension of the lesions, to enable a better therapeutic management.

**Brief discussion of the case** Therefore, it is fundamentally important that the radiologist have an adequate knowledge and a fair interpretation of the images, in order to determine the severity and extension of the lesions, to enable a better therapeutic management of the disease.

### PD.01.052

#### SMALL BOWEL TUMORS IN CT ENTEROGRAPHY: PICTORIAL ESSAY

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**Introduction:** Small Bowel CT enterography (CTE) has become an important method for evaluating small bowel diseases. It is a noninvasive method which allows the evaluation of the bowel wall as well as the extra-intestinal structures. Its utility for evaluating small bowel neoplasms has already been established. This pictorial essay proposes the review of the main signs of small bowel tumors by this method.

**Methods Involved:** Review of the CTE performed in our center in a period of two years and the exposure of its main radiological signs concerning the small bowel neoplasms.

**Discussion:** The CTE can detect with a good accuracy the small bowel neoplasms. As a noninvasive method which can be done in multiplanar sections, we can evaluate the mucosa, the small bowel wall, as well as the extra-intestinal structures.

**Conclusion of the presentation:** The importance of CTE evaluation in small bowel neoplastic disease is well recognized worldwide. As a noninvasive method that allows the complete evaluation of both small bowel segment and adjacent structures, it has an important role in the diagnostic propeutics of small bowel tumors.

### PD.01.053

#### PICTORIAL ESSAY – ABDOMINAL EXTRA LUMINAL GAS COLLECTIONS

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**Introduction:** The aim of this presentation is to illustrate the most common presentations of abdominal extra-luminal gas collections and briefly discuss the conditions that lead to them.

**Methods Involved:** We will use plain radiographic evaluation, ultrasound and computed tomography to illustrate the findings of abdominal extra-luminal gas collections.

**Discussion:** Conventional radiographic imaging and ultrasound may be helpful, but computed tomography consists in the best tool available for detection, exact location and determination of etiology of extra-luminal gas collections.

**Conclusion of the presentation:** We illustrate the typical findings of extra-luminal abdominal gas collections.

### PD.01.055

#### PRIMARY PNEUMATOSIS INTESTINALIS: CASE REPORT AND LITERATURE REVIEW.

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**Brief description of the purpose of the report:** Pneumatosis Intestinalis is characterized by multiple cystic or linear streaks of gas content in the submucosa and subserosa of the gastrointestinal tract. It's a clinical and radiological sign that can occur in a primary form, without underlying pathological condition (about 15 % of cases), or secondarily, in association with several diseases.

**Medical History:** The primary form is usually asymptomatic; it is likely that its prevalence has increased in recent

years. It affects males three times higher in frequency, with greater incidence in the adult age group being more rare in childhood.

**Diagnosis:** The knowledge of the different forms of Pneumatosis Intestinalis is very important to prevent misconduct, since the primary one requires expectant management and shows spontaneous resolution in most cases.

**Discussion and summary of the case:** This paper aims to report three cases that occurred within less than six months, in which patients were at the emergency care because of nonspecific abdominal pain, with inconclusive clinical and laboratory evaluation. Computed tomography of the abdomen showed signs consistent with Pneumatosis Intestinalis, diagnosed as primary, since there were no other associated pathological findings. The cases were managed conservatively, with spontaneous resolution.

### PD.01.058

#### DUPLICATION OF THE GALLBLADDER ON COMPUTED TOMOGRAPHY

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**Brief description of the purpose of the report:** Duplication of the gallbladder is a rare congenital malformation that occurs in approximately 0.025%. This is an important condition as it can cause surgical problems due to the increased risk of complications, especially after laparoscopic cholecystectomy. We report the findings of computed tomography of a patient with gallbladder duplication.

**Medical History:** W. H. B., female, 53 years old, reported epigastric pain associated with nausea and vomiting. Denies comorbidities and previous surgery.

**Diagnosis:** Duplication of the gallbladder.

**Discussion and summary of the case:** It is a rare congenital malformation caused by incomplete vacuolization of early gallbladder, which results in the persistence of a longitudinal septum. May be related to pain in the right hypochondrium and complications such as cholecystitis and cholelithiasis. Divided into three groups according to the classification of Boyden: - Incomplete Duplication with common cystic duct; - Duplication complete with separate cystic duct leading into the common hepatic duct; - Complete Duplication with common cystic duct enters the common hepatic duct. The preoperative diagnosis of this malformation is especially important to avoid possible surgical complications and repeated laparotomies. Differential diagnoses: vesicular diverticulum, gallbladder Phrygian cap, choledochal cyst, focal adenomyomatosis.

### PD.01.059

#### PLASMABLASTIC LYMPHOMA OF ANAL CANAL IN PATIENT HIV / AIDS - A CASE REPORT

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**Brief description of the purpose of the report:** HIV infection causes cell immunity reduction, which increases the incidence of malignancy. Most non-Hodgkin lymphomas are aggressive in this group and are considered one of the most lethal AIDS-defining malignancies. Image findings of anorectal involvement by plasmablastic lymphoma are wall infiltrative mass, concentric wall thickening without obstruction, polypoid mass, muscle thickening and moderate contrast enhancement.

**Medical History:** We present a case report of patient with painless mass of about 3.0 cm in the perineal region with two months evolution. During hospitalization, there was significant lesion growth and ulceration, a computed tomography was performed for better elucidation. The diagnosis of HIV/AIDS (CD4:67) was made.

**Diagnosis:** Computed tomography showed multiple small nodules in lung parenchyma; infiltrative mass with heterogeneous contrast enhancement, measuring 19x15x11cm, located in the anal canal, extending to the inferior rectus, vagina and cervix. A biopsy was performed and revealed the diagnosis of plasmablastic lymphoma.

**Discussion and summary of the case:** The plasmablastic lymphoma is an aggressive non-Hodgkin lymphoma, locally invasive, with 60-90% of cases showing extraganglionic involvement at diagnosis. The most common site of occurrence is the oral cavity, about 90% of cases, with the rare anorectal involvement.

### PD.01.060

#### APPLICATIONS OF DIFFUSION SEQUENCES IN MRI OF THE ABDOMEN.

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**Introduction:** MRI is widely used for abdominal evaluation, providing multiplanar images with good anatomic resolution without the use of ionizing radiation. The use of paramagnetic contrast agent (gadolinium) is part of standard protocol for abdominal examinations, but it may be contraindicated in allergic or patients with renal failure or pregnant women. The diffusion method adds important information without the use of contrast.

**Methods Involved:** MRI images of our institution and personal files were selected in order to make a review of the main uses of diffusion sequences in clinical practice.

**Discussion:** The diffusion method is based on the motion of water molecules, providing information about the tissue cellularity and integrity of cell membranes. Restricted diffusion occurs in high cellular density tissues, whereas in cystic or necrotic lesions the movement of water molecules is free. Among its applications, we include the assessment of liver, kidney and pancreas focal lesions, the evaluation of cirrhosis, fibrosis or liver iron overload, analysis of tumor response to treatment, in inflammatory bowel disease and colorectal carcinoma.

**Conclusion of the presentation:** There are many applications of diffusion MRI of the abdomen, being of great value in cases of impossibility of the use of intravenous contrast.

### PD.01.061

#### EVALUATION OF FOCAL NODULAR HYPERPLASIA WITH FAT: IMAGING FINDINGS AND DIFFERENTIAL DIAGNOSES.

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**Introduction:** Focal hepatic lesions are a common entity in clinical practice and the presence of detectable fat in a hypervascular lesion usually suggests the diagnosis of hepatocellular adenoma. However, the occurrence of focal nodular hyperplasia (FNH) with fat content has been described, and constitutes a diagnostic challenge. This study aims to describe the main imaging findings in FNHs adipose content.

**Methods Involved:** Will be described and illustrated the imaging findings of FNHs with fat content, as of seven cases from our teaching file, emphasizing the role of hepato-specific contrast agents. We will also present a literature review, confronting its main differential diagnoses.

**Discussion:** The differentiation of FNH with other focal liver lesions is very important because it is an injury that does not require surgical treatment. To try to establish the diagnosis, we have to observe whether these lesions have typical findings of FNH or atypical findings, although containing fat inside. The hepato-specific contrast agents increase diagnostic confidence by show late contrast retention.

**Conclusion of the presentation:** The FNHs fat content are an entity of relevant in the context of focal hepatic lesions. MRI with the use of hepato-specific contrast has the potential to aid in the differential diagnosis.

### PD.01.062

#### PICTORIAL ESSAY OF CT FEATURES OF ACUTE INTESTINAL ISCHEMIA

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**Introduction:** Acute mesenteric ischemia (AMI) is a condition that increases their incidence with population aging, being a frequent cause of abdominal pain in emergency care. It's, however, still underdiagnosed in our midst. It is characterized by an abrupt reduction of the blood flow to the bowel, compromising the viability of enteric segments to varying degrees, causing ischemia and eventually necrosis, sometimes requiring immediate surgical intervention.

**Methods Involved:** This pictorial essay aims to present the main tomographic findings observed in AMI in accordance with the literature reviewed, using real and unpublished cases from radiology in emergency session of an X Hospital in Sao Paulo, Brazil.

**Discussion:** Studies point to the AMI as responsible for about 1% of the causes of acute abdomen. Its etiology is diverse, comprising arterial or venous thrombosis, intestinal obstruction, secondary to trauma or even tumors.

**Conclusion of the presentation:** In this way the radiologist must be familiar with its clinical presentation and imaging findings in their daily practice.

### PD.01.063

#### MEDIAN ARCUATE LIGAMENT SYNDROME.

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**Brief description of the purpose of the report:** The Median Arcuate Ligament Syndrome is a rare disease, characterized by a set of signs and symptoms caused by compression of the focal origin of the celiac trunk by the fibrous arch of the diaphragmatic crus called middle arcuate ligament.

**Medical History:** S. B., female, 21 years old, referred intense cramping pain that worsen after meals for several months, with periods of worsening and improvement, and which intensified 2 days ago.

**Diagnosis:** Median arcuate ligament syndrome.

**Discussion and summary of the case:** The diagnosis of this syndrome is excluded because there is no well-defined criteria, so a battery of tests should be performed as endoscopy, abdominal ultrasound, colonoscopy and CT scan of abdomen. This entity is very common in females, between 20 and 50 years old. The main symptom is chronic abdominal pain, insidious and ill-defined characteristics. The treatment may be by percutaneous transluminal coronary angioplasty or surgical decompression of the celiac trunk section by compressing the structures.

### PD.01.065

#### PITFALLS IN TRAUMATIC INJURY OF THE URINARY BLADDER.

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**Introduction:** Injuries to the urinary bladder can be a puncture wound or, more often in polytrauma patients, victims of blunt abdominal trauma. The delay in diagnosis and treatment of bladder trauma can substantially increase mortality, being fundamental to its early and accurate diagnosis.

**Methods Involved:** Cases of bladder trauma were collected from patients enrolled in an educational institution and underwent computed tomography (CT) addressing the imaging findings and the main pitfalls encountered in the diagnosis.

**Discussion:** The partial or passive bladder distension in the context of pelvic trauma can lead to false negatives in the diagnosis of bladder trauma. It has been well documented that the filling of the bladder with a minimum of 250-300 ml of contrast material is necessary to exclude with certainty a bladder injury. The retrograde filling of the bladder with this volume of contrast material prior to a CT (CT cystography) may improve the detection of extravasation in diagnostic accuracy approaching 100%.

**Conclusion of the presentation:** The search bladder trauma only by passive bladder distension by the contrast medium excreted may not be appropriate, it is essential to achievement of CT cystography through polling and active bladder distension with the contrast medium when clinical suspicion in order to increase diagnostic sensitivity.

## PD.01.067

### GADOXETIC ACID (GD-EOB-DPTA) - A HEPATOBI-LIARY-SPECIFIC MR CONTRAST AGENT – HOW TO USE IT? - A PICTORIAL ESSAY.

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**Introduction:** INTRODUCTION Sometimes liver lesions can be a challenge. Radiologists may face difficult situations, like in differentiating adenomas from nodular hyperplasia, in detecting lesions in a cirrhotic liver, in evaluating hepatobiliary complications after surgical procedures and even checking if a radiofrequency procedure for a liver disease was really a success. The gadoxetic acid (Gd-EOB-DPTA) is a new contrast based on gadolinium and it is specifically captured by hepatocytes and undergoes approximately 50% excretion through the biliary route, providing robust delayed hepatic and biliary tree imaging.

**Methods Involved:** METHODS Illustrations of magnetic resonance images obtained from the institution's digital archive.

**Discussion:** DISCUSSION We discuss our experience with Gd-EOB-DPTA in MRI studies showing the normal findings and the evaluation of pathological features, divided into four groups: focal liver lesions (oncological and non oncological patients), lesions in cirrhotic liver, surgical complications after hepatobiliary surgery and evaluation post radiofrequency procedures. Based on the most representative cases, we selected images to illustrate the most important findings in these situations.

**Conclusion of the presentation:** CONCLUSION Our goal is to show how to use this new hepatobiliary contrast that can improve the sensibility and specificity of the magnetic resonance findings, helping the radiologist diagnosing the nature of various hepatobiliary liver conditions without using unnecessary invasive procedure.

## PD.01.070

### PHEOCHROMOCYTOMA: CHAMELEON TUMOR. FOCUS ON MAGNETIC RESONANCE (MR) FINDINGS.

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**Introduction:** Pheochromocytomas are rare catecholamine secreting tumors originating from pheochromocytes, the predominant cells of the adrenal medulla. Noninvasive diagnosis is extremely important since any physical contact with these neoplasms may precipitate cardiac arrhythmias and malignant hypertension, which, if untreated, may cause fatal clinical consequences.

**Methods Involved:** Selection of MR cases.

**Discussion:** Usually affect middle-aged adults, regardless of gender, being unilateral and benign in most cases. Its histological differentiation is difficult, being established by local invasion or metastasis. Arise from the adrenal medulla or sympathetic paraganglia, with variable clinical presentation, the most common being hypertensive crisis. Elevated levels of urinary metanephrine or plasma catecholamines may suggest the diagnosis. At this moment, imaging is needed to

establish the location of the tumor which usually presents as a well circumscribed heterogeneous mass with high signal on T2-weighted images and intense enhancement after contrast medium.

**Conclusion of the presentation:** MRI is emerging as the technique of choice for the diagnosis of pheochromocytoma, given its ability to reliably detect lesions and differentiate them from other adrenal tumors.

## PD.01.071

### SOLID PSEUDOPAPILLARY TUMOR OF THE PAN-CREAS (TSPP): CASE REPORT WITH UNUSUAL FE-ATURES

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**Brief description of the purpose of the report:** Describe and record clinical and radiological atypical features, of great importance, in the diagnosis and management of this tumor occurring in age-advanced man.

**Medical History:** Male, 63 years old, with a history of increasing abdominal mass diagnosed 5 years ago, occasional and longstanding abdominal pain, nausea and vomiting. Right upper quadrant abdominal mass represented the clinical findings.

**Diagnosis:** TSPP

**Discussion and summary of the case:** The TSPP is a rare neoplasm, first described in 1959. Currently, 800 cases were reported worldwide. Occurs more frequently among young women, as a large encapsulated mass in the pancreatic tail, being considered low-grade malignancy and with good prognosis. However there is variability in clinical and radiologic presentation. An aggressive behavior may be related to advanced age and male sex, evolving with metastasis and vascular involvement. It is usually an incidental finding, asymptomatic or with nonspecific clinical findings. Diagnosis is made by imaging, and the findings reflect the variability of these tumors. These case showed large mass in the pancreatic neck, which insinuates into the liver and infiltrates adjacent structures. Sparse solid hepatic nodules (secondary etiology), caudal pancreatic atrophy and large vascular contacts were noticed. Treatment is surgical, with high resectability and small recurrence, significantly improving the prognosis.

## PD.01.072

### EVALUATION OF BILIARY TREE WITH USE OF HE-PATOBILIARY-SPECIFIC MR CONTRAST AGENTS

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**Introduction:** The gadoxetic acid is the first and only hepatobiliary-specific MR contrast agent (HBSA) approved for clinical use in Brazil. Its role in detection and characterization of focal hepatic lesions is well established. However its applications in evaluation of biliary tree are not widespread. This paper aims to demonstrate the use of HBSA in evaluation of the biliary tree, highlighting the main aspects of image and guiding about its findings and applications.

**Methods Involved:** MRI images of the upper abdomen with HBSA conducted between January and November/2013 were selected from digital archive of our institution.

**Discussion:** The HBSA, recently approved for use in Brazil, are promising for the diagnosis and characterization of hepatobiliary lesions. Unlike contrasts routinely used, they are specifically captured by functioning liver cells and have high rates of excretion via the biliary tree. This different metabolism and the fact that they are made of gadolinium - shortening the hepatobiliary longitudinal relaxation time - give important advantage in functional and anatomical evaluation of the liver and biliary tree.

**Conclusion of the presentation:** Possible indications for the use of HBSA include: diagnosis of biliary stenosis and gallstones, leakages and ruptures of biliary-enteric anastomosis, acute cholecystitis, surgical planning of hilar cholangiocarcinoma and for evaluation of liver donor.

### PD.01.073

**PADRÕES DE RESPOSTA E TOXICIDADE ÀS PRINCIPAIS DROGAS ALVO UTILIZADAS EM ONCOLOGIA**  
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**Introduction:** Drogas alvo (targeted-drugs) são terapias que interferem em moléculas específicas necessárias para o crescimento e progressão tumoral. Elas diferem das quimioterapias citotóxicas tradicionais que destroem células com crescimento rápido e que atuam no mecanismo de divisão celular. Os padrões radiológicos de resposta às drogas alvo não seguem de maneira direta os critérios RECIST (Response Evaluation Criteria for Solid Tumors) e, além disso, podemos ter diversos efeitos colaterais específicos para cada terapia.

**Methods Involved:** demonstraremos as principais alterações observadas em tumores tratados com drogas alvo e também efeitos colaterais que devem ser reconhecidos pelo radiologista em exames de tomografia computadorizada e ressonância magnética

**Discussion:** A vantagem das drogas alvo é agir com maior precisão e potencialmente com menos efeitos colaterais. De maneira geral, estas drogas são classificadas em anticorpos monoclonais (p. ex: bavituzumab, cetuximab) ou moléculas pequenas (p. ex: bortezomib, imatinib). Estas drogas são atualmente utilizadas na terapia diversos tumores, com destaque para mama, colorretal, células renais, glioblastoma multiforme, neuroendócrino, melanoma, tumores estromais gastrointestinais (GIST) e leucemia.

**Conclusion of the presentation:** as drogas alvo abriram um extraordinário campo dentro do arsenal de tratamento oncológico e seus efeitos biológicos e toxicidade devem ser conhecidos do radiologista para um adequado seguimento de imagem.

### PD.01.079

**ABDOMINAL MANIFESTATIONS OF EXTRANODAL LYMPHOMA: ICONOGRAPHIC ESSAY AND LITERATURE REVIEW**

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**Introduction:** Abdominal extranodal lymphoma is found in approximately 40% of patients with lymphoma, and it can mimic many other diseases, including other types of tumors or inflammatory disorders, reason why its diagnosis may be a defiant job.

**Methods Involved:** The purpose of this iconographic essay is to illustrate the different abdominal manifestations of extranodal lymphoma with biopsy confirmation in Computerized Tomography (CT) and Magnetic Resonance (MR) through cases from our own archives, and also expose a brief review of the literature.

**Discussion:** Abdominal extranodal lymphoma frequently involves the spleen, the liver and the gastrointestinal tract and, in a lower frequency, the pancreas, the genitourinary tract, the adrenal glands and the biliary tract. Extranodal disease is more common in non-Hodgkin's lymphoma than with Hodgkin's disease. Due to its spectrum of manifestations, imaging diagnosis may be suggested in the presence of features such as a bulky mass or hypovascularized infiltrative lesion or inespecific focal thickening associated to lymphadenopathy. Strategies to confirm the disease are mainly based on CT guided biopsy.

**Conclusion of the presentation:** In conclusion, both MR and CT are the main diagnostic methods in the abdominal extranodal lymphoma's diagnosis, staging and follow-up.

### PD.01.080

**THE DIAGNOSTIC DILEMMA OF UNUSUAL HEPATIC STEATOSIS**

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**Introduction:** To review the diagnosis of hepatic steatosis and its different forms of presentation, with special emphasis on unusual patterns that may cause diagnostic confusion by mimicking neoplastic or inflammatory conditions.

**Methods Involved:** Hepatic steatosis cases mainly the ones that mimic malignant diseases, with illustrations of their features in computed tomography (CT) and magnetic resonance (MR) imaging from our Institutions.

**Discussion:** Importance of hepatic steatosis and imaging techniques for its detection. A brief discussion of its different forms of presentation on imaging studies, mainly the ones that mimic malignant diseases (lobar, sectorial, polymorphous, perivascular or nodular), with illustrations of their features in computed tomography (CT) and magnetic resonance (MR) imaging.

**Conclusion of the presentation:** MR and CT are excellent noninvasive imaging modalities for easily detection of hepatic steatosis, a common cause of chronic liver disease. Therefore, radiologists should be familiar with its different forms of presentation, specially atypical ones that can be sometimes misdiagnosed as true hepatic lesions.

### PD.01.081

#### GASTROINTESTINAL STROMAL TUMORS (GIST): COMMON IMAGING FINDINGS AND ASSOCIATED SYNDROMES

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**Introduction:** GIST are the gastrointestinal tract's most frequent mesenchymal tumors. They originate in Cajal interstitial precursor cells and express a KIT, tyrosin kinase growth factor receptor (CD 117), which distinguish GIST from other mesenchymal neoplasms.

**Methods Involved:** The stomach is the most commonly affected site, followed by the small intestine, anus, rectum, colon and esophagus. Occasionally it may primarily affect the omentum, mesentery and retroperitoneum. Generally, they arise within the muscularis propria, and presents as circumscribed and heterogeneous masses. When they grow towards the bowel lumen may reduce it, causing obstruction symptoms. Necrosis, hemorrhage or cystic degeneration may occur, forming cavitations which eventually ulcerate the mucosa and communicate with the intestinal lumen. Metastases occur more frequently in the liver, peritoneum and less frequently in the lungs. Typically, after chemotherapy hepatic metastases become homogeneously cystic.

**Discussion:** Most GIST are sporadic, but they may occur as part of hereditary familial or idiopathic syndromes, including neurofibromatosis type 1, Carney's triad and the Carney-Stratakis syndrome.

**Conclusion of the presentation:** This study aims at to develop a pictorial essay showing several aspects considered common in GIST representations with selected cases from review of 120 CT scans of 20 patients with pathologically proven diagnosis.

### PD.01.088

#### MULTIFOCAL HEPATIC STEATOSIS SIMULATING METASTATIC LESIONS

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**Brief description of the purpose of the report:** Review the literature and report a new and rare case of multifocal hepatic steatosis simulates metastatic lesions with MRI did not characterize intracellular fat.

**Medical History:** In this case the patient, 34, presents breast carcinoma and on image exams suggestive of metastatic lesions.

**Diagnosis:** Only with biopsy the diagnosis of hepatic steatosis was confirmed

**Discussion and summary of the case:** Multifocal hepatic steatosis simulates metastatic lesions on ultrasound (US) and computed tomography (CT), but Magnetic Resonance Imaging (MRI) can characterize intracellular fat in the IN and OUT PHASE sequences. In this case the patient, 34, presents breast carcinoma and on image exams for staging the US and RM features liver micronodules without correlation in CT findings, suggestive of metastatic lesions. Therefore MRI did not allow the diagnosis of multifocal hepatic steatosis, probably due to sub-centimeters lesions dimensions. Only with biopsy the diagnosis was confirmed

### PD.01.089

#### SECONDARY HEMOPERITONEUM AFTER USE OF COCAINE - CASE REPORT AND LITERATURE REVIEW

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**Brief description of the purpose of the report:** A case of hemoperitoneum in a male patient of 18 years old, with box diffuse abdominal pain, intense and sudden onset after cocaine use.

**Medical History:** Patient of 18 years old, with box diffuse abdominal pain, intense and sudden onset after cocaine use.

**Diagnosis:** Abdominal ultrasonography featured free fluid in the abdominal cavity in large quantities and computed tomography revealed that the free fluid was spontaneously hyperattenuating, compatible with blood. Diagnostic laparoscopy confirmed that the framework spontaneous hemoperitoneum without solid organ injury was performed.

**Discussion and summary of the case:** Cocaine use is currently one public health problem due to the increasing number of users. With this related to the incidence of complications of cocaine use becomes increasingly present in medical routine. It is estimated that between 1 % and 6 % of the European population has used cocaine at least once. Its use can cause cardiovascular, neurological and gastrointestinal complications . Among the complications, gastrointestinal are less frequent. The massive hemoperitoneum is a rare and potentially fatal gastrointestinal complication and should be considered among the differential diagnosis of acute abdominal pain after using cocaine.

### PD.01.090

#### NODULAR PULMONARY AND HEPATOSPLENIC SARCOIDOSIS: A NEW PSEUDOMETASTATIC PATTERN OF DISEASE PRESENTATION?

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**Brief description of the purpose of the report:** To describe and discuss two similar cases of sarcoidosis with multiple pulmonary and hepatosplenic nodules, mimicking metastatic disease.

**Medical History:** Both patients were female and middle-aged, the first case was asymptomatic, so diagnostic evaluation was initiated after incidental finding of hepatosplenic nodules on a abdominal ultrasound. The second patient presented with a 1-month history of mild left hypochondrial pain, for this reason a ultrasound was made, which revealed the same findings of the first patient. On physical examination, both patients had splenomegaly.

**Diagnosis:** Chest and abdominal computed tomography revealed multiple hypovascular hepatosplenic nodules and also bilateral pulmonary nodules. Besides, CT scan also showed enlarged mediastinal/hilar lymph nodes. The final diagnosis of sarcoidosis was then made by percutaneous image-guided splenic biopsy.



**Discussion and summary of the case:** Sarcoidosis is a chronic granulomatous multisystem disease of unknown aetiology. It most commonly affects the lungs and mediastinal lymph nodes. However, only 5 percent of pulmonary sarcoidosis manifests as nodules. In turn, the nodular hepatosplenic involvement is even rarer. To the best of our knowledge these are the first reports in the literature of association between nodular pulmonary sarcoidosis and nodular hepatosplenic sarcoidosis. Sarcoidosis should be included in the differential diagnosis of patients with multiple nodules throughout the lung, liver and spleen.

#### PD.01.094

##### GROOVE PANCREATITIS: CASE REPORT AND LITERATURE REVIEW

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**Brief description of the purpose of the report:** Groove pancreatitis is an uncommon form of focal pancreatitis characterized by involvement of the groove located between the cephalic portion of the pancreas and duodenum. Segmental involvement makes it difficult to differentiate from pancreatic cancer, sometimes requiring surgical excision for diagnosis.

**Medical History:** NAPP, 53 years old, from Sao Paulo, Brazil, complaining of diffuse abdominal pain of recent onset, radiating to the right iliac fossa, and fever. Physical examination shows feverish and tachycardia. Laboratory tests showed hypertriglyceridemia. CT scan performed at admission showed slight increases in the pancreatic head and blurring of fat adjacent to it and contiguous duodenal portion. MRI showed, besides CT findings, obliteration of pancreatoduodenal groove and mild thickening of the third portion of the duodenum, making it impossible to exclude the possibility of pancreatic cancer associated. The patient was discharged after 4 days, asymptomatic, with better laboratorial parameters.

**Diagnosis:** Groove Pancreatitis

**Discussion and summary of the case:** Rarely reported in the literature, its low incidence can be explained by medical knowledge. A greater attention to its occurrence is required, since a greater familiarity with the subject can avoid unnecessary procedures.

#### PD.01.096

##### PICTORIAL ESSAY : KEY INJURIES PANCREATIC CYSTIC .

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**Introduction:** The increasingly universal access to methods of diagnostic imaging has allowed the diagnosis of pathologies in oligo or asymptomatic patients. Many of cystic pancreatic pathologies include this feature. Incidentally found in CT scans and magnetic resonance imaging in asymptomatic or referred for photos for several reasons patients will present some of these pathologies.

**Methods Involved:** Computed tomography and Magnetic ressonância

**Discussion:** This paper will illustrate the six main pancreatic cystic lesions: mucinous cystadenomas and serous classic, pancreatic pseudocyst and the rarest forms as serous cystadenoma oligocística variant, Frantz's tumor (solid-cystic) and the cystic form of neuroendocrine tumor, all diagnosed in the hospital authors, discussing briefly the most typical characteristics of each, and help in the differential diagnosis between these pathologies.

**Conclusion of the presentation:** Because of diagnostic implications in each of these diseases, the knowledge of all diagnostic possibilities are key to proper preparation of the radiological report.

#### PD.01.097

##### NUTCRACKER SYNDROME: CT FINDINGS THAT SUPPORT THE DIAGNOSIS.

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**Introduction:** The nutcracker syndrome (NCS) is characterized as compression of the left renal vein by the aorta and superior mesenteric artery, usually tied to one, however, non-specific symptoms characteristic of the syndrome. Besides the pressure of the left renal vein, we highlight the following signs as the most common symptoms: hematuria, pain in the left flank, left varicocele, pelvic congestion, orthostatic proteinuria, chronic fatigue.

**Methods Involved:** The diagnosis of NCS is still difficult to perform, since these symptoms are relatively common in other clinical situations, particularly with nephrolithiasis. However, several imaging studies can aid in the diagnosis and may show the characteristic compression syndrome, but the diagnosis is made only in the presence of hematuria and hypertension associated with left renal vein. In the absence of this association, it is the phenomenon of nutcracker.

**Discussion:** Among the tests, one of the most important is computed angiography.

**Conclusion of the presentation:** The aim of this pictorial essay is to demonstrate the main features of tomographic images of the nutcracker syndrome, vital for its diagnosis. For this we conducted a comprehensive literature review.

#### PD.01.098

##### ANGULATION IN THE PLANE T2 WEIGHTED IN MRI EXAMS FOR EVOLUTION OF RECTAL CÂNCER: DIAGNODIS INTERFERING IN?

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**Introduction:** Magnetic resonance imaging (MRI) is useful in the staging of adenocarcinoma of the rectum. According to the initial stage, the patient may have to undergo surgery or should be referred to neoadjuvant treatment. For proper staging of the lesion is necessary to conduct examination in directed protocol using transverse T2 weighted sequences at high resolution, which must be precisely targeted, or there is risk of incorrect assessment of the relationship of the injury to the rectal wall. The aim of this study is to illustrate the proper orientation of the transverse T2 weighted sequence of the

rectum and as the incorrectness of overestimation orientation can lead to injury

**Methods Involved:** Pictorial retrospective study using MRI

**Discussion:** The correct programming transverse T2 weighted image is perpendicular to the cranio-caudal axis of the rectum at the level of the tumor. Through this sequence, it is possible to evaluate prognostic criteria of rectal tumor, depth of invasion as the mesorectal fat and distance to mesorectal fascia. This review is only possible with the acquisition of appropriate images

**Conclusion of the presentation:** The correct angulation of the transverse T2 lesion in the rectum programming is important because from a proper study, you can determine the best approach for patients with rectal cancer

### TL.01.010

#### DEFECOGRAPHY BY DIGITAL RADIOLOGY: EXPERIENCE IN CLINICAL PRACTICE

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**Brief description of the purpose of the study:** Introduction: To describe the population who has underwent to defecography and its main diagnoses, as well as to evaluate a subgroup of higher complexity quantitatively.

**Methods:** Study conducted from January of 2012 to November of 2013. Patients were divided by quantitative analysis, into groups A (higher complexity) and B (lower complexity). Continuous variables are expressed as average  $\pm$  standard deviation. The statistical difference between the two groups was evaluated by applying the t-test, and the significance of P was  $<0,05$ .

**Main results:** Female was the most prevalent gender ( $n=29/31$ ). The youngest patient was 33 years old, and oldest was 82 years old (average age of  $52\pm13$ ). The most prevalent diagnoses was anterior rectocele (87%) followed by enterocele (38%). The least frequent were vaginal prolapse (3%) and uterine prolapse (3%). The quantitative assessment showed a significant difference at rest ( $p<0,01$ ) between perineal descent in group A ( $2,9\pm1,1$ cm) and in group B ( $5,1\pm1,8$  cm). Anal canal opening was  $0,8\pm0,2$ cm in group A and  $0,5\pm0,2$ cm in group B ( $p<0,01$ ).

**Importance of the conclusions:** Defecography can not only evaluate the most complex changes of the pelvic floor, as it also enables to distinguish individuals with multiple compartments disorders from the ones with slight disturbances aiding to the clinical management.

### TL.01.012

#### ENTEROGRAPHY AND DEFECOGRAPHY BY MAGNETIC RESONANCE IN OPEN FIELD APPARATUS: EXPERIENCE IN CLINICAL PRACTICE.

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**Brief description of the purpose of the study:** Objective: To evaluate the diagnostic ability of MRI enterography and defecography done in the open MRI unit and correlate the clinical information with the imaging findings.

**Methods:** Materials and methods: A retrospective analysis including all MRI enterographies and defecographies performed in an open MRI unit between June and December of 2013. The ANOVA test was applied to analyze correlation between the imaging findings and the clinical information. The level of significance was  $p < 0.05$ .

**Main results:** Results: Women were prevalent (80%) aged 36-67 years ( $52,53 \pm 9.4$ ). The most common indication was constipation (33.3%), followed by blocked defecation, anorectal discomfort and Crohn's disease (13.3%). Rectocele was the most common diagnosis (40%), followed by increased perineal descent (33.3%) and cystocele (26.6%). Prolapse of multiple compartments and rectal was identified in 3% of cases. In all cases the clinical information had excellent correlation with imaging findings ( $p < 0.001$ ).

**Importance of the conclusions:** Conclusion: The diagnostic ability of MR enterography and defecography in open field unit was excellent, with high correlation between clinical information and imaging findings.

## 2 - GENITOURINARY

### PD.02.001

#### COWPER'S SYRINGOCELE: CASE REPORT

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**Brief description of the purpose of the report:** Cowper's syringocele is a rare but an under-diagnosed cystic dilation of the Cowper's ducts and is increasingly being recognized in the adult population. Recent literature suggests that syringoceles be classified based on the configuration of the duct's orifice to the urethra, either open or closed, as this also allows the clinical presentations of 2 syringoceles to be divided. Usually post-void dribbling, hematuria, or urethral discharge indicate open syringocele, while obstructive symptoms are associated with closed syringoceles. Perineal pain occurs in two types. The asymptomatic form may also occur frequently.

**Medical History:** In this case, AAG, 40, asymptomatic, abdominal and pelvic magnetic resonance imaging was performed for evaluation of hepatic and renal cysts.

**Diagnosis:** Cystic lesions were observed close to the bulbar urethra in pelvic MR.

**Discussion and summary of the case:** Ultrasonography coupled with retro and ante grade urethrography usually suffices to diagnose syringocele, but supplementary procedures - such as cystourethroscopy, computed tomography scan, and magnetic resonance imaging - can prove useful. Conservative observation is first recommended.

### PD.02.002

#### RELATIONSHIP BETWEEN LEVELS OF TOTAL PROSTATE SPECIFIC ANTIGEN AND PROSTATE VOLUME IN THE AGE OF 40 TO 90 YEARS

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**Brief description of the purpose of the study:** The aim of this study was to evaluate the levels of total prostate specific antigen (tPSA) and prostate volume obtained by endorectal ultrasonography in healthy individuals at age 40-90 years.

**Methods:** It is observational, prospective, cross-sectional study in 150 healthy men who underwent endorectal ultrasonography in the period of 2007-2012. The sample groups were divided by age groups 40-50, 51-60, 61-70, 71-80 and 81-90 years. The dosage of tPSA was performed before any manipulation of the prostate. Sonographic examinations were performed by a single observer, using a device with a convex transducer endocavity. We used the Kruskal-Wallis test to identify whether there were differences in the values of prostate volume between the age groups, the Dunn post-test to identify which age groups differed and p Spearman's coefficient to assess the correlation between the values of the tPSA and prostate volume.

**Main results:** There was a positive correlation in the age groups 50-60 ( $p=0.0042$ ), 61-70 ( $p<0.001$ ) and 71-80 years ( $p<0.0040$ ).

**Importance of the conclusions:** Our data are important because they describe the relationship between the tPSA and prostate volume, indispensable in the screening of prostate cancer.

#### PD.02.004

##### PROSTATE VOLUME IN HEALTHY SUBJECTS OF 40 TO 90 YEARS BY ENDORECTAL ULTRASONOGRAPHY COSTA AG, GADELHA PS, MELO FILHO FA, REBÊLO RAB, SILVA LB

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**Brief description of the purpose of the study:** The aim of this study was to evaluate prostate volume by endorectal ultrasonography in healthy individuals at age 40-90 years.

**Methods:** It is observational, prospective, cross-sectional study in 150 healthy men who underwent endorectal ultrasonography during the period of 2007-2012. The sample groups were divided by age groups 40-50 years (15.33%), 51-60 years (27.33%), 61-70 years (30.00%), 71-80 years (20.67%) and 81-90 years (6.67%). The examinations were performed by a single observer using an ultrasound device with a convex transducer endocavity. We used the Kruskal-Wallis test to identify whether there were differences in prostate volume between the age groups. The Dunn's post-test was used to identify which age groups differ.

**Main results:** We observed that the prostate volume increased in the age groups 61-70 years and 71-80 years ( $p<0.001$ ).

**Importance of the conclusions:** Our data are important for the comparison of prostate volume between healthy subjects and those with prostate disease.

#### PD.02.006

##### MALIGNANT ANGIOMYOLIPOMA

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**Brief description of the purpose of the report:** Angiomyo-

lipomas (AMLs) are the most common benign mesenchymal renal neoplasm. Composed of adipose tissue, smooth muscle, and thick-walled blood vessels derived from perivascular epithelioid cells. It is a rare variant, not frequently described as malignant disease.

**Medical History:** We report a rare case of a 37-year-old woman with a malignant angiomyolipoma in the lungs. The patient visited our hospital for right flank pain and macroscopic hematuria. No pathological history, such as tuberous sclerosis or genetic disorders, were found. Computed Tomography (CT) of the chest, found two unspecific nodules in left lung. However, the CT scan of the abdomen identified a 6,6 x 7,9 x 10,5 cm lesion solid / cystic, with focus of calcification inside and heterogeneous enhancement after contrast in the topography of the right kidney.

**Diagnosis:** Under the impression of AML, a right nephrectomy was performed and a pathological report proved the diagnosis.

**Discussion and summary of the case:** After 12 months uneventfully, the patient developed pain in the right hemithorax, weight loss and productive cough. A new imaging scan found on chest CT multiple nodules bilateral lung fields. Conducted a CT-guided percutaneous biopsy, the pathology showed malignant epithelioid AML.

#### PD.02.008

##### BILATERAL RENAL ONCOCYTOMAS

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**Brief description of the purpose of the report:** Oncocytomas are benign adenomatous tumors composed by oncocytes, that affect many organs, including kidneys. They represent most common benign solid renal tumors and arise from the collecting ducts cells. In kidneys, they are usually unilateral and solitary lesions, but may be bilateral in 4-14%, multifocal in 2-12% and multifocal and bilateral in 1.4% of the cases. In this report we describe a case of bilateral renal oncocytomas.

**Medical History:** M.B.P, female, 65 years old, presented with an incidental renal mass on left kidney during ultrasound examination (January/2010). Partial nephrectomy was performed; the histological analysis revealed an oncocytoma. Follow-up computed tomography (October/2011) revealed new lesion in right kidney. Patient underwent ultrasound-guided biopsy of lesion in our institution (November/2013), revealing new oncocytoma.

**Diagnosis:** Bilateral renal oncocytomas

**Discussion and summary of the case:** Oncocytomas are the most common benign solid renal tumors. They typically occur in the seventh decade of life and have a male predilection (1,6:1). Imaging techniques have low specificity in the diagnosis of solid renal masses, leaving surgical resection and histological examination as the main diagnostic tools. However, specifically in our case, image-guided renal biopsy revealed itself as a useful alternative for diagnosis, being less invasive, less costly and able to aid in the preservation of renal parenchyma.

#### PD.02.009

##### CAVERNOUS HEMANGIOMA OF THE ADRENAL GLAND.

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**Brief description of the purpose of the report:** Cavernous hemangioma is a rare benign tumor of the adrenal gland. The cavernous type is uncommon, with few cases described, and the most of these tumors occurring in children.

**Medical History:** In this report, we propose to present the case of a 53 years old female, with a right adrenal tumor gland measured about 5.8 cm in diameter, with heterogeneous signal intensity, predominantly isointense with some foci intermingled, hyperintense on T2-weighted sequences and hypointense on T1. Based on imaging tests, the patient underwent right adrenalectomy subcostal open.

**Diagnosis:** The combined histopathology and immunohistochemistry studies confirmed the diagnosis of Cavernous Hemangioma of the right adrenal gland.

**Discussion and summary of the case:** Although these tumors are benign, the imaging results showed tumor of neoplastic origin, including on differential diagnosis list: lymphoma, pheochromocytoma and secondary damage.

#### PD.02.010

##### RED DEGENERATION OF LEIOMYOMA: AN EXCEPTIONAL CAUSE OF UTERINE RUPTURE IN PREGNANCY.

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**Brief description of the purpose of the report:** We report a case of even exceptional, related to uterine rupture associated with red degeneration of fibroid in the pregnant uterus.

**Medical History:** A woman aged 37 was admitted to the emergency with chronic periumbilical pain, history of "miscarriage" 6 months ago and menstrual irregularity. She had never done pre-natal follow-up and even looked for medical assistance after abortion.

**Diagnosis:** The ultrasound showed fetus with gestational age estimated at 20 weeks and 5 days in the abdominal cavity without vitality, the study was documented with radiography and abdominal computed tomography. Laparotomy revealed a ruptured uterus caused by the degeneration of intramural leiomyoma, whereby the fetus was extruded into the abdominal cavity.

**Discussion and summary of the case:** About 10% of uterine leiomyomas can present complications during pregnancy, most commonly spontaneous abortion, preterm labor, preterm premature rupture of the membranes, placental abruption, abnormal presentations and higher cesarean delivery rates. Red, fleshy or necrobiosis degeneration is the most common type of degeneration occurs during pregnancy and the growth of leiomyoma, its vascular insufficiency and hemorrhagic infarction. Spontaneous uterine rupture in the second trimester of pregnancy is a very rare event, the risk factors are uterine surgeries and prior cesarean, placenta percreta and more remotely fibroid degeneration.

#### PD.02.012

##### NEPHROMETRY: A NEW METHOD FOR CLASSIFYING RENAL LESIONS.

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**Introduction:** Nephrometry is a score system imaging (computed tomography (CT) or magnetic resonance imaging (MRI)) used for classify the complexity of renal tumors and is increasingly being used for prediction and treatment planning (surgeon or ablative techniques).

**Methods Involved:** - Multislice CT of the abdomen with intravenous contrast and multiplanar reformatting. - MRI of the abdomen with intravenous contrast.

**Discussion:** Given the progressive improvement in the detection of early renal tumors thanks to technological advances and with the aim of providing treatment that minimizes the amount of renal parenchyma, nephrometry has been able to help in such cases, stratifying lesions objectively and helping select the best therapeutic alternatives (partial nephrectomy, nodulectomy or ablation techniques).

**Conclusion of the presentation:** The Nephrometry Scoring System is an easy and practical method, with applications in the classification and stratification of renal tumors, facilitating the surgeon's procedures and helping with any complications that may arise.

#### PD.02.013

##### MAJOR ANATOMIC LANDMARKS FOR URETEROLITHIASIS DIAGNOSIS IN TOMOGRAPHIC STUDY.

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**Introduction:** Ureterolithiasis has high prevalence and recurrence rates, and is one of the most common urinary tract disorders. The greatest difficulty is to differentiate ureteral calculus and phlebolith, especially in the pelvic area.

**Methods Involved:** The test chosen for the diagnosis of obstructive uropathy due to calculus is the Computed Tomography scan (CT) without contrast. Direct visualization of the calculus inside the ureter is the most common sign. This study analyses calcifications through CT and, according to anatomic landmarks, it is possible to indicate the correct topography of the calcium focus.

**Discussion:** It is most commonly found in the ureterovesical junction or above it, in the pelvic part of ureter. The ureteropelvic junction is around 29.7mm above the pubic symphysis, and 10.5mm below the acetabular roof, which helps distinguishing between distal ureteral calculus and other pelvic calcifications. Calcifications that are 3cm below the acetabular roof and less than 1.5cm above the upper border of pubic symphysis probably have no signs of ureteral calculi.

**Conclusion of the presentation:** CT scan without contrast plays a major role in ureterolithiasis research and its differential diagnosis, in order to provide the proper treatment.

#### PD.02.014

##### R.E.N.A.L. NEPHROMETRY SCORE GUIDING PRE OPERATIVE DECISIONS

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**Introduction:** Preoperative evaluation of renal neoplasms today is based on qualitative and subjective description which often complicates the surgical decision. To help in this decision, a numerical score (R.E.N.A.L. Nephrometry Score) based on anatomical features was created for standardize the description of renal lesions and guide treatment

**Methods Involved:** The aim of our study is to describe the R.E.N.A.L. score of nephrometry, and highlight its importance to standardization to surgical decision in renal masses, based on findings of computed tomography and magnetic resonance.

**Discussion:** RENAL score is based on five reproducible anatomical features in solid renal masses. Of the five components 4 are classified on a scale from 1, 2 or 3 points with the fifth indicating the anterior or posterior location of the mass. Together, the score will predict the degree of complexity of the surgical procedure, helping in the process of therapeutic decision.

**Conclusion of the presentation:** Specific characteristics of renal lesions as tumor size, location and depth are essential for decision making in the face of uncertainty and effective comparisons. The R.E.N.A.L. score is a standardized system that provides a significant tool for clinical practice and urology.

## PD.02.016

### PRIMITIVE NEUROECTODERMAL TUMOR OCCURRING IN THE KIDNEY: CASE REPORT

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**Brief description of the purpose of the report:** The primitive neuroectodermal tumor (PNET) peripheral is rare (1% of all sarcomas), being more frequent in the soft tissues of the chest wall, head and neck, paraspinal, intraabdominal, intrapelvic and extremities. Few reports have been described originating primarily in the kidney. So, the objective is to demonstrate the imaging findings of this entity that although rare, may be included in the differential diagnosis of expansive lesions within the kidney.

**Medical History:** Male patient, 35 years old, with weight loss of 20 Kilograms in 45 days, hematuria, back pain, daily evening fever and bad general condition in the period. On examination: regular general health, pallid (+/+ 4), flabby, globose abdomen with a palpable abdominal lesion in the left flank. Preserved peripheral perfusion. Ultrasonography and computed tomography of the abdomen with findings of malignant lesion in the left kidney. Given the findings, performed left radical nephrectomy with histopathological and immunohistochemistry with diagnosis of PNET.

**Diagnosis:** Primitive neuroectodermal tumor (PNET) occurring in the kidney

**Discussion and summary of the case:** PNET occurring in the kidney has a predilection for young male adults, with typical symptoms of pain and hematuria. It presents typically voluminous and widely obliterating the native renal parenchyma, with high malignant potential. Immunohistochemistry is essential in diagnosis.

## PD.02.017

### DIFFERENTIAL DIAGNOSIS FOR T2-HYPOINTENSE OVARIAN MASSES

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**Brief description of the purpose of the Review of Literature:** Magnetic resonance imaging is an excellent method for diagnosis of ovarian masses allowing the evaluation of their morphology, location, size, composition and relationship with adjacent structures. T2-weighted sequences are an integral part on this evaluation and the majority of lesions contain cystic components, which demonstrate high signal intensity on T2-weight images. The lesions with hypointense signal on T2 are less common, but a correct interpretation enables a specific diagnosis. This study aims to discuss the differential diagnosis of ovarian masses with low signal intensity on T2.

**Description (s) condition (s), method (s) or technique (s):** The ovarian lesions with low signal intensity on T2 are generally classified according to predominant component or according to degree of signal loss and include on the differential diagnosis endometrioma, hemorrhagic cyst, fibroma, fibrotecoma, cistoadenofibroma, Brenner tumor, Struma ovarii, Krukenberg tumor, malignant transformation of endometrioma and mucinous cystic neoplasms.

**Conclusion:** Magnetic resonance evaluation allows accurate diagnosis of most ovarian masses with low signal intensity on T2 also aiding in the differentiation between benign and malignant lesions and resulting on appropriate patient management.

## PD.02.023

### PREOPERATIVE EVALUATION OF RENAL TUMORS: MORPHOMETRIC AND FUNCTIONAL CRITERIA

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**Introduction:** The average size of renal masses on radiologic imaging findings have reduced, with the majority of these incidental tumors have less than 4 cm. In these cases there is a therapeutic challenge because these lesions are benign in 25% of times. This study describes morphometric and functional findings of renal focal lesions, aiming to assist in the diagnosis and treatment decisions.

**Methods Involved:** The main morphometric methods (R.E.N.A.L score), vascular and functional (diffusion, dynamic contrast enhancement, arterial spin labeling, bold) for the diagnosis of renal lesions, illustrating them with cases from our teaching file will be described.

**Discussion:** The morphometric and functional integrated assessment of renal tumors is increasingly useful in oncological management. Location, maximum tumor diameter, identification of endophytic or exophytic component and surrounding collector morphometric system are analyzed in this paper. Analysis of nurturing and adjacent vascular structures of the lesion by Angio-CT or Angio-MRI will be evaluated, as well as studies of diffusion, dynamic contrast enhancement, arterial spin labeling and bold tumors, allowing adequate surgical schedule for each type tumor.

**Conclusion of the presentation:** Magnetic resonance imaging using functional techniques have the potential to make a complete and comprehensive analysis of renal focal lesions, aiding the therapeutic decision.

## PD.02.024

### MALE CYSTOURETHROGRAPHY: OPTIMIZATION OF THE TECHNIQUE USING "CUFF" CATHETER (HS CATHETER).

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**Brief description of the purpose of the study:** Introduction: A retrograde and voiding cystourethrography is considered the gold standard test for the morphological study of the male urethra, being a simple exam, low cost and easy to work. Initially, retrograde introduction is accomplished with the non-ionic water soluble contrast for the purpose to evaluate the penis and bulbar urethra (anterior urethra), and after bladder filling, to evaluate the urethra through the voiding phase. Objectives: Report the examination technique in current use in this service, with clinical- radiographic illustrative, and revise their strengths and weaknesses with the help of specific current literature.

**Methods:** Method: Were selected examinations conducted in 2013, considered a successful technique, for illustration. Articles for literature review were taken from Medscape and Medline search system for comparisons of current scientific knowledge with the practice employed.

**Main results:** Results: This technique allows the use of disposable materials and easy to obtain, also good initial acceptance and quickly, without prejudice to the radiographic quality and with less discomfort for the patient.

**Importance of the conclusions:** Conclusion: The proposed technique is demonstrated as an effective alternative for performing retrograde and voiding cystourethrography on adult male patients, with better technique and advantageous cost-effective quality.

## PD.02.025

### RENAL CELL CARCINOMA WITH CLEAR CELL AND PAPILLARY FEATURES

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**Brief description of the purpose of the report:** Know a rare renal neoplasm and studied recently, since their precise diagnosis has both prognostic and therapeutic implications.

**Medical History:** VJF 33 year old female came to the emergency room complaining of back pain on the right with duration of 2 months, with no other urinary symptoms. Computed tomography of the abdomen without contrast showed nodule hypoattenuating, in exophytic and mildly heterogeneous situation in the right kidney. Requested magnetic resonance, showing nodule with hypointense signal on T1 and T2, and restriction of water molecules in the diffusion and contrast enhancement. Performed partial nephrectomy being diagnosed by histopathology.

**Diagnosis:** Renal tumor coalition (renal cell carcinoma with clear cell and papillary features).

**Discussion and summary of the case:** Clear cell papillary renal cell carcinoma is a recently characterized, distinctive renal neoplasm. These tumors tend to be singular and small

(<5 cm), but multifocality can be present, especially in the context of end-stage renal disease. The imaging characteristics are varied, with the tumor diagnosed by histopathologic. Limited outcome data are available because of its only very recent description in the literature, but the cases published to date suggest that it is an indolent and without evidence of tumor recurrence.

## PD.02.027

### COMPARISON BETWEEN THE ANATOMICAL SYSTEMS USED FOR ASSESSMENT OF RESECTABILITY OF RENAL MASSES: C -INDEX , PADUA AND R.E.N.A.L. SCORES.

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**Brief description of the purpose of the Review of Literature:** - To describe the anatomical systems used along with cross-sectional imaging methods (Computed Tomography and Magnetic Resonance Imaging) for the evaluation of resectability of the renal masses, PADUA , C-INDEX and R.E.N.A.L Score. - To describe and illustrate how renal masses should be measured and evaluated according to each system. - To discuss the advantages and limitations of each system based on validation studies already performed. - To discuss the importance of the use of anatomical systems for surgical planning of renal lesions.

**Description (s) condition (s), method (s) or technique (s):** Renal neoplasms has shown a rising incidence in recent decades. Meanwhile, surgical approach for these lesions also evolved to more conservative techniques, whenever the extent and location of the lesion allow. To reduce the subjectivity in assessing the resectability of the renal lesions and allow studies with more reliable comparisons, in the past few years three anatomical systems for describing renal masses were created based on imaging studies.

**Conclusion:** Knowledge of the key parameters for the definition of resectability or not of a renal mass is a important task for abdominal radiologists. The accurate description of the location and extent of renal masses, based on proposed anatomical systems, improves therapeutical surgical planning.

## PD.02.029

### COMPARISON OF MULTIPARAMETRIC MRI FINDINGS OF SUSPICIOUS PROSTATE LESIONS WITH THE HISTOLOGICAL STUDY OF BIOPSIES PERFORMED AFTER MRI

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**Introduction:** INTRODUCTION Prostate cancer (PCa) is the most common kind of cancer among men. Due to its variable aggressiveness, the challenge is to differentiate the patients who should be treated of those who could only be followed. The prostate multiparametric MRI (MPMRI) helps to identify clinically these relevant tumors.

**Methods Involved:** METHODS INVOLVED We reviewed the MPMRI parameters used for diagnosis and characterization of PCa and demonstrated the relevant aspects of image

with case examples of our institution, comparing with the results of histological study of transrectal ultrasound-guided prostate biopsies performed after the interpretation of MPMRI.

**Discussion:** DISCUSSION The importance of MPMRI is already established in the diagnosis, characterization, risk stratification and staging of PCa. Due to its current use also in target selection for prostate biopsy, especially in those patients with previous negative biopsies with high PSA levels and those in active surveillance, the radiologist must recognize the aspects of images and interpret the MPMRI.

**Conclusion of the presentation:** CONCLUSION Given the increasingly importance of MPMRI in the diagnosis of PCa, it is necessary the continuous training of radiologists in order to properly interpret the MPMRI.

### PD.02.030

#### RADIOLOGY REPORT IN URORADIOLOGY - CLINICIANS PREFERENCES AND ASSESSMENT OF REPORT MESSAGE

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**Brief description of the purpose of the report:** Our objective is to assess the radiology report quality to convey imaging findings, report style and clarity., with emphasis in the elaboration of reports that enhance comprehension of clinicians.

**Medical History:** Multiple-choice questionnaires were interactively administered in real time in multidisciplinary meetings in two tertiary referral hospitals by the urologists, uro-oncologists and radiotherapists. Questions assessed general quality of radiology report and specifically regarding clinicians interpretation of common radiological findings: focal renal lesion (nephrometry, histological prediction and complex cysts), urinary calculi, MRI of the prostate, incidental adrenal findings, uroCT investigation of hematuria, bladder lesions and foreign body.

**Diagnosis:** Clinicians preferred structured reports dedicated to each exam and pathology, emphasizing findings of clinical relevance and suggestion of further investigation. Vague reports, verbose and without emphasis were considered inadequate.

**Discussion and summary of the case:** Emphasized and structured reports of each organ and pathology were of preference of clinicians, specially in regards to findings of clinical-surgical relevancy.

### PD.02.031

#### PELVIC ENDOMETRIOSIS: MRI FINDINGS

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**Brief description of the purpose of the study:** INTRODUCTION Endometriosis is a common cause of pelvic pain and infertility, and corresponds to the presence of endometrial glands and stroma outside the endometrial cavity. It has an estimated frequency of 10-15% in women of reproductive age. Three distinct patterns of pelvic compromise are recognized: ovarian, peritoneal and deep infiltrating endometriosis. The disease can be noninvasively diagnosed by transvaginal pelvic sonography or magnetic resonance imaging (MRI), the latter with better accuracy.

**Methods:** METHODS MRI scans of 43 patients diagnosed with pelvic endometriosis were retrospectively reviewed for sites of involvement, prevalence per site, and age.

**Main results:** RESULTS Patient age varied between 17 and 57 years. Eight of them (18,6%) had only ovarian endometriomas; 10 (23,2%) presented with deep endometriosis; and 3 (6,9%) had only abdominal wall nodes. Deep endometriosis and endometriomas were observed in 20 patients (46,5%). Two patients (4,6%) had concomitant deep endometriosis and abdominal wall involvement.

**Importance of the conclusions:** CONCLUSION Endometriosis is a recognized cause of pelvic pain and infertility during menopause. It is important for radiologists to recognize the most common presentations of this disease, since an accurate diagnosis is useful in treatment planning.

### PD.02.034

#### THE IMPORTANCE OF HYSTEROSALPINGOGRAPHY IN CURRENT RADIOLOGY

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**Introduction:** Introduction: The hysterosalpingography (HSG) is an examination performed through the injection of contrast in the cervix, aiming to opacify the uterus and fallopian tubes, evaluating, therefore, the internal architecture of the female reproductive tract. Can therefore provide valuable information regarding tubal and uterine abnormalities in patients with primary or secondary infertility, recurrent miscarriages or monitoring of tubal surgery.

**Methods Involved:** Methods involved: Meeting of images illustrating the major diagnosis that the method can detect.

**Discussion:** Discussion: The HSG test has been widely used in our country to search for causes of infertility. It is a sensitive test to anatomical changes of the uterine cavity and fallopian tubes. Often, the findings of hysterosalpingography are specific and can be interpreted as a cause of infertility.

**Conclusion of the presentation:** Conclusion of the presentation: The HSG test has been widely used in our country to search for causes of infertility. It is a sensitive test to anatomical changes of the uterine cavity and fallopian tubes. Their low cost and their small risk of complications or iatrogenics make it even more appealing examination for initial assessment of complaints of infertility.

### PD.02.035

#### HERLYN-WERNER-WUNDERLICH SYNDROME COMPLICATED WITH RESIDUAL ABSCESS URETER

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**Brief description of the purpose of the report:** We report a case of Herlyn-Werner-Wunderlich syndrome whose pelvic pain symptoms proved secondary to abscess in residual ureter, such a complication without antecedents in the literature in these patients.

**Medical History:** A 23-years-old female with the syndrome, G1P1A0, and history of vaginoplasty in puberty because of hematocolpos, presented with significant worsening of ab-

dominal pain six months ago and then underwent to negative laparotomy for suspected acute abdomen. She kept painful and then new imaging studies were performed months later. Referred to Urology for surgical approach. Asymptomatic after the procedure.

**Diagnosis:** Pelvic magnetic resonance imaging depicted uterus didelphys and right renal agenesis, besides an elongated irregular structure with proteinaceous fluid filling signal, extending from the retrovesical region to mesogastrium, that could represent persistence of mesonephric duct in this clinical context. Surgery identified abscess in the residual ureter.

**Discussion and summary of the case:** Herlyn-Werner-Wunderlich syndrome, characterized by uterus didelphys, obstructed hemivagina and ipsilateral renal agenesis is a rare anomaly mostly diagnosed after pelvic pain due to hematocolpos. Complications secondary to uterovaginal anatomic derangement are described in the literature. One should also be aware of the possibility of changes in the urinary tract as the cause for pain in these patients, providing timely and decisive outcome.

## TL.02.002

### HYSTEROSALPINGOGRAPHY: INDICATING AND APPLICABILITY FACE OF OTHER IMAGING METHODS.

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**Brief description of the purpose of the study:** Hysterosalpingography is a radiological exam contrasted used in assessing uterine and fallopian tube. In general it is performed for the evaluation of infertility, although there are other indications, such as assessment of tubal ligation and miscarriages of repetition. In this study we review the routine used in carrying out this procedure.

**Methods:** The questionnaire was answered by 54 women. The examination was performed between the 7th and the 10th day of the menstrual cycle, according to the standard technique described in the literature.

**Main results:** The women's age ranged from 23 to 43 years. When questioned about the time that they are trying to get pregnant, 55% responded be more than 2 years. In relation to the indication of the examination, 67% cite primary infertility. To finalize the exams was noticed 83% patency total of Fallopian tubes. The proof of Cotte was positive in 71% of the examinations.

**Importance of the conclusions:** We've noticed that the various other exams available, despite the numerous specific pathologies, still does not allow the replacement of hysterosalpingography in the assessment of tubal patency. We observed that many times the examination is not indicated correctly, subjecting patients to an invasive examination and susceptible to complications.

## TL.02.005

### ASSOCIATION BETWEEN TRANSABDOMINAL PROSTATIC ULTRASOUND FINDINGS AND THE IPSS SCORE IN THE PROSTATIC CONTROL

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**Brief description of the purpose of the study:** PURPOSE. To analyze the association between the US findings and the IPSS Score (International Prostatic Symptom Score) in patients who undergo prostate examination (no screening).

**Methods:** METHOD AND MATERIALS. 159 patients referred for prostate control (no screening) were included, which were evaluated using a transabdominal US; all the patients received the IPPS questionnaire of the American Urological Association, which classify the urologic symptoms (obstructive and irritative) as mild, moderate and severe. The variables included in the analysis were as follows: age (continuous variable), prostate weight (categorical variable: > or < 25 gr), thickness of the bladder wall (categorical variable: > or < 4 mm) and post-voiding residue (categorical variable > or < 60 cc). The association between the different variables and the IPSS Score was calculated through the Spearman coefficient. In all of the cases a p value <0.05 was considered as statistically significant.

**Main results:** RESULTS. Patients' age ranged from 40 to 84 years old ( $60.4 \pm 10.3$ ) (mean  $\pm$ SD; median: 59). The prostate weight ranged from 7 to 323 grs ( $46.7 \pm 40.4$ ). The mean bladder wall thickness was  $3.9 \pm 1.0$  mm (from 1.6 to 8 mm). Of all the patients evaluated, 58% presented mild symptoms, 33% moderate, and only 9% had severe symptoms. There was no statistically significant association between the US weight variables ( $r = 0.046$ ;  $p = 0.284$ ), bladder wall thickness ( $r = 0.055$ ;  $p = 0.247$ ) and clinical symptoms expressed through the IPPS. The only variable that showed positive correlation with the IPSS Score was the post-voiding residue (Spearman correlation coefficient:  $r = 0.199$ ;  $p = 0.006$ ). The post-voiding residue was null in 57 of the 92 patients with mild symptoms (62%).

**Importance of the conclusions:** CONCLUSION. The trans-abdominal US is still the first line method for evaluating the prostate. Besides the research of the prostate weight, the presence of focal lesions and bladder wall thickness, it is essential to consider the pre and post-voiding bladder repletion in all cases, for the latter shows a direct association with the patients symptoms, apart from the prostate weight (the small prostates may cause urinary obstruction while the bigger prostates do not cause obstruction).

## TL.02.006

### VARIABILITY AND REPRODUCIBILITY OF RENAL CALCULI SIZE AND DENSITY MEASUREMENTS BETWEEN DIFFERENT RECONSTRUCTION THICKNESS AND WINDOWING

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**Brief description of the purpose of the study:** CT is the "gold standard" method for detection and characterization of urinary calculi. The stone measurement predicts spontaneous elimination and assists in treatment planning. The density measurement correlates with the difficulty of fragmentation in lithotripsy. Our goal is to analyze the variability and reproducibility of these measures in different reconstruction thicknesses and windowing.

**Methods:** Retrospective study, with size and density measurements of kidney stones on CT scans for urinary lithiasis performed by two evaluators. 150 calculi were analyzed, and



divided into three groups ( 1 -3mm , 4 -6mm and > 7mm ) , using bone ( level 800 , width 2000) and soft tissue ( level 60 , width 360 ) windowing and 1mm and 3mm cut thickness. Additionally density measurements of renal parenchyma and vertebral bodies were made to standardize the noise.

**Main results:** There was significant variability in the dimensions and densities measurements of the stones between different slice thicknesses, more significant on smaller calculi. The estimated average stone diameter and density were higher in images with 1mm cuts.

**Importance of the conclusions:** The analysis of urinary calculi in 1 mm thickness reconstructed images allows more reliable evaluation of the stone diameter and density with potential impact on treatment.

### **3 - HEAD & NECK**

#### **PA.03.020**

##### **LACRIMAL DUCT DIFFUSE LARGE B-CELL LYMPHOMA (DLBCL): LITERATURE REVIEW WITH A CASE REPORT.**

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**Brief description of the purpose of the report:** Report a rare neoplastic involvement of the lacrimal duct with histologic correlation.

**Medical History:** 65 years of age woman refers of “sudden swelling” in the lower eyelid 2 months ago, painless, intermittent output with tears and normal fundus eye examination.

**Diagnosis:** CT scan notes that the lacrimal sac is distended by hypoattenuating fluid content with solid projections that show contrast impregnation, extraconal fat blurring and expansive mass in the medial canthus, circumscribing the canthal tendon and promoting eyeball lateral displacement. Also demonstrates bone irregularity of the lacrimal sac walls and the ipsilateral nasolacrimal duct with bone continuity solutions that may be related to pressure atrophy or bone erosion associated with dilatation of the nasolacrimal duct by hypoattenuating content, with a focus showing contrast impregnation in the Hasner valve projection.

**Discussion and summary of the case:** The ocular lymphoma is responsible for 5-10% of all extranodal lymphomas. Malignant neoplasms of the lacrimal duct are rare, but potentially lethal, have been reported less than 250 primary tumors in the international literature. The most common clinical manifestations are tearing and medial swelling mimicking nasolacrimal duct obstruction, being the extent of swelling above the medial canthal ligament should raise the malignancy suspicion.

#### **PD.03.001**

##### **INFLAMMATORY MYOFIBROBLASTIC TUMOR OF THE PAROTID GLAND**

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**Brief description of the purpose of the report:** To describe

a case of inflammatory myofibroblastic tumor of the parotid gland in children.

**Medical History:** Male, 2 years old, with left pre-auricular mass, hard, painless and semi-fixed, with progressive growth in one year, and no history of fever or weight loss. Negative serology for toxoplasmosis, syphilis, HIV, HTLV, hepatitis, Chagas disease, CMV and rubella. Conducted two cycle of antibiotics with no response. CT showed heterogeneous formation of well-defined limits, measuring 4,4cm, located in the left parotid superficial lobe with predominantly peripheral enhance by contrast.

**Diagnosis:** First biopsy performed outside the institute, suggesting desmoid tumor. Second biopsy, with immunohistochemical study indicative of inflammatory myofibroblastic tumor.

**Discussion and summary of the case:** The IMT was initially described in thorax and abdomen. It is rare in Head and Neck region, with the orbit being the most frequent site. The parotid involvement is uncommon and has been described in adults. The imaging findings are not specific, and have several differential diagnosis including benign and malignant lesions, such as fibromatosis, fibrous histiocytoma and sarcomas, with positive F18 FDG PET. Immunohistochemistry is required for its characterization.

#### **PD.03.002**

##### **SOLITARY FIBROUS TUMOR OF THE ORBIT**

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**Brief description of the purpose of the report:** To report a case of solitary fibrous tumor of the orbit and discuss the imaging findings and review of the literature.

**Medical History:** 44-year old male, with proptosis, ocular itching, conjunctival and eyelid edema for about three months. Ocular motility was preserved. Ultrasonography, Computed Tomography and Magnetic Resonance imaging showed an extraconal well-defined mass in the upper-outer quadrant of the right orbit, with heterogeneous enhancement after contrast, displacing the muscles, optic nerve and eyeball inferiorly, without a cleavage plane with the lacrimal gland. A right orbitotomy for biopsy and tumor excision was performed.

**Diagnosis:** Histopathological and immunohistochemical analysis revealed a solitary fibrous tumor of the orbit (TFS).

**Discussion and summary of the case:** SFT is a rare mesenchymal neoplasm, mainly fibroblastic cellularity, originally described and more frequent in the chest. STF of the orbit is rare, with fewer than 100 cases reported in the literature so far. Generally described as a well-defined mass, with low aggressiveness and slow growth pathern. The imaging findings are not specific, but bone remodeling is suggestive of its benign behavior. Surgery is the treatment of choice.

#### **PD.03.003**

##### **SPECTRUM OF CERVICOFACIAL SUBCUTANEOUS EMPHYSEMA FOLLOWING A DENTAL TREATMENT: WHAT A RADIOLOGIST NEEDED TO KNOW TO IMPROVE DIAGNOSTIC AND MANEGEMENT**

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**Introduction:** Subcutaneous emphysema is an uncommon clinical complication of dental treatment caused by forceful injection of air into the connective tissue below the dermal layer. Recognition of some specific radiological patterns and the route of spread along contiguous fascial planes is helpful in establishing an early diagnosis and avoid potential complications.

**Methods Involved:** Structured systematic review of cases of cervicofacial emphysema occurring during dental treatment and correlation with epidemiological data, clinical findings, and imaging presentation performed in our Institution. We will illustrate different findings in head and neck and thoracic imaging exams, correlating with available clinical data.

**Discussion:** Subcutaneous emphysema is an uncommon clinical complication of isolated dental treatment caused by forceful injection of air into the connective tissue below the dermal layer. It may develop after injection of pressurized air during dental treatment. The air penetrates the soft tissue and may dissect the fascia and spread along the fascial planes to distant areas. Most cases of subcutaneous emphysema are of limited severity, resulting in minor, localized swelling, which requires nothing more than observation. More extensive cases may require admission for parenteral antibiotics.

**Conclusion of the presentation:** In the evaluation of cervicofacial emphysema an early diagnosis are crucial, preventing complications and avoiding iatrogenic procedures.

#### PD.03.004

##### **RADIOGRAPHIC IMAGING OF THE ACUTE CALCIFIC TENDONITIS OF THE LONGUS COLLI**

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**Brief description of the purpose of the report:** Under-diagnosed neck pain caused by an inflammatory reaction due to deposition of calcium hydroxyapatite in the longus colli tendon. Its importance is mainly noted for mimicking other, possible causes for pain in the cervical region, such as retropharyngeal abscesses, meningitis, traumatic injury and cervical myelopathy and to avoid unnecessary intervention.

**Medical History:** Patient complaining of cervicobrachialgia and numbness of approximately 2 week duration. Physical examination revealed moderate limitation of motion of the region. The initial hypothesis was disc herniation. An MRI was requested and the initial study revealed the presence of thickening of the retro-pharyngeal space. Initially, interpreted as a prevertebral collection, the findings regressed after a month with a treatment of analgesics. This is the normal expected pattern of evolution indicative of longus colli muscle tendinopathy.

**Diagnosis:** Acute calcific Tendinitis of the Longus Colli

**Discussion and summary of the case:** The findings of the lateral view of the cervical radiography are considered pathognomonic, and consist of soft tissue edema in the prevertebral region and amorphous calcification anterior to C1 - C2 level. MRI is superior in detecting soft tissue lesions. Its superiority is shown through the ability to demonstrate the edema of the longus colli muscle tendon and the adjacent muscles as well as changes in the retropharyngeal space.

#### PD.03.005

##### **FRACTURES AND PSEUDOFRACTURES OF THE TEMPORAL BONE IN COMPUTED TOMOGRAPHY.**

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**Introduction:** In this paper several topics related to the trauma of the temporal bone which are important for radiologist's practice are analyzed, with emphasis on fractures evaluation and their differentiation from pseudofractures.

**Methods Involved:** Literature review with demonstration, by tomographic images, of normal anatomical structures and their variations and injuries that can result from the temporal bone trauma.

**Discussion:** The temporal bone is considered one of the more complex ones of the human body and it includes the auditory and vestibular systems, besides being the passageway for other nerve and vascular structures, which makes it the site of clinically relevant lesions. Computed tomography is currently the initial exam of choice for searching and evaluating traumatic lesions of this bone. When performed with a proper technique, the high definition of bony parts allows a detailed examination, conferring to the method high sensitivity and specificity for this purpose. However, some of normal temporal bone components are often confused with fractures, deserving special attention.

**Conclusion of the presentation:** Knowledge of the trauma pathophysiology at this complex region and its anatomy, as well as identifying normal structures and anatomical variations, avoiding their interpretation as fractures, is needed.

#### PD.03.008

##### **HEAD AND NECK AMYLOIDOSIS: CT AND MR IMAGING FEATURES**

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**Introduction:** Introduction: Amyloidosis is a disease complex characterized by the deposition of insoluble and fibrous amyloid protein, mainly in the extracellular spaces of organs and tissues. Our aim is to show the characteristic imaging features of amyloidosis involving the head and neck with a brief review of the literature.

**Methods Involved:** Method: We evaluated patients with head and neck amyloidosis in our institution. The sites included were: orbits, larynx, and trachea.

**Discussion:** Discussion: Although amyloidosis is a rare disease, the head and neck region has been reported as a frequent site of amyloid deposits. The diagnosis of amyloidosis requires pathologic examination of amyloid deposits in tissue specimens. Imaging features are variable and can mimic slow-growing neoplasms. Amyloid deposits appear as relatively well-defined, homogeneous masses in CT scans. Therefore, the presence of calcification may improve the suspicion of the disease. Amyloid deposits are characteristically hypointense on T1 and T2-weighted MR sequences, with homogeneous post-Gd enhancement.

**Conclusion of the presentation:** Conclusion: The characteristic imaging features of head and neck amyloid deposits on CT and MR must be known, because they are important for the suspicion of amyloidosis.

### PD.03.009

#### FORAMINA, CANALS AND ANATOMICAL VARIANTS OF THE CENTRAL SKULL BASE: PICTORIAL ESSAY.

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**Introduction:** Introduction: The skull base anatomy is very complex. Our aim is to illustrate the most important foramina, canals, and anatomic variants of the central skull base in radiological practice.

**Methods Involved:** Methods: Present the most important foramina, canals, and anatomical variants of the central skull base of patients undergoing CT and MRI scans for other reasons, in our institution.

**Discussion:** Discussion: Neurovascular structures pass through multiple canals and foramina located in the central skull base, such as foramen ovale, rotundum, and spinosum, as well as vidian, optical, carotid, and palatovaginal canals. There are also anatomical variants like canalis basilaris medianus, fossa navicularis, persistent stapedia artery, foramen of Vesalius and canaliculus inominatus, among others. The knowledge of this anatomy is necessary in order to avoid misinterpretations with diseases.

**Conclusion of the presentation:** Conclusion: The radiologist should be able to recognize the most important structures of the central skull base, avoiding misinterpretations with diseases.

### PD.03.010

#### LYMPHOEPITHELIOMA : CASE REPORT AND RADIOLOGICAL FINDINGS RELATED

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**Brief description of the purpose of the report:** Nasopharyngeal carcinoma ( NC ) is responsible for 70 % of nasopharyngeal malignancies, with the lymphoepithelioma ( LE ) of the various types. Clinically nasal obstruction, epistaxis, rhinorrhea and otitis media. In this study the main tumor manifestations will be discussed through literature, images from CT and MRI regarding the case .

**Medical History:** Man, 18, is presented to the clinic with neck mass, epistaxis and weight loss. Physical examination showed bulging of the soft palate. Nasofibrosocopia featured mass in both nasal cavities, bleeding to manipulation.

**Diagnosis:** The sinus CT showed mass extending from the nasopharynx to the nasal cavity, with erosion of the medial lamina of pterygoid process and the posterior wall of the maxillary sinus. A complementary MRI and biopsy compatible with undifferentiated carcinoma type LE.

**Discussion and summary of the case:** NC is a tumor, epidermoid particularly common origin in China is closely related to Epstein-Barr virus, and the LE rare condition observed in 0.2 to 0.5 % of malignant tumors. Despite the initial stage CNF has a good prognosis, the treatment of advanced lesions have been disappointing. The differentiation of the various types of NC is determined by pathologic examination associated with the imaging findings.

### PD.03.013

#### RESSONÂNCIA MAGNÉTICA NAS PATOLOGIAS DA ARTICULAÇÃO TEMPOROMANDIBULAR (ATM) – ENSAIO PICTÓRICO

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**Introduction:** A ATM é uma articulação sinovial complexa que pode ser acometida por uma série de patologias tais como alterações degenerativas, inflamatórias e infecciosas, tumores, deslocamentos discais e traumas. A ressonância magnética (RM) possui um papel importante no diagnóstico diferencial de tais desordens.

**Methods Involved:** Revisar a anatomia e as principais patologias comuns e incomuns que acometem a ATM, ilustrando com casos clínicos e imagens de RM do nosso serviço. Iremos discutir os principais achados na RM assim como os diagnósticos diferenciais.

**Discussion:** A causa mais frequente de disfunção da ATM é o desarranjo interno definido por uma relação anormal do disco com o côndilo. Nos últimos anos, a RM tem sido o método de imagem de escolha para estudar a ATM. Outras patologias também podem mais raramente acometer a ATM, como tumores, condromatose sinovial, pseudogota, osteoartrites, traumas, sinovite vilonodular pigmentada, dentre outras.

**Conclusion of the presentation:** É importante para o radiologista detectar precocemente os sinais de disfunção da ATM e as suas principais patologias, evitando assim uma evolução dessas condições para estágios finais e irreversíveis.

### PD.03.014

#### POSTOPERATIVE ANALYSIS OF THE TEMPORAL BONE - WHAT RADIOLOGISTS NEED TO KNOW.

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**Introduction:** Anatomic structures of the temporal bone and middle ear are key references used to define operative technique as well as extension of resection during surgical procedures of the temporal bone.

**Methods Involved:** Literature review and description of possible approaches for surgical procedure of the temporal bone using: - schematic figures; - Computed Tomography (CT) images from clinical cases; - CT images obtained from cadaveric anatomic specimens demonstrating these procedures step-by-step. This technique will provide demonstration of all types of procedures that may be performed (simple mastoidectomy, canal-wall-up mastoidectomy - facial recess approach, canal-wall-down mastoidectomy, modified radical mastoidectomy, radical mastoidectomy, translabyrinthine approach and retrosigmoid approach.

**Discussion:** Using the tools mentioned above we will review the complex anatomy of the temporal bone focusing on anatomic changes due to surgical procedures in combination to preexisting disease and demonstrate clinical situations that may lead to surgical procedure of the temporal bone, highlighting the various approaches used exemplifying the application of each one of them based on the nature and extension of the baseline disease.

**Conclusion of the presentation:** It is important for the radiologist to acknowledge the anatomical references of the

temporal bone and the variety of procedures that may be performed, leading to a proper preoperative planning and correct postoperative imaging interpretation.

### PD.03.015

#### SARCOMAS OF HEAD AND NECK: WHO ARE THEY?

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**Introduction:** Sarcomas are rare mesenchymal neoplasms that constitute 1% of all malignancies in the body and 4–10% in the head and neck. The purpose of this exhibit is to show the aspects of head and neck sarcomas and their imaging features.

**Methods Involved:** Computed tomography (CT), magnetic resonance (MR), histologic findings

**Discussion:** Noninvasive diagnosis methods including computed tomography (CT), magnetic resonance (MR) with advanced techniques. They are essentials to characterization of tumor composition, extent and preoperative grading. However the imaging characteristics of many such tumors are nonspecific. Pertinent patient data including previous radiotherapy and physical examination provide helpful clues to the different diagnosis. The last WHO classification of sarcomas is based on tissue type and biologic behavior. We will report sarcomas of head and neck, including Liposarcoma, Fibrosarcoma, Chondrosarcoma, Undifferentiated pleomorphic sarcoma, Rhabdomyosarcoma, Leyomyosarcoma, Carcinosarcoma, Angiosarcoma, Osteosarcoma, Alveolar soft part sarcoma, Synovial sarcoma and Ewing sarcoma.

**Conclusion of the presentation:** Many sarcomas may arise in the head and neck region. Radiologists should be familiar with the most common imaging manifestations of these tumors.

### PD.03.016

#### MAGNETIC RESONANCE SIALOGRAPHY: CRITICAL ANALYSIS OF 5 CASES WITH COMPARISON TO CONVENTIONAL SIALOGRAPHY AND LITERATURE REVIEW

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**Brief description of the purpose of the Review of Literature:**

Brief description of the purpose of the Literature Review : Over the past 15 years, several articles have described the magnetic resonance sialography (sialoMRI) as an important alternative study to evaluate the salivary ducts . These articles describe the different magnetic resonance (MRI) techniques employed, ways to optimize the evaluation of salivary ducts and compare this procedure with conventional sialography in several pathologies . The aim of our review is to evaluate the main articles about this technique, indicating its advantages and limitations.

**Description (s) condition (s), method (s) or technique (s):** Description of the pathologies , method ( s ) or technique ( s ) : SialoMRI was performed in patients undergoing conventional sialography, for further correlation between methods. To avoid interference of the catheterization, the sialoMRI was performed before conventional Sialography .

**Conclusion:** Conclusion : SialoMRI evolved greatly in recent years , presenting some advantages over conventional

sialography . It is crucial , however , to know its limitations and ways to optimize the procedure, to enhance its clinical applicability .

### PD.03.024

#### CERVICAL LYMPHATIC SYSTEM NEOPLASTIC INVOLVEMENT: BEYOND REGULAR STAGING

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**Introduction:** It is part of the radiologists' daily routine to find different presentations of primary and secondary cervical lymphatic disease spread.

**Methods Involved:** Schematic illustrations along with computed tomography, magnetic resonance and PET – CT images will demonstrate our findings.

**Discussion:** Knowledge of the cervical lymph node levels is essential for regular TNM staging of primary head and neck neoplastic lesions and therapeutical management. However, there are different lymphatic drainage patterns spread according to specific tumor locations that must be identified and named. Recognition of these patterns may help diagnose specific conditions namely, linfoproliferative diseases, squamous cell carcinomas (secondary to smoking, alcohol or papiloma vírus), thyroid carcinomas and melanoma. Also, identification of nodal capsular rupture and PET-CT contrast intake is very important for treatment management. There are still other secondary manifestations of lymphatic extra-nodal diseases, such as invasion of major lymphatic ducts and cutaneous and subcutaneous lymphangitis.

**Conclusion of the presentation:** All radiologists should know the lymphatic system anatomy, lymph node levels, as well as the different patterns of lymphatic disease spread and lymphangitis pre and post-treatment.

### PD.03.027

#### CT AND MRI OF CERVICAL MASSES IN URGENCY

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**Introduction:** Neck masses are frequent diagnostic challenges for the health care team in an environment of urgency. The differential diagnosis of cervical masses includes groups of congenital, inflammatory, neoplastic or traumatic diseases. Ultrasound is useful in differentiating solid nodules and cysts in the initial evaluation. Additionally, the axial methods allow characterizing and establishing the detailed location of the lesion.

**Methods Involved:** There were selected cases that had a clinical history of neck mass in the emergency room in a private hospital, and performed imaging evaluation by computed tomography (CT) and/or magnetic resonance(MRI). Between those, there were chosen illustrative images of various pathologies in urgency.

**Discussion:** Even though ultrasonography is widely used, CT is the exam of choice for evaluation of a neck mass in the urgency, due to its advantages such as shorter examination time and allow better topographic evaluation. And, if necessary, can be complemented by MRI when necessary.

**Conclusion of the presentation:** With the growing access to CT and MRI, the general radiologist must be familiar with the evaluation of neck masses on the urgency, in order to make the correct diagnosis and an appropriate therapeutic management.

### PD.03.029

#### RETINOBLASTOMA MIMICKING INFLAMMATORY LESION IN YOUTH

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**Brief description of the purpose of the report:** a) Retinoblastoma (RB) is the most common intraocular tumor in children, with a mean age at diagnosis of 2 years. As this is a rare condition, the RB in older children have a high incidence of misdiagnosis and usually presents at an advanced stage. Given the importance of imaging methods for early diagnosis of this condition, we report a case of a teenager with RB, emphasizing the characteristic image.

**Medical History:** a) Female patient, 14 years old, with proptosis of the left eye for 2 years. Ocular history revealed an old blunt trauma of this eye. Ophthalmological examination revealed 20/20 visual acuity in the right eye and no light perception in the left one with a tumor in the lower portion of the globe, with a total derangement of ocular structures. Patient was submitted to enucleation of the left eye, with material sent to pathologic evaluation.

**Diagnosis:** Retinoblastoma

**Discussion and summary of the case:** a) RB is a rare condition in older children has a high incidence of misdiagnosis, and usually presents at an advanced stage, with extraocular disease. Must be considered as a differential diagnosis when a fundus mass is found, even the absence of calcification almost always excludes the diagnosis of this condition.

### PD.03.032

#### PLASMABLASTIC B-CELLS LYMPHOMA OF THE FRONTAL SINUS IN AN IMMUNOCOMPETENT PATIENT: CASE REPORT AND LITERATURE REVIEW

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**Brief description of the purpose of the report:** Non-Hodgkin lymphomas (NHL) represent 1.5 % of all tumors of the body. Involvement of the sinonasal tract is rare (0.44 % of cases), usually manifesting with destructive lesions of the face. Plasmablastic lymphoma (PBL) is an aggressive type of B-cells NHL occurring predominantly in HIV + patients and, less frequently, in immunosuppressed or transplant patients. Manifestation in immunocompetent individuals, the subject of this report, is extremely rare.

**Medical History:** 46-year-old man complaining of bulging and intense pain in frontal region for two months, epistaxis and diplopia; serological tests were negative for HIV and positive for Epstein-Barr virus (EBV). Computed tomography and magnetic resonance imaging scans of the face showed a neoplastic mass lesion with an epicenter in the left frontal region and periorbital sinus, with extra-axial extension to the frontal lobe. The lesion was surgically resected.

**Diagnosis:** Histopathological and immunohistochemical findings were suggestive of a PBL.

**Discussion and summary of the case:** There are less than 80 cases of PBL reported in HIV- patients, with only a small subset involving immunocompetent individuals. EBV infection has been reported in 74% of cases. Lymphomas of the sinonasal tract should be considered in the radiological differential diagnosis of aggressive lesions of the face, even in immunocompetent patients.

### PD.03.033

#### SALIVARY GLANDS LESIONS: PICTORIAL ESSAY

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**Introduction:** The salivary glands, divided in major and minor, may be afflicted by diverse diseases, and most of them represent a diagnostic challenge for the surgeon and the clinician. In that context, the evaluation of those lesions by the imaging specialist is essential, directing diagnosis and/or as a guide for diagnostic and curative procedures.

**Methods Involved:** Illustrative cases were obtained from the digital archive of our institution, based on exams of computed tomography and magnetic resonance, and those of greater didactic relevance were selected.

**Discussion:** The association of available methods, even when it is not enough to define the diagnosis, is essential to evaluate extension, in surgery planning and to predict prognosis for the neoplastic lesions, and correlates with the surgical findings.

**Conclusion of the presentation:** The imaging aspects of the lesions correlate well with the surgical findings, in special the location and extension, and therefore the evaluation by an imaging specialist is of great importance for surgical planning and conduction of the case.

### PD.03.034

#### VASCULAR ANOMALIES OF THE HEAD AND NECK: PICTORIAL ESSAY

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**Introduction:** The vascular anomalies include a great number of lesions that might be present on the newborn, or be found throughout life, and may appear anywhere on the body, especially on the head and neck region. Even though they have the vascular origin in common, there are differences concerning prognosis and treatment, with imaging being essential for defining the type of lesion and its extension.

**Methods Involved:** On this essay, we use cases from our institution's archive to show some of the most common lesions and their patterns, focusing on axial imaging (computed tomography and magnetic resonance).

**Discussion:** By using these methods, it is possible to classify the vascular anomalies in vascular tumors and vascular malformations, and those by the blood flow (low and high) and

their vascular components (arterial, capillary, lymphatic and venous), and also identify afflicted anatomic structures.

**Conclusion of the presentation:** The image findings therefore suggest the attending physician the prognosis and better treatment options for each case.

## 4 - NEURORADIOLOGY

### PA.04.007

#### DEVELOPMENT OF EDUCATIONAL MATERIAL FROM MAGNETIC RESONANCE CORONAL IMAGES FOR THE STUDY OF NEUROANATOMY

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**Introduction:** The diagnostic neuroimaging technologies, such as magnetic resonance imaging (MRI), may also contribute to the development of learning tools for the study of neuroanatomy by medical students, allowing a direct contact with these images that have revolutionized the knowledge and the treatment of neurological disorders. Thus, the aim of this study was to develop an atlas with MRI images of the supra and infratentorial regions that can be used as an instrument for the study of neuroanatomy.

**Methods Involved:** MRI images in T1 and T2 weighted and 3D-CISS were selected, with the identification of the anatomical elements in levels of court in coronal plane highlighting structures in the following observed areas: bulb, bridge, mid-brain, cerebellum, cranial nerves, diencephalic structures, basal ganglia, telencephalon, vessels and the ventricular system.

**Discussion:** The recognition of anatomical sites involved in pathologies of the central nervous system (CNS) contributes to the learning process of neuroanatomy and is quite useful for radiological practice.

**Conclusion of the presentation:** Our pictorial essay is useful for undergraduates in medicine who are studying neuroanatomy and radiologists, as it provides developed material for study and consultation.

### PA.04.027

#### UNILATERAL CALCIFICATIONS OF THE BASAL GANGLIA ARE ASSOCIATED WITH DEVELOPMENTAL VENOUS ANOMALIES

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**Brief description of the purpose of the Review of Literature:**

Developmental venous anomalies are the most common congenital vascular malformations of the central nervous system. Its association with cavernous angiomas is well documented and known, however, they may be associated with changes in brain parenchyma. Similarly, calcifications in the basal ganglia are also quite common, usually with bilateral and related with mineral deposits, frequent in elderly patients. The causes of calcifications in the basal ganglia are numerous and varied. Unilateralism or asymmetry in calcium deposition are atypical and may be the cause of diagnostic errors or interpretation.

**Description (s) condition (s), method (s) or technique (s):** We review the literature and illustrate the changes with three cases of a tertiary hospital presenting unilateral calci-

fication of the basal ganglia associated with developmental venous anomalies.

**Conclusion:** Unilateral calcifications in the basal ganglia associated with developmental venous anomalies represent a generally benign occurrence and without clinical repercussions and should be known by every radiologist, avoiding diagnostic errors of interpretation.

### PD.04.001

#### ASPECTS OF MRI IN CORTICAL VENOUS THROMBOSIS: A CASE REPORT

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**Brief description of the purpose of the report:** Isolated cortical venous thrombosis (ICVT), although relatively rare, is a medical emergency condition that presents a wide range of clinical manifestations, and this diagnosis requires advanced techniques such as magnetic resonance imaging (MRI) and magnetic resonance angiography (MRA). Diagnosis depends crucially on the ability of the radiologist to recognize its presentations, by the parenchymal changes or by direct visualization of the thrombus.

**Medical History:** Female patient, 33 years old, in the 9th. day after delivery, presenting with seizure.

**Diagnosis:** Cortical venous thrombosis with parenchymal hematoma in the right parietal region.

**Discussion and summary of the case:** A parietal hematoma was observed at the MRI, and the ICVT was featured in a vessel adjacent to the hematoma, with intense hypointensity on SWI sequence and a filling defect image in SPGR sequence post contrast. ARM is the method of choice for the diagnosis of venous thrombosis, but when it involves cortical veins, as in this case, the search for the thrombus is of utmost importance and it may be suggested by the asymmetric aspect of the veins. An accurate and rapid diagnosis allows the initiation of treatment at an early stage, reducing the morbidity and mortality of the disease.

### PD.04.002

#### IMAGING EVALUATION OF GLIOBLASTOMA MULTIFORME (GBM) DURING TREATMENT WITH AVASTIN® (BEVACIZUMAB)

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**Introduction:** Avastin® (bevacizumab) is used for the treatment of GBM patients with progressive disease following prior therapy. It is an inhibitor to the activity of human vascular endothelial growth factor and represents a promising optional treatment for these patients, since angiogenesis is a hallmark of high grade tumors.

**Methods Involved:** We will use clinical cases with magnetic resonance imaging (MRI) to discuss correlation between the imaging findings and molecular, biochemical and genetic characteristics of GBM, supported by literature review. To demonstrate through MRI the tumor behavior during target therapy, depicting different patterns of evolution and growth of the lesions, sometimes different from the initial tumor and present in the same patient.

**Discussion:** The use of target therapy for recurrent GBM is

recent and it increases the life span, but does not cure the disease. The effects on tumor behavior and growth pattern are still being observed and understood. The tumors initially respond, but ultimately progress, and it is possible to observe distinct growth imaging patterns.

**Conclusion of the presentation:** As a relatively recent practice there will be a lot to observe and to learn regarding tumor behavior related to this treatment, and imaging is playing a fundamental role in the evaluation of response and prognostic factors.

#### PD.04.006

##### MAIN RADIOLOGICAL FINDINGS OF POSTERIOR FOSSA TUMORS

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**Introduction:** Tumors of the central nervous system have high incidence in both adults and children. Among them, the infratentorial tumors represent 45-60 % of childhood cases and present a wide variety of radiological signs and symptoms.

**Methods Involved:** Imaging methods such as magnetic resonance imaging (MRI) and computed tomography (CT) play an important role in the early diagnosis of these lesions, enabling improved and faster treatment.

**Discussion:** Due to the vital importance of posterior fossa structures, infratentorial lesions exhibit early and often severe symptoms, cursing with intracranial hypertension, hydrocephalus, edema and ischemia in some cases, and must be quickly diagnosed.

**Conclusion of the presentation:** The goal is to demonstrate the main imaging findings on CT and MRI of the posterior fossa tumors, including pilocytic astrocytoma, medulloblastoma, ependymoma, brainstem glioma and hemangioblastoma, allowing appropriate differential diagnosis between them.

#### PD.04.007

##### RADIOLOGIC ASPECTS OF MENINGIOMA

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**Introduction:** The meningioma is the most prevalent not primary glial cranial tumor, corresponding to 15-20% of brain tumors. They are usually unique and present broad dural base. Enhance after contrast infusion, and, depending on its location can cause a wide variety of clinical symptoms.

**Methods Involved:** Computed tomography and MRI have a role in the differential diagnosis of meningioma, which presents radiological aspects ranging from the massive hyperostosis to heterogeneous masses that simulate neoplasms.

**Discussion:** The correct diagnosis of meningioma is essential to plan the treatment, that can be conservative or surgical, depending on location, size and aggressiveness of these tumors.

**Conclusion of the presentation:** Our objective is to demonstrate the main features of the radiographic appearance of meningioma in order to facilitate its diagnosis among its differentials, which include dural metastases and granulomatous diseases, considering its prevalence and variety of presentations.

#### PD.04.008

##### IMAGING FINDINGS IN TRAUMATIC BRAIN INJURY

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**Introduction:** Traumatic brain injury (TBI) is a major cause of morbidity and mortality in Brazil and worldwide, affecting young adults, defined as a cranioencephalic aggression caused by external force or not resulting in an altered or decreased level of consciousness state.

**Methods Involved:** Computed tomography (CT) is the imaging method of choice performed in emergency to identify lesions that require specific therapy. Magnetic resonance imaging is reserved to explain signs and symptoms that are not explained by prior CT or to complement the diagnosis of injuries ever seen.

**Discussion:** The objective of the study is to describe the imaging findings in lesions resulting from trauma cranioencephalic. These lesions are classified into extra-axial lesions, including epidural hematoma, subdural hematoma, subarachnoid hemorrhage, intraventricular hemorrhage and skull fractures, and intra-axial including traumatic axonal injury, primary brain stem trauma, injury of subcortical gray matter, cortical contusions, cerebral herniation, secondary traumatic cerebral infarction, secondary hemorrhage, diffuse cerebral edema.

**Conclusion of the presentation:** The prompt recognition of such lesions is important because although there are complications from the brain's response to the initial damage itself, the methods of supplementary diagnostic imaging in TBI assist in therapeutic decisions and ultimately minimize the morbidity of the patient.

#### PD.04.010

##### THE NEUROANATOMIC KNOWLEDGE HELPING IN THE DIFFERENTIAL DIAGNOSIS OF LESIONS OF THE BRAIN STEM

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**Brief description of the purpose of the Review of Literature:** The purpose of this study is to use the anatomic and topographic information obtained with magnetic resonance studies and correlate this information with the differential diagnosis of lesions of the brain stem, by using original examples of some of the more important and common pathologies of this topography we had in our institution in the past few years and a brief review of the literature about this subject.

**Description (s) condition (s), method (s) or technique (s):** We report how the anatomic knowledge and the exactly topographic diagnosis in each structure of the brain stem can help narrow the differential diagnosis in these lesions of this topography, for example, lesions that involve the medulla, like progressive ataxia and palatal tremor (PAPT) and Wallenberg syndrome.

**Conclusion:** The outcome of magnetic resonance and their advanced imaging methods have enabled a great knowledge of the anatomy of the brain stem that can be correlated with some specific topographic diagnosis.

#### PD.04.011

##### BRAIN ABNORMALITIES IN PATIENTS WITH LIVER DISEASES

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**Brief description of the purpose of the Review of Literature:** This work has the objective of reviewing the brain imaging findings of patients with liver disease by using several cases collected in the past few years in our institution and a brief review of the literature about the subject.

**Description (s) condition (s), method (s) or technique (s):** The brain is greatly susceptible to damage from products of altered metabolism and various toxins, most of them associated with liver dysfunction. Hepatic encephalopathy reflects a spectrum of neuro-psychiatric abnormalities occurring in patients with liver dysfunction. Most cases are associated with cirrhosis and portal hypertension, but the condition can also be seen in patients with acute liver failure. Usually, brain abnormalities are reversible when hepatic dysfunction is correct.

**Conclusion:** Magnetic Resonance (MR) of the brain is the best tool in the evaluation of these patients, for diagnosis and follow-up. Another useful tool is MR spectroscopy, that can detect intracellular metabolic shifts in these patients. Sometimes, the neurologic disease may manifest earlier than hepatic disease. Imaging findings is not specific but may suggest de primary hepatic diagnosis of the patient, justifying the importance to of this knowledge.

#### PD.04.014

##### COMPARISON OF TEMPORAL LOBE EPILEPSY WITH LEFT OR RIGHT HIPPOCAMPAL ATROPHY USING QUANTITATIVE ANALYSIS OF DIFFUSION (DTI)

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**Brief description of the purpose of the study:** Medial temporal lobe epilepsy (MTLE) with left hippocampal atrophy (HA) probably has different clinical behavior when compared with the right side. This study aims to quantify structural changes in the brain white matter of patients with MTLE and left or right HA compared with controls.

**Methods:** Eight patients with right MTLE, seven with left MTLE and 30 controls were evaluated. All patients underwent 3T MRI (Siemens Verio). Echo planar imaging (EPI) sequence was used to obtain the images. To analyze diffusion tensor images (DTI) obtained, FSL program and TBSS (Tract-Based Spatial Statistics) technique were used. Fractional anisotropy (FA) maps were extracted, processed and submitted to statistical analysis comparing the groups.

**Main results:** MTLE with right HA: FA reduction with the center of gravity in the fusiform gyrus ( $x = 39, y = -4, z = -18; 1271$  voxels,  $T = 5.13$ ). MTLE with left HA: more significant and diffuse FA reduction with center of gravity in the thalamus ( $x = -1, y = -13, z = 15; 56282$  voxels,  $T = 6.32$ ).

**Importance of the conclusions:** The present data shows changes in the white matter of patients with MTLE with more significant and diffuse involvement in patients with left HA.

#### PD.04.016

##### CASE REPORT: PITUITARY DWARFISM

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**Brief description of the purpose of the report:** The pituitary Dwarfism is a genetic disorder that affects fewer than 100 people worldwide, which prevents the normal growth of the individual. In the literature there are few cases described, including the records are rare findings of magnetic resonance imaging (MRI).

**Medical History:** Clinical history: A male patient from inside attended the Center for Diagnostic Imaging MRI examination of the Turkish saddle in investigation of short stature and developmental delay.

**Diagnosis:** The images obtained showed pituitary hypoplasia, associated with absence of the infundibulum and ectopic posterior pituitary, consistent with Pituitary dwarfism.

**Discussion and summary of the case:** The pituitary dwarfism is a rare cause of short stature, since in this pathology there is disturbance in hormonal secretion of this gland.

#### PD.04.017

##### PERSISTENCE OF THE METOPIC SUTURE IN ADULTS : REPORT OF 10 CASES AND LITERATURE REVIEW

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**Brief description of the purpose of the report:** The metopic suture is located between the two frontal bones and the physiological time of its closure have shown discrepancies in the literature , with reports of its closure which can range from birth to eight years and is considered the driving fusion of the sutures 2 years old , but some studies have demonstrated the persistence of this suture in adults after closure of other cranial sutures

**Medical History:** Clinical History: The study consists of the report of 10 patients with a history of mild to moderate head trauma and were evaluated by the Department of Neurosurgery at the hospital . Ten patients reported head trauma, and in five of these patients the trauma was due to falling level in three patients reported motor vehicle accident and two patients with direct trauma object. The ages of the patients ranged from 17 to 71 years.

**Diagnosis:** Diagnosis : The neurological examination was normal in eight patients and two patients had subgaleal hematoma. Ten patients underwent computed tomography with multiplanar reformatting and 3D volume reconstruction and all exhibit persistent metopic suture linear type.

**Discussion and summary of the case:** Discussion : The purpose of this report is to present 10 patients with persistent metopic suture observed on CT scans in Hospital Trauma. Knowledge of the existence of this anatomical variation is important in the differential diagnosis of frontal vertical fracture patients with head trauma. The correlation with clinical data and computed tomography associated with reformatting multiplanar and volumetric 3D reconstruction were very useful in the evaluation of persistent metopic suture.



#### PD.04.021

##### POST-RADIOTHERAPY CHANGES IN THE CENTRAL NERVOUS SYSTEM: A PICTORIAL ESSAY

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**Introduction:** Radiation therapy is an important tool for the treatment of several tumors, with satisfactory oncological results in the most of the times, but with significant adverse effects in the short and long term. In the central nervous system, the spectrum of post-radiotherapy changes is wide, and affect structures of white and gray matter, vessels and meninges.

**Methods Involved:** This study analyzes the computed tomography and magnetic resonance imaging, including perfusion techniques, of patients who underwent brain radiotherapy.

**Discussion:** The present study showed typical and atypical imaging findings of post- radiotherapy changes in the central nervous system such as cerebral edema, radionecrosis, pseudoprogression and differential diagnosis with true disease progression, radio-induced leucopathy, vasculopathy, induction of vascular malformations, such as cavernomas, and tumors, chiefly meningiomas.

**Conclusion of the presentation:** Knowledge of the adverse effects of radiation in the central nervous system is critical for the radiologist, since these changes can increase the list of the differential diagnosis and modify the presentation of superimposing diseases.

#### PD.04.022

##### IMAGING FINDINGS IN TOXIC-METABOLIC DISORDERS OF CENTRAL NERVOUS SYSTEM

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**Introduction:** Toxic-metabolic disorders affecting the central nervous system comprise a wide spectrum of diseases, many of them with similar symptoms and signs, including altered level of consciousness, extrapyramidal syndrome, motor disorders and psychiatric disturbances.

**Methods Involved:** In this study, we show computed tomography and magnetic resonance imaging findings in patients with neurological symptoms attributable to toxic-metabolic disorders confirmed by laboratory tests.

**Discussion:** The present study demonstrates the clinical-radiological findings and the wide spectrum of involvement of central nervous system by the most common toxic-metabolic diseases encountered in clinical practice. We discuss cases of patients with vitamins B1 and B12 deficit, osmotic myelolysis, adult and neonatal hypoglycemia, hyperglycemia, hepatic encephalopathy, and drug toxicity, such as cyclosporine and methotrexate.

**Conclusion of the presentation:** The imaging findings spectrum of the toxic-metabolic disorders affecting the central nervous system is somewhat extensive. The same finding can be shared by different etiologies, but subtle radiological aspects may allow us to narrow the differential diagnosis, especially if correlated with clinical and laboratory data.

#### PD.04.023

##### NON-NEOPLASTIC BRAIN MRI FINDINGS POST TREATMENT

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**Introduction:** Brain imaging evaluation of patients treated in an oncology hospital covers a wide spectrum of disorders, which may be related to surgery and / or radiotherapy, the systemic treatment procedures, as well as changes related to immunodeficiency.

**Methods Involved:** METHODS: CT and MRI scans were evaluated focusing on the non-neoplastic findings related to surgical or clinical treatment.

**Discussion:** DISCUSSION: Non-neoplastic neurologic complications in patients with malignancy are frequent and the establishment of a correct diagnosis is essential to the follow-up of these subjects. We recognize some entities such as vascular complications related to surgery and chemotherapy, hypertrophic olivary and Wallerian degeneration after surgical resection of a brain tumor, alterations related to brain/head and neck radiotherapy, opportunistic infections, white matter chemotoxicity, and CSF hypotension syndrome.

**Conclusion of the presentation:** CONCLUSION: One of the major and noteworthy complications of malignancies directly affecting survival is brain metastasis; therefore, non-neoplastic complications are encountered and are underestimated, due to either a missed diagnosis or the lack of information pertaining to the clinical outcome. It is important for the radiologist to recognize and highlight these effects, in order to help the clinician to develop an adequate treatment strategy.

#### PD.04.024

##### RARE PINEAL REGION LESIONS: CLINICAL FEATURES, IMAGING ASPECTS, PATHOLOGICAL CORRELATION AND LITERATURE REVIEW

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**Introduction:** Our goal is to make a pictorial essay describing and illustrating radiological findings of rare lesions of the pineal region, review the literature, clinical symptoms and histopathological changes. We used as method of inclusion histologically confirmed diagnosis or presumed radiological diagnosis of rare lesions of this region and performed a search in our archive. We operate in a tertiary hospital, in conjunction with other departments in the integrated patient diagnosis.

**Methods Involved:** Frequently, the radiologist is confronted with lesions in the pineal region. Typically, patients present with signs and symptoms related to mass effect, such as Parinaud syndrome, hydrocephalus and sudden decreased level of consciousness secondary to apoplexy. Germ cell tumors account for 40% of lesions and pineal parenchyma tumors for 14% to 27%. More rarely, we find lesions that originate from a variety of other cells residing in this region, rare neoplasms of the pineal parenchymal, metastases, vascular lesions or dermoid and epidermoid cysts.

**Discussion:** These lesions present no imaging pathognomonic findings, but analysis with clinical and laboratory data narrow the differential diagnosis. In most cases, histopathological analysis is necessary for definitive diagnosis.

**Conclusion of the presentation:** The correct interpretation of imaging findings helps in diagnosis and treatment planning, guiding the prognosis and follow up.

#### PD.04.025

##### IN VIVO ASSESSMENT OF WHITE MATTER DAMAGE IN NEUROMYELITIS OPTICA PATIENTS: A DIFFUSION TENSOR AND DIFFUSION KURTOSIS MR IMAGING STUDY

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**Brief description of the purpose of the study:** To investigate the possibility that microstructural alterations are present in NAWM tracts, DTI and diffusion kurtosis imaging (DKI) techniques were applied and compared.

**Methods:** Thirteen patients with NMO and 13 controls underwent MRI, with both DTI and DKI sequences acquired. Parametric FA maps were derived from diffusion tensor (FADTI) and from diffusion kurtosis tensor (FADKI) values using b values of 0 and 1000 s/mm<sup>2</sup> and 0, 1000, and 2000 s/mm<sup>2</sup>, respectively. Mean FADTI and FADKI values were also calculated. A ROI analysis of the genu and splenium of the corpus callosum, cerebral peduncle, and optic radiation were also performed.

**Main results:** Both the splenium of the corpus callosum and the left optic radiation of NMO patients were found to have significantly reduced FADTI values compared to controls ( $p < 0.05$ ). The FADKI ROI values of NMO patients only demonstrated a positive trend. The other WM tracts analyzed did not display significant decrease in the FA values obtained for NMO patients versus controls for both the DTI and DKI techniques.

**Importance of the conclusions:** These data indicate that DKI could not be used to evaluate WM integrity in NMO patients. Furthermore, the results obtained with FADTI are consistent with the hypothesis that diffuse brain involvement characterizes NMO.

#### PD.04.026

##### BEHCET'S DISEASE: NEURORADIOLOGICAL FINDINGS AND LITERATURE REVIEW

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**Introduction:** Behçet's disease is chronic, idiopathic relapsing-remitting multisystem vascular-inflammatory disease characterized by recurrent orogenital ulcerations and uveitis. CNS involved in up to 20% of patients. The objective is to report the neuroimaging features of this disease, correlating them with pathogenetic and clinical data.

**Methods Involved:** Retrospective study from the neuroradiology teaching file from a large university center of São Paulo - SP. It was given emphasis to typical cases including MR and CT, representative of the spectrum of findings. A literature review was performed.

**Discussion:** The neurological involvement by Behçet's disease

may be suspected clinically in cases of young patients (median age of 40 years) who have oral and genital ulcers, associated with neurological deficits (hemiparesis), headache and seizures. The main imaging findings are T2 hyperintense brainstem lesion (most commonly midbrain) or deep gray nuclei.

**Conclusion of the presentation:** Recognizing the imaging features of this disease is useful for the correct diagnostic interpretation, in order to suggest the investigation of Behçet disease in young adults with brainstem or deep gray nuclei lesions, even when CNS lesions precede development of oral and genital ulcers.

#### PD.04.027

##### AREA POSTREMA LESIONS IN NEUROMYELITIS OPTICA PATIENTS

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**Brief description of the purpose of the study:** Objective: cerebral areas with high aquaporin-4 expression may be a target for neuromyelitis optica (NMO) lesions. Our objective is to describe the radiological aspect of area postrema (AP) lesions in NMO patients.

**Methods:** Materials and Methods: we included NMO patients that had brain magnetic resonance imaging (MRI) in our radiology department. Exclusion criteria were pediatric patients (<18 years) and exams considered inappropriate for analysis. Data were reviewed by two neuroradiologists for the presence or absence of lesion, aspect, topography and post-gadolinium enhancement. Clinical data were obtained by a review of medical records.

**Main results:** Results: 40 brain MR were obtained, in which 12 had medulla oblongata abnormalities. Of these, 10 had AP involvement (25%). Lesions had a linear configuration, predominantly involving central canal or pericanalicular regions, with or without extension to the cervical spinal cord. Post-gadolinium enhancement was observed in only 30% of lesions. Regarding clinical manifestation, 4 of these patients (40%) had, at the presentation or during clinical evolution, episodes of severe nausea/vomiting or hiccups, while the others presented with the classical relapsing NMO clinical picture.

**Importance of the conclusions:** Conclusion: knowledge of the radiological aspect of lesions in the AP and their clinical profile can contribute to the differential diagnosis in imaging.

#### PD.04.028

##### THE DIFFERENTIAL DIAGNOSIS OF CORTICOSPINAL TRACTS AFFECTIONS: A PICTORIAL ESSAY OF AMYOTROPHIC LATERAL SCLEROSIS AND ITS "MIMIC SYNDROMES".

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**Introduction:** According to current criteria diagnosis of amyotrophic lateral sclerosis (ALS) is based on the upper motor neuron (UMN) and lower motor neuron (LMN) compromise in conjunction with the exclusion of "ALS mimic syndromes". Herein, we aimed, to confront imaging appearances between ALS and its "mimics syndromes".

**Methods Involved:** We retrospectively study patients with either clinical pyramidal impairment or abnormal corticospinal tract (CST) signal intensity from a single institution from January-2000 until December-2013. Two experienced radiologists scrutinized MRI images to list all findings and to confront them with the final clinical diagnosis.

**Discussion:** We enrolled 250 subjects, including 110 ALS patients and a vast list of “mimic syndromes”. Supratentorial selective bilateral CST hyperintensity on T1 magnetization transfer (T1-MTC), as a solely MRI finding, was coincident with motor neuron diseases. All other included diseases presenting additional MRI extra-motor findings, associated with variable imaging patterns.

**Conclusion of the presentation:** Our results reinforce that T1 MTC might be an imaging biomarker highly specific of UMN degeneration. However, radiologists must be aware that ALS is not the only condition that modifies CST signal intensity on MRI. Appropriate MRI protocol should be done to recognize imaging patterns of ALS and its “mimic syndromes”, particularly in patients with weakness and pyramidal signs.

#### PD.04.029

##### **DISEASE LHERMITTE - DUCLOS : CASE REPORT .**

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**Brief description of the purpose of the report:** This paper aims to report the case of a patient with a history of progressive occipital headache about 1 year ago . The Lhermitte - Duclos disease , also known as cerebellar dysplastic gangliocytoma , is characterized by progressive enlargement of part of the cerebellum. It is often seen in young adults ( 34 years) . Less frequently in pediatric patients. There is no sex predilection . Clinically , patients may be asymptomatic or may present with symptoms and signs of increased intracranial pressure. Cranial nerve palsies , cerebellar symptoms and sudden neurological deterioration as a result of obstructive hydrocephalus are frequent findings . This disease is commonly associated with other congenital malformations , as megalencephaly , polydactyly , multiple hemangiomas and anomalies in the skull . Typically , patients present with symptoms of long standing were present for years , indicating the slow, progressive nature of the disease . Mental retardation may be present .

**Medical History:** The etiology of this disorder is controversial , may exhibit characteristics of histologically low-grade gliomas or other non-tumor forms .

**Diagnosis:** It may occur as an isolated condition but can also be associated to Cowden syndrome, these patients have germline mutations in the PTEN gene and the majority of patients with Lhermitte- Duclos disease appear to have a germline loss of one allele of PTEN and tend to go missing the remainder of alleles at some point , thus allowing the granular growth of abnormal cells.

**Discussion and summary of the case:** It is shown as an abnormally large population of neurons in the internal granular layer and there or aberrant myelination in the external or molecular layer . The cerebellar cortex appears grossly thickened and dysplastic .

#### PD.04.030

##### **GENETIC – WHAT THE NEURORADIOLOGISTS NEED TO KNOW**

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##### **Brief description of the purpose of the Review of Literature:**

The evolution of the radiological interpretation requires that the radiologist knows some basics of genetics. This presentation intends to review some of important concepts as genomics, proteomics and metabolomics; genotype and phenotype; dominant, recessive and X-linked autosomal diseases; mitochondrial DNA defect; penetrance and variability of expression. Furthermore, we intend to show practical examples of how radiogenetic has been used within the neuroradiology, reviewing some publications on inborn errors of metabolism, Alzheimer’s disease and glioblastoma multiforme.

##### **Description (s) condition (s), method (s) or technique (s):**

The human genome has about 20,000 genes responsible for the functioning of the central nervous system. Some mutations in these genes are responsible for hereditary diseases, many of these mutations have already been mapped and their particular gene loci are known. Radiogenomics is an evolution of radiology-pathology correlation from the tissue level to the subcellular level. The goal is to identify phenotypic characteristics that correspond to different genotypes.

**Conclusion:** The advent of new imaging techniques provides the opportunity of noninvasively study of such endophenotypes, giving all neurophysiological, neurochemical and neuroanatomical information. Among the technics could be mentioned the use of tomography, magnetic resonance spectroscopy, PET (positron emission tomography) and SPECT (single proton emission computed tomography).

##### **Brief discussion of the case**

#### PD.04.032

##### **BRAIN MRI FINDINGS IN PATIENTS WITH MENKES DISEASE INCLUDING MR SPECTROSCOPY**

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**Brief description of the purpose of the report:** The aim of our study is to describe the findings of magnetic resonance imaging and spectroscopy of Menkes disease

**Medical History:** This report presents three infants with Menkes disease in whom brain MRI demonstrated swollen temporal lobes, and tortuosity of intracranial vessels, but not all the cardinal features were present at the opening examination. In one of the patients, the MRI follow-up shows the progression of such neuroimaging findings, with the first report of spectroscopy study demonstrating high lactate levels in a case of Menkes disease, due to cytochrome- c- oxidase deficiency.

**Diagnosis:** Menkes disease

**Discussion and summary of the case:** Menkes disease is an X-linked recessive mitochondrial disorder caused by a mutation in the ATP7A gene. This defect results in dysfunction of essential copper-dependent enzymes and severe neurodegeneration.

#### PD.04.033

##### ACUTE CEREBELLITIS WITH OPSOCLONUS MYOCLONUS SYNDROME FOLLOWING H1N1 INFLUENZA VACCINATION

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**Brief description of the purpose of the report:** As far as we know, this is the first report of cerebellar MRI abnormalities following H1N1 vaccination in a patient with severe neurological sequelae.

**Medical History:** We describe a female patient with opsoclonus myoclonus syndrome following H1N1 vaccination, with cerebellar dysfunction and cerebellar abnormalities on MRI. The first brain magnetic resonance imaging (MRI) study was carried out at day 50th and demonstrated cerebellar swelling with hypersignal intensity on T2-weighted images and Flair images of cerebellar cortex and subcortical white matter without enhancement, possibly secondary to an autoimmune mechanism.

**Diagnosis:** Cerebellar MRI abnormalities following H1N1 vaccination

**Discussion and summary of the case:** Opsoclonus myoclonus syndrome is a rare disorder that has been described in the setting of central nervous system malignancies and following viral infection. Clinical features of involuntary saccades, myoclonus and ataxia are pathognomonic for this condition.

#### PD.04.034

##### ABSENCE OF RESTRICTION DIFFUSION IN TWO BRAIN ABSCESS BY SERRATIA

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**Brief description of the purpose of the report:** To our knowledge, this is the first report of the absence of restriction diffusion in pyogenic bacterial abscesses.

**Medical History:** We describe two cases of brain abscess, both without restriction on diffusion in preoperative imaging, with frankly purulent material by macroscopic and culture confirming serratia. The first patient was a premature 2-month-old infant, with a history of seizures and neurological changes. Brain MRI showed left temporal annular lesion without restricted diffusion. The second patient was a 58 year-old lady who underwent resection of a left frontal glioblastoma multiforme, with Brain MRI showing a similar abscess six weeks after surgery.

**Diagnosis:** Absence of restriction diffusion in abscess by Serratia

**Discussion and summary of the case:** The presence of restricted diffusion in the study by magnetic resonance imaging (MRI) within an annular lesion was largely pointed out as a landmark to identify a pyogenic lesion.

#### PD.04.035

##### The role of spinal magnetic resonance imaging in atypical headaches

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**Brief description of the purpose of the report:** The imaging signs of intracranial hypotension can be subtle or atypical on brain MRI and the typical orthostatic headache may be

misunderstood as well. Spinal MRI examinations can be useful in identifying the epidural venous congestion and possible leaking of cerebrospinal fluid.

**Medical History:** We describe two cases of patients with severe headaches, who required admission to the UTI, where spinal MRI scans (MRI) were key to show the signs of intracranial hypotension. One patient was conducted as a refractory case of Chiari I malformation. The second one present only dural venous congestion on brain CT scan. In both cases the spinal MRI showed epidural venous congestion with extra-dural fluid collections. Patients underwent lumbar surgery and bloodpatches had been made, resulting in significant improvement of symptoms.

**Diagnosis:** Intracranial hypotension

**Discussion and summary of the case:** Intracranial hypotension is always considered in patients that exhibit the typical pattern of orthostatic headache or a history of trauma related to the clinical. Spinal MRI examinations can be useful in identifying the epidural venous congestion and possible leaking of cerebrospinal fluid, allowing precocious surgical intervention and cure.

#### PD.04.037

##### DEMENTIA: PICTORIAL ESSAY OF IMAGE FINDINGS MACRUZ, F.B.C ; HIRATA, F.C.C ; RIMKUS C. M. ; LUCATO, L.T. ; MANSUR. M.C.D. ; PINHEIRO, T.L.

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**Introduction:** The role of neuroimaging in dementia nowadays extends beyond its traditional role of excluding neurosurgical lesions. Radiological findings, in combination with clinical assessment, have an important value in improving diagnostic accuracy during life of specific neurodegenerative disorders. This accurate and timely diagnosis of dementia is fundamental to guide management and improve the disease's prognosis.

**Methods Involved:** Computed tomography Magnetic Resonance Single-photon emission computed tomography (SPECT)

**Discussion:** In this essay we will discuss typical findings in the most common dementia syndromes: o Alzheimer's disease o Vascular Dementia o Asymmetric cortical degenerative syndromes o Parkinson-plus syndromes o Normal pressure hydrocephalus

**Conclusion of the presentation:** The precise and precocious diagnosis is increasingly important to guide management for some specific neurodegenerative disorders. Structural imaging, predominantly of Magnetic Resonance, can provide valuable positive and negative predictive information to help differentiate between demencia's different causes, based on reported imaging features, with a great diagnostic value.

#### PD.04.039

##### USE OF BOLD SEQUENCE IN THE EVALUATION OF THE COMPROMISING OF LIMBIC SYSTEM: LITERATURE REVIEW

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**Brief description of the purpose of the Review of Literature:** The use of MRI for research in psychiatry proved that psychiatric illnesses are directly related to neurologi-

cal bases, especially the limbic region in the case of emotional disorders.

**Description (s) condition (s), method (s) or technique (s):** The BOLD sequence has been applied in order to explore the differences in the magnetic susceptibility of oxyhemoglobin (diamagnetic) and deoxyhemoglobin (paramagnetic) as a result of increased blood flow and local oxygen consumption that occurs during a given stimulus. MRI Comparative studies performed between subjects with schizophrenia and healthy controls showed changes mainly in the limbic region. **Conclusion:** The use of BOLD sequence helping the diagnosis of diseases that compromise the limbic system has been shown very useful, as it gives images with high anatomic resolution, which provide a functional visualization and can offer a quantification of brain abnormalities each time more reliable.

#### PD.04.047

##### USE IN NEURORADIOLOGY OF A PACS-BASED IMAGE FUSION TOOL

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**Introduction:** Tools for image fusion are more commonly used in research than clinical practice. In general, these tools are not included in PACS, but in softwares that work parallel to the system. However, some PACS have this feature built-in, which accelerates fusion, making easier to compare exams and subtract images.

**Methods Involved:** Demonstration of image fusion in these scenarios: follow-up of hydrocephalus, evaluation of the growth of meningiomas, detection of new lesions in multiple sclerosis, subtraction of pre and post - contrast images and bone subtraction in angioCT. Exams may be visualized in "layers", which allows us to change from the previous to the current study by simply varying the opacity of the fused image from 0 to 100% or setting the opacity of the fused image in 50% and reversing the window of the previous study, which creates a subtraction effect.

**Discussion:** The correct co-registration of images is crucial to avoid errors. It may be automatic or manually refined. MR may create geometric distortions, due to magnetic field inhomogeneity, which is a challenge to a good co-registration.

**Conclusion of the presentation:** Radiologists may benefit from the use of image fusion tools in daily practice. Nevertheless, it is necessary to use it critically, aware of its pitfalls.

#### PD.04.048

##### CHALLENGES IN LOES SCORE: AN UNUSUAL ANATOMY TO THE RADIOLOGIST

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**Introduction:** Loes Score was first described in 1994 to quantify brain lesions in patients with adrenoleukodystrophy. The score ranges from 0 to 34, according to severity criteria. Areas of signal abnormality on T2 and areas of contrast enhancement are both considered lesions, except small foci of signal abnormality on T2, which are non-specific. Regional or global atrophy also contributes to the score. Nowadays, thinner slices in MR provide greater anatomical detail, which can sometimes be controversial in scoring.

**Methods Involved:** We didactically demonstrate the involvement of different regions in brain lesions in adrenoleukodystrophy in patients examined at our institution, using the FLAIR weighted sequence (isotropic acquisition, 1 mm thickness), subsequently performed multiplanar reformatting and correlation with figures of anatomy and histology. Some issues to be further discussed: Meyer's loop, geniculate bodies, brachium of the inferior colliculus, lateral lemniscus, trapezoid nuclei and projection fibers of the pons.

**Discussion:** Loes Score is part of the criteria to indicate bone marrow transplantation in these patients. Distinguishing contiguous anatomical structures may be a challenge, especially when comparing exams with different techniques.

**Conclusion of the presentation:** Neuroradiologists must be aware of this unusual, yet very important, anatomy in everyday practice.

#### PD.04.052

##### PROGRESSIVE FACIAL HEMIATROPHY (PARRY-ROMBERG SYNDROME): REPORT OF SIX CASES

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**Brief description of the purpose of the report:** The purpose is to report six patients presented in our institution from June 2011 to April 2012 with progressive facial hemiatrophy, with characteristic physical findings and neuroradiological abnormalities, as well as literature review.

**Medical History:** Six patients who underwent magnetic resonance imaging (MRI) and computed tomography (CT) fulfilled diagnostic criteria.

**Diagnosis:** Patients presented in the second and third decades of life (5 females, 1 male) with seizures and migraine which varied mainly on the time of onset. Five patients had typical cutaneous facial lesions and soft tissue changes on MRI study as well as intracranial ipsilateral abnormalities which consisted of T2/FLAIR hyperintense lesions in the subcortical white matter associated with hypointense GRE foci, probably representing calcifications. One patient also showed mild parenchymal enhancement. The patient who underwent CT had an important right facial hemiatrophy.

**Discussion and summary of the case:** Progressive facial hemiatrophy (Parry-Romberg syndrome) is a rare neurocutaneous characterized by typical cutaneous / neurological manifestations and characteristic imaging findings. Our findings were very similar to literature showing the importance of looking for soft tissue abnormalities on MRI when a suspected intracranial lesion is found and dermatological clinical data is not provided.

#### PD.04.057

##### ALZHEIMER'S DISEASE AND DIFFUSION TENSOR IMAGING: THE THEORY OF DISCONNECTION SYNDROME AND ABNORMALITIES IN ASSOCIATION BUNDLES.

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**Brief description of the purpose of the study:** Our study aims to use the technique of diffusion tensor imaging to as-

sess the integrity of association fibers in patients with mild Alzheimer's disease (AD).

**Methods:** 20 patients with mild AD and 25 healthy controls were recruited. The patients fulfilled NINCDS-ADRDA diagnostic criteria. Brain MRI was performed using a 1.5T scanner and diffusion sequences were made in 12 directions. The post-processing of the images was performed using the FSL platform and a novel registration approach to diffusion tensor imaging data, the TBSS.

**Main results:** The maps show a significant reduction (TCFC  $p < 0.05$  and VBT  $p < 0.01$ ) of the FA in the regions: the pillars of fornix, right corpus callosum, right major forceps, right fronto-occipital fasciculus, right inferior longitudinal fasciculus, right superior longitudinal fasciculus, major forceps and minor forceps.

**Importance of the conclusions:** The association fibers were injured. The extra-limbic projection fibers were spared. A disconnection syndrome may play a role in functional decline of these patients.

#### PD.04.059

##### **BRAIN NEOPLASMS IN INFANTS: WHAT RADIOLOGISTS NEEDS TO KNOW**

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**Introduction:** Congenital tumors of the central nervous system are rare. The literature is controversial in relation to until age at diagnosis, these tumors should be considered as probably congenital. In general, cancer diagnosed in infants children usually have large diagnosis and may have neurological deficits, hydrocephalus, increased head circumference as the initial presentation.

**Methods Involved:** Pictorial essay with cases of brain tumors diagnosed in children less than 2 years with different imaging methods, illustrating the main imaging findings and brief review of the main lesions.

**Discussion:** Congenital tumors and / or in infants are rare. However, the general radiologist may encounter with these entities in their daily practice. Therefore, knowledge of the fetures of these lesions helps to narrow the diagnostic hypotheses and allows providing data to the referring physician assisting the management of the case.

**Conclusion of the presentation:** Brain tumors in infants are rare and usually related to poor prognosis. To know the epidemiological characteristics and imaging fetures of the major injuries is very important to specialist and general radiologists.

#### PD.04.060

##### **LESÕES COMUNS E INCOMUNS DOS PEDÚNCULOS CEREBELARES MÉDIOS (PCM): ASPECTOS DE IMAGEM QUE PODEM AUXILIAR NO DIAGNÓSTICO.**

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**Introduction:** As lesões dos pedúnculos cerebelares médios podem ser de etiologias variadas, como as de substrato vas-

cular, desmielinizante, metabólicas, congênitas, traumáticas, neoplásicas e tóxicas.

**Methods Involved:** Revisão dos aspectos de imagem de lesões bilaterais comuns e incomuns dos pedúnculos cerebelares médios.

**Discussion:** As lesões dos pedúnculo cerebelar médio podem estar relacionadas a lesões usuais como infarto, infecção e neoplasia. Entretanto, alguns aspectos de imagem podem favorecer etiologias mais raras, auxiliando o radiologista a estreitar os diagnósticos. Descreveremos casos das patologias: atrofia múltiplas de sistemas, doença de Wilson, síndrome do tremor/ataxia relacionada ao X frágil, ataxia espino-cerebelar, síndrome de Wolfram, leucenfalopatia multifocal progressiva (LEMP), infecção pelo HTLV entre outras lesões incomuns acompanhado de suas características específicas de imagem e achados clínicos que podem auxiliar no diagnóstico.

**Conclusion of the presentation:** As lesões bilaterais dos pedúnculos cerebelares médios são caudados por uma variedade de etiologias. Conhecer sua anatomia e entender seus processos fisiopatológicos, contribui para um diagnóstico precoce e atenuação das morbidades. A revisão de patologias raras associada ao conhecimento das doenças mais usuais auxilia o raciocínio do especialista, assim como do radiologista geral.

#### PD.04.061

##### **SPONTANEOUS INTRACRANIAL HYPOTENSION SYNDROME: IMAGING EVALUATION PRE AND POST BLOOD PATCH THERAPY**

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**Introduction:** Spontaneous Intracranial Hypotension Syndrome (SIH), a rare disorder, is characterized by postural headaches caused by spontaneous spinal cerebrospinal fluid (CSF) leak that presents particular imaging findings. Therapy may be performed using Blood patch, with high success rates when targeted to specific level of suspected spinal dural defect, which may be identified by imaging.

**Methods Involved:** Didactic illustration of SIH cases with typical clinical and imaging findings, evaluated by computed tomography, magnetic resonance and cisternal scintigraphy, pre and post blood patch therapy.

**Discussion:** The association of postural headaches and typical findings, such as diffuse pachymeningeal enhancement, extra-axial fluid collections, "sagging" or descent of the brain, dilated epidural veins, enlarged epidural venous complex, canal attenuation or cord compression, and active contrast extravasation, suggests the diagnosis of SIH. Patients diagnosed with SIH often evolve to spontaneous resolution or to a self-limited course. However, in patients who fail conservative treatment and/or non-targeted lumbar blood patches, localization of the precise sites of CSF leaking is critical to guide the therapy.

**Conclusion of the presentation:** Imaging findings of SIH should be readily identified by radiologists. Knowledge of the role of imaging in the diagnostic and therapeutic algorithm is pivotal in order to provide proper care.

#### PD.04.063

##### **WALLERIAN DEGENERATION OF THE CENTRAL NERVOUS SYSTEM: BEYOND CORTICOSPINAL TRACT.**

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**Brief description of the purpose of the report:** Wallerian degeneration (WD) in central nervous system (CNS) refers to the secondary degeneration of distal axons and myelin sheaths after injury to the neuronal cell body or proximal axon and signifies irreversible loss of neuronal function as there is little evidence of axonal regeneration in CNS.

**Medical History:** We selected several cases with findings of WD in different tracts of the CNS demonstrated by conventional MRI images, secondary to injuries of various etiologies.

**Diagnosis:** Wallerian degeneration is most often described in the corticospinal tract because of its size, striking appearance, and functional importance, although it can be seen in any white matter structure. Anatomical radiological knowledge and use of proper protocol in acquisition of images can allow identification of this finding in other tracts. Findings related to the involvement of white matter tracts are presented in this study, including projection tracts (e.g. corticobulbar, corticopontine, thalamic radiations and geniculocalcarine), different association and commissural tracts, as well as some specific tracts related to the limbic system and brainstem.

**Discussion and summary of the case:** The clinical importance of wallerian degeneration has been demonstrated in literature and resides mainly in motor prognosis in cases involving the corticospinal tract. This essay demonstrates that this finding can be identified in several other tracts.

#### PD.04.064

##### **NEONATAL HYPOXIC-ISCHEMIC INJURY: CURRENT CONCEPTS AND CONTRIBUTION OF IMAGING TO EARLY DIAGNOSIS AND CHARACTERIZATION OF THE TYPE OF LESION**

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**Introduction:** Introduction: Hypoxic-ischemic encephalopathy (HIE) is one of the main causes of mortality and severe neurological injury in neonatal period.

**Methods Involved:** Methods: We selected cases of magnetic resonance imaging of the brain performed in term and preterm newborns, illustrating the several patterns of HIE, highlighting the discussion of current concepts, including periventricular leukomalacia subtypes, also showing temporal evolution of the findings.

**Discussion:** Discussion: HIE findings are variable and depend on factors such as brain maturity, duration and severity of insult and also timing of study. HIE's main forms of presentation are germinal matrix hemorrhage, periventricular leukomalacia, watershed territory infarcts and gray matter injury. Knowledge of myelination milestones and temporal evolution is necessary to the correct interpretation of the findings.

**Conclusion of the presentation:** Conclusion: Magnetic resonance imaging plays a significant role in HIE evaluation and familiarity with patterns of brain involvement is essential to the radiologist, including its subtypes. Recognition of these findings helps early diagnosis and treatment, as well as provides information about extent and severity of brain injury.

#### PD.04.065

##### **PRIMARY MENINGIOMA OF THE FOURTH VENTRICLE: A CASE REPORT**

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**Brief description of the purpose of the report:** Meningioma is a tumor of meningotheelial cells of origin on the inner surface of the dura mater. The primary occurrence of meningiomas in the ventricular system with no connection to the dura mater is extremely rare, representing up to 3.0% of intracranial meningiomas. They are most frequently seen at the lateral ventricle (77.8%), third ventricle (15.6%) and in the fourth ventricle (6.6%). In a retrospective study, we found in the literature 32 cases of patients with meningiomas of the fourth ventricle

**Medical History:** We report a rare case of male patient, 29 years old, of primary meningioma of the fourth ventricle in old, which manifest clinically with dizziness, paresthesia in the left lower limb, nuchal pain, impaired phonation, difficulty deglutition and sialorrhea. Magnetic resonance (MR) imaging of the brain showed solid mass lesion, lobulated, with high contrast enhancement in the topography of the foramen of Luschka to the left, compressing the bulb and fourth ventricle, measuring 4.7x4.0 cm.

**Diagnosis:** The patient underwent posterior fossa craniotomy and complete resection of the neoplasm. Morphological findings associated with immunohistochemical panel were consistent with fibrous meningioma.

**Discussion and summary of the case:** Although meningioma of the fourth ventricle is a rare neoplasm, it should be considered in the differential diagnosis with more common cancers that location.

#### PD.04.068

##### **UNUSUAL OPTIC NERVE LESIONS: IMAGING ASPECTS THAT HELPS IN DIFFERENTIAL DIAGNOSIS**

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**Introduction:** Optic nerves lesions have different etiologies which are responsible for diverse clinical manifestations that isolated are commonly insufficient to establish the diagnosis, especially in atypical lesions. Imaging exams have great importance narrowing the differential diagnosis, highlighting the current role of magnetic resonance imaging (MRI).

**Methods Involved:** Orbits and brain multidetector CT scans (MDCT) and MRI imaging, performed from 2008 to 2013 will be analyzed.

**Discussion:** Optic nerves imaging of primary and secondary uncommon diseases will be analyzed with their main differ-

ential diagnosis. The following diseases will be discussed: Congenital: Coloboma, morning glory, staphyloma and hypoplasia / aplasia; Inflammatory and infectious diseases: Optic neuromyelitis, sarcoidosis, cat scratch disease, Coat's disease, progressive outer retinal necrosis (PORN) and cytomegalovirus; Vascular: Infarction and cavernoma; Neoplastic: Lymphoma and leukemia; Others: Leber hereditary optic neuropathy, drusen and traumatic injuries. Many of these diseases have distinct imaging aspects, which are essentials for a correct diagnosis.

**Conclusion of the presentation:** The understanding of these typical imaging patterns is extremely important for the correct diagnostic analysis, avoiding further delay or improper diagnosis and treatment.

#### PD.04.070

##### FETAL MAGNETIC RESONANCE IMAGING: ATYPICAL CASES

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**Introduction:** Introduction : Magnetic resonance imaging (MRI) fetal has been successfully used to assess fetal neuroaxis, mainly as a complementary method of ultrasound or even to assess fetuses with familiar history of malformations.

**Methods Involved:** Methods: We selected and reviewed 6 atypical cases of MRI optimized for evaluation of the fetal neuroaxis performed in our institution from 2010 until 2013.

**Discussion:** Discussion : Cases usually assessed in routine studies include ventriculomegalies, tumors, infections and congenital abnormalities of the spine. We will discuss lesser frequent findings, which are usually inconclusive at ultrasonography, such as evaluation of intracranial hemorrhage, illustrating a case of intra-axial hemorrhage and a subdural hematoma; developmental malformations of posterior fossa, including a case of cerebellar dysplasia, another of cerebellar hypoplasia with probable romboencefalosinapse and a third one of meningocele with vanishing cerebellum; encephaloclastic changes resulting from infectious insult, exemplified by a case of hydranencephaly secondary to cerebral toxoplasmosis.

**Conclusion of the presentation:** Conclusion: We present unusual cases of fetal neuroaxis findings which are less known probably because the lower prevalence of these findings and/or the limited experience with the intrauterine presentation of these diseases. The better knowledge and increasing availability of the method can allow a more accurate diagnosis and early intervention.

#### PD.04.071

##### IMAGING MANIFESTATIONS OF SARCOIDOSIS IN THE CENTRAL NERVOUS SYSTEM: A PICTORIAL ESSAY

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**Introduction:** Introduction Sarcoidosis is an idiopathic systemic disease characterized histologically by the formation of non-caseating granuloma. It affects all parts of the body, es-

pecially the lungs and lymph nodes. Central nervous system is involved in about 25% of cases, and only about 5% have some clinical manifestation.

**Methods Involved:** Methods The confirmed cases of neurosarcoidosis were reviewed by illustrations of MR images obtained from the institution's digital archive, including vascular, cranial nerve, orbital and spinal cord involvement.

**Discussion:** Discussion Clinical expression of neurosarcoidosis is highly variable. The diagnosis is established based on clinical and radiological evidences, supported by histological findings of a systemic involvement. Imaging evidence of central nervous system disease is seen in about 10% of patients with systemic disease. Neurosarcoidosis has a predilection for the base of the brain and involves cranial nerves and leptomeninges, which show a diffuse enhancement on contrast-enhanced magnetic resonance images. It can also involve bones, dura mater, nerve roots, parenchyma of the brain and spine.

**Conclusion of the presentation:** Conclusion The prognosis may correlate with the extent of the disease by the time of the diagnosis. Given its variable clinical manifestations, it is crucial the knowledge of the different radiological features to enable the suspicion of the disease, diagnosis and treatment.

#### PD.04.073

##### IMAGING PATTERNS OF VENOUS INFARCT IN THE BRAIN: ITS FOLLOW-UP AND ITS RELATIONSHIP WITH CEREBRAL VENOUS THROMBOSIS.

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**Brief description of the purpose of the study:** Brain venous infarct (VI) is a rare stroke subtype, attributed to venous sinus thrombosis (CVST). Despite its superimposed features there are peculiarities involving its physiopathology, presentation, and outcome. This study aims to improve the recognition of VI diagnosis based on its imaging patterns, avoiding treatment delay.

**Methods:** We defined criteria to retrospectively study MRI of patients with CVST from a single institution (January-1995 until December-2013). Two radiologists examined MRI studies, defining imaging features, and its relationship with follow-up.

**Main results:** A series of 91 subjects were enrolled. According to criteria, 82 patients were included (82/91-90,1%). VI predominated in the supratentorial compartment, with distribution according to intracranial veins anatomy, related to both superficial and deep venous thrombosis (VT). Isolated dural sinus thrombosis (39/82-47,5%) had a better imaging prognosis. VT, when followed by VI (43/82 - 52,4 %), determined focal neurological deficits or seizures. Most of the affected parenchyma recovered, suggesting the predominance of vasogenic edema. Hemorrhage was variable, and arteriovenous dural fistula was rare.

**Importance of the conclusions:** Our data confirmed that VI is a consequence of VT, independently of dural sinus thrombosis. Radiologists must know intracranial vein anatomy and its parenchymal drainage to recognize patterns of VI. Imaging outcome is different between dural sinus thrombosis and VI.



#### PD.04.074

##### **REMOTE CEREBELLAR HEMORRHAGE: COMPUTED TOMOGRAPHY FINDINGS**

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**Introduction:** The occurrence of remote cerebellar hemorrhage (RCH) following neurological surgery is a rare complication generally associated with supratentorial intracranial procedures. The theory of cerebellar sag with distention of vermian veins is the most accepted. The treatment depends mainly on the neurological status of the patient and the extent of injury. The goal is to demonstrate the key tomographic aspects (CT).

**Methods Involved:** Selection of CT cases in a State Educational Institution's image databases.

**Discussion:** RCH occurs most frequently following supratentorial craniotomy and the most accepted pathophysiological mechanism is the depletion of cerebrospinal fluid (CSF) leading to sagging and caudal displacement of the cerebellum, with consequent occlusion of the superior vermian veins at the posterior fossa and hemorrhagic infarct. The diagnosis can be demonstrated by CT, which reveals the presence of blood around the cerebellar folia that forms, in contrast to the less dense parenchyma, a classic image called the "zebra sign". Treatment depends primarily on the neurological condition of the patient and the characteristics of bleeding.

**Conclusion of the presentation:** RCH should be suspected in cases where the patient had severe CSF loss during surgery or developed sudden neurological deficits postoperatively, warranting prompt neuroimaging investigation.

#### PD.04.075

##### **DYSPLASTIC CEREBELLAR GANGLIOCYTOMA (LHERMITTE-DUCLOS DISEASE): RADIOLOGIC FINDINGS AND PATHOLOGIC CORRELATION**

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**Introduction:** Dysplastic cerebellar gangliocytoma (DCG) is a rare cerebellar lesion of uncertain etiology, insidious growth and usually diagnosed in adulthood, when it presents complications. It is characterized by disorganization of cerebellar cellular architecture and association with Cowden syndrome. Treatment targets its complications and most patients undergo complete surgical resection.

**Methods Involved:** Selection of magnetic resonance (MRI) and anatomical pathology images.

**Discussion:** DCG is a rare tumor of unknown pathogenesis associated with Cowden syndrome, which is an autosomal dominant hamartomatous syndrome characterized by a variety of mucocutaneous lesions. Histological analysis reveals disruption of the normal laminar structure of the cerebellum with hypertrophic ganglion cells represented in imaging studies by thickening of the cerebellar folia with a striated pattern ("corduroy"). As it grows very slowly, initial treatment targets the complications. Surgical resection is often curative with few reports of recurrence.

**Conclusion of the presentation:** Although it is a rare tumor with nonspecific clinical manifestations, developments in neuroimaging have given the radiologist means to make an accurate presumptive diagnosis of this disease, favoring proper treatment and greatly improving the prognosis.

#### PD.04.076

##### **CASE REPORT OF CYSTOID WHITE MATTER DEGENERATION IN TUBEROUS SCLEROSIS.**

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**Brief description of the purpose of the report:** We report a case of cystoid brain degeneration of white matter in Tuberous Sclerosis (TS).

**Medical History:** The diagnostic investigation occurred in a 9 months old patient with epilepsy.

**Diagnosis:** Magnetic Resonance Images (MRI) revealed classic findings of tuberous sclerosis (cortical tubers and subependymal nodules) and cystic degeneration of white matter, unusual complication of this disease.

**Discussion and summary of the case:** The origin of the cystic lesions is not fully understood and may reflect parenchymal neuroepithelial cysts, cystic degeneration of white matter dysplastic lesions or enlargement of perivascular spaces. Knowledge it in the radiological spectrum of ET increases the active pursuit of this type of injury and limits the differential diagnosis of this pathology.

#### PD.04.080

##### **FUNCTIONAL MAGNETIC RESONANCE IMAGING IN THE PREOPERATIVE EVALUATION OF FOCAL LESIONS: ITS ROLE IN THE NEW NEUROSURGICAL GUIDELINES**

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**Introduction:** Recent recommendations propose neurosurgical resection of neoplastic lesions for minimal residual lesion volume and maximum preservation of brain function. In this context, functional magnetic resonance imaging (fMR) has a fundamental role in planning, helping to determine the relationship of eloquent areas of brain injuries.

**Methods Involved:** We will illustrate the role of fMR in pre-surgical planning in cases of routine clinical practice in a tertiary hospital. Situations in which the method has brought relevant information for surgical planning will be demonstrated as well as its limitations.

**Discussion:** The preoperative planning of tumors via fMR was began to be realized in 1994, when researchers demonstrate the usefulness of the method in patients with lesions in the premotor cortex, comparing the result with intraoperative cortical mapping. Previous studies have shown that the method influences on surgical and therapeutic decisions and varies 69-89%, for the definition of resectability, planning the surgical setting and the need for intraoperative electrophysiological assessment.

**Conclusion of the presentation:** The fMR, when performed properly and with well-established protocols, provides relevant information for preoperative planning. Their role has

become more relevant in the modern neurosurgical context, to assist in the access road and provide decision criteria for planning the limits of resection.

#### PD.04.084

##### DIFFERENT ASPECTS OF MELANOMA METASTASIS TO THE CENTRAL NERVOUS SYSTEM

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**Brief description of the purpose of the report:** Metastasis are the most common tumors of the central nervous system, up to ten times more common than primary tumors. The most cited originating sites are lung (45%), breast (20%) and melanoma (15%) and mostly occur by hematogenous spread. Brain metastasis secondary to melanoma usually present as cystic lesions, sometimes bleeding.

**Medical History:** SLN, 56 years old, born in São Paulo, presented in 2008 dorsal cutaneous lesion, with histological diagnosis of melanoma. On December 2011, biopsy of left axillary node results in spindle cell neoplasm with abundant presence of melanin pigment. In novembro/2013 was hospitalized with changes in mood and behavior. MRI showed expansive, solid-cystic lesion with significant perilesional swelling. Hematitic content was also seen within the cystic portion.

**Diagnosis:** Cerebral melanoma metastasis

**Discussion and summary of the case:** The prognosis of metastatic melanoma is very poor, with survival mean of 8 months in patients treated surgically. MRI and CT are excellent tools to aid in the diagnosis of secondary lesions and may be requested early by attending physician, if there is an appropriate clinical context.

#### TL.04.002

##### HYDROGEN PROTONS SPECTROSCOPY OF THE BRAIN:10 YEARS EXPERIENCE IN GENERAL HOSPITAL

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**Brief description of the purpose of the study:** Objective: To evaluate the brain spectroscopy performed in general hospitals

**Methods:** Material and Methods: A retrospective study was approved by the ethics that included tests performed in the period 2003-2013 committee. Correlation with age was taken for all data. For statistical evaluation we used Pearson correlation, ANOVA and the criterion for significance was  $P < 0.05$

**Main results:** Results: 800 tests were performed. With the voxel in the posterior cingulate gyrus of the NAA / Cr ratio was  $1.75 \pm 0.98$ , Cho / Cr and  $0.63 \pm 0.15$  Mio / Cr  $0.57 \pm 0.15$ , for the total population. There was an inverse relationship with aging for Cho / Cr and a positive relationship with Mio / Cr ( $p < 0.001$ ). Voxels were also studied in the frontal, parietal lobe and hippocampus. The most prevalent symptoms were: dementia (30.3%) in adults and attention deficit disorder (37.5%) in the pediatric. Tumors and abscesses were studied in 3.9% of cases.

**Importance of the conclusions:** Conclusion: The spectroscopy

can be used as a method of diagnosis aid in neuroradiology and should be encouraged in clinical routine. Our data agree with the literature: with aging we saw that there was decrease in Cholina and Mionositol elevation, suggesting demyelination.

## 5 - MUSCULOSKELETAL

#### PA.05.015

##### ULTRASONOGRAPHIC ASSESSMENT OF THE ELBOW: ULNAR NERVE DISLOCATION/MEDIAL EPYCONDILITES

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**Brief description of the purpose of the study:** To perform ultrasonography in selected patients to determine the presence of displacement of the ulnar nerve, its cross-sectional area and analyze signals of epicondylitis.

**Methods:** Performed triage of patients with complaints of pain and / or tingling of the elbow and forearm, to perform ultrasound examination of the elbow.

**Main results:** 8 elbows were studied. 6 reported pain, 12 complained of paresthesia and 2, both complaints. The displacement of the ulnar nerve was observed in 11 elbows. Of the 7 who did not shift, 4 showed signs of epicondylitis. Of the 11 elbows which suffered nerve displacement, 9 showed Section transversa area (AST) greater than  $6 \text{ mm}^2$  and 2 had lower AST / equal to  $6 \text{ mm}^2$ . 7 of elbows whose nerve showed no displacement, 5 AST showed meno / equal to  $6 \text{ mm}^2$  and 2, greater than  $6 \text{ mm}^2$ . The average CSA of the ulnar nerve in elbow dislocation with ulnar nerve was  $8.37 \text{ mm}^2$ . The mean AST elbow that showed no displacement was  $5.36 \text{ mm}^2$ .

**Importance of the conclusions:** Pain is more related to the sonographic signs of epicondylitis, while complaining of numbness symptom is mainly attributed to the displacement of the ulnar nerve, associated generally with increased cross-sectional.

#### PA.05.017

##### ATYPICAL PRESENTATION OF GOUT IN THE KNEE JOINT

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**Brief description of the purpose of the report:** Gout is a disease caused by monosodium urate microcrystals deposits in synovial membranes, articular cartilage and ligaments. Chronic tophaceous gout is one of the phases of the disease. This case aims to illustrate an atypical presentation of chronic tophaceous gout and their differential diagnoses.

**Medical History:** Male, 28 years old, complaining pain in the knee joint for 8 years without solution with symptomatic treatment. Denied pathologies or previous surgeries.

**Diagnosis:** Chronic tophaceous gout.

**Discussion and summary of the case:** Patient with chronic knee joint's pain held a radiography that showed calcified intraarticular mass. On magnetic resonance imaging was visu-

alized a rounded mass that had areas of low signal intensity on T2-weighted image, located in the anterior recess of the knee joint. The patient also had bone erosions and calcium deposits in the interphalangeal and metacarpophalangeal joints. The research for hemophilia and pigmented villonodular synovitis, differential diagnosis for the case, were negative. Given these results, the patient was then referred for biopsy guided by ultrasound. Histopathologic examination was consistent with chronic tophaceous gout, revealing an atypical presentation of the pathology.

#### PA.05.034

##### PYLE DISEASE: CASE REPORT

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**Brief description of the purpose of the report:** Report a new case of a patient with Pyle disease, emphasizing the radiographic findings.

**Medical History:** Male patient, 18 years old, with a history of two episodes of fractures and Erlenmeyer flask deformity of the long bones, and Chiari malformation type I.

**Diagnosis:** Pyle disease

**Discussion and summary of the case:** Pyle disease is a rare, autosomal recessive, metaphyseal dysplasia with childhood-onset, first described in 1931 by Edwin Pyle. It is characterized by mild symptoms and typical radiographic signs with Erlenmeyer flask deformity with cortical thinning of long bone metaphyses, genu valgus, mandibular prognathism, limitation of articular range motion, frontal bossing, skull bones with slight sclerosis and bone fragility that rarely results in fractures. The diagnosis is strictly radiographical. Patients with Pyle disease usually do not require therapeutic intervention but the correction of genu valgus and fracture sequelae may be required.

#### PA.05.045

##### LEG MYXOID LIPOSARCOMA: CASE REPORT AND LITERATURE REVIEW WITH HISTOLOGICAL CORRELATION

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**Brief description of the purpose of the report:** Report a limb fat neoplasia making correlation of imaging and histological study.

**Medical History:** 41 years old man presented with painful mass in the lateral aspect of the leg after local injury 5 years ago, growing since then. Physical examination shows a tumor on the side of right leg without skin change. Lower limbs mobility without limitations.

**Diagnosis:** Ultrasound visualized a large, hypoechoic, heterogeneous, well-designed mass, in the subcutaneous tissue, showing hyperechoic area in its interior. The MRI in which it was detected an oval shaping, well-defined, lobulated mass in the proximal third of the anterolateral margin leg located between the muscle bellies of the soleus, peroneus longus, extensor digitorum and lateral gastrocnemius, following the common / superficial peroneal nerve path, insinuating itself into

the subcutaneous fat through the fibular tunnel, cranially. The lesion has a close relationship with the lateral cortex of the fibula, with heterogeneous paramagnetic contrast impregnation.

**Discussion and summary of the case:** The myxoid liposarcoma accounts for 30-35% of all liposarcomas and occurs predominantly in the extremities of young adults, between the fourth and fifth decades of life, with no sex predilection. It is commonly seen in the thighs and has little propensity for metastasis.

#### PA.05.053

##### LEONINE FASCIES IN DIALYSIS PATIENT: A CASE REPORT

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**Brief description of the purpose of the report:** Secondary hyperparathyroidism (SHPT) due to secondary to chronic kidney disease (CKD) is a group of endocrine disorders of calcium, phosphorus and calcitriol metabolism and bone remodeling. SHPT is a presentation of renal osteodystrophy and determines bone remodeling, absence of bone mineralization with variable trabecular and cortical volume. Severe and untreated cases bring serious changes of facial bones and skull, setting aspect of "leonine fascies".

**Medical History:** A 43 years old man, who started to receive hemodialysis 20 years due to CKD, with SHPT and increased of maxilla and mandible. Performed tomography scans (CT) of the head and neck that showed bone thickening and heterogeneous density with cortico-medullary differentiation loss, lamellar lytic areas and marked hypertrophy of the jaws.

**Diagnosis:** About 40 % of bone biopsies in CKD with bone symptoms have fibrous osteitis (FO). In severe and untreated SHPT situations, can be observed severe alterations of facial bones and skull, with hyperostosis and dysmorphic features, that contribute to the appearance designated "leonine fascies".

**Discussion and summary of the case:** Radiographic imaging may be normal in patients with mild to moderate FO and difficult differential diagnosis. The method of choice to evaluate the bone density and architecture is the CT.

#### PA.05.055

##### Bone lesions in pediatrics: pictorial essay

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**Introduction:** Bone lesions are divided by aggressiveness criteria after a systematic analysis of its shape, limits (Lodwick classification), cortical and periosteal reaction, and soft tissue component. Image findings may be compared with pathology data been classified into benign and malignant. The location of the bone lesion, density and radiological criteria of aggressiveness associated with clinical and epidemiological data, in addition to the knowledge of the natural history of diseases, allow an accurate diagnosis, preventing biopsy in most cases.

**Methods Involved:** A case review and pictorial essay of bone tumors, including pathological reports and cases that the biopsy was unnecessary.

**Discussion:** Bone tumors usually occur between 5 and 25 years old at bone proliferation sites, and the age and location of lesions are crucial in the diagnostic orientation. The clinical presentation should be correlated with the radiological characteristics guiding the differentiation between aggressive lesions (malignant neoplasms and infectious processes), and lesions with signs of low aggressiveness (primitive and pseudotumors benign lesions).

**Conclusion of the presentation:** The knowledge of the radiological findings of these lesions is essential to avoid unnecessary invasive procedures.

#### PD.05.004

##### ATLANTO-AXIAL SUBLUXATION WITH COMPRESSION BULBOMEDULAR TRANSITION IN A PATIENT WITH RHEUMATOID ARTHRITIS: A CASE REPORT

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**Brief description of the purpose of the report:** Review the imaging findings of rheumatoid arthritis and associated changes of the cervical spine.

**Medical History:** Female patient, aged 76 and with a previous diagnosis of rheumatoid arthritis without accompaniment. Forwarded by rescue to the emergency room, unconscious, mydriatic and Glasgow 3. A CT brain performed for evaluation and was diagnosed with atlanto-axial subluxation with bulbomedular compression.

**Diagnosis:** Atlanto-axial subluxation with compression bulbomedular

**Discussion and summary of the case:** Rheumatoid arthritis is an inflammatory disease and is usually associated with synovitis and ligament injury. One of the potential sites of disease involvement is the cervical spine and craniocervical transition. In the column, the rheumatoid arthritis can lead to atlantoaxial subluxation, atlantoaxial impaction, and subaxial subluxation among others leading to instability and potential risk of spinal cord and brain stem compression. Many patients are asymptomatic, regardless of the degree of subluxação. Because of the risk of compression and sudden death, the treatment for patients with instability is surgery.

#### PD.05.005

##### PLANTAR REGION OF THE FOOT: A REVIEW OF ANATOMY AND MOST COMMON DISORDERS

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**Introduction:** The plantar region (consisting of plantar aponeurosis, intrinsic and extrinsic muscles, ligaments, nerves and vessels) is site of many pathologies and currently receive considerable attention in the scientific literature. This pictorial essay summarizes the most common plantar abnormalities and addresses their characteristic in the whole of imaging methods.

**Methods Involved:** Anatomical and functional aspects of the plantar region will be reviewed by illustrations including im-

aging correlation. The pathologies will be shown by images of ultrasound, radiography and MRI, obtained from the institution's digital archive.

**Discussion:** Plantar pain is a common complaint in clinics and etiologic diagnosis only based on physical examination is not always possible, in this scenery imaging becomes fundamental. The structures of the plantar region have a broad spectrum of disorders, including aponeurotic disorders (faciitis and plantar fibromatosis, enthesopathy, traumatic and corticosteroid-induced rupture, rheumatologic and infectious processes), muscle disorders (inflammatory, traumatic and denervation) and vascular disorders (thrombosis). Imaging methods are definitive in differentiating all these entities.

**Conclusion of the presentation:** The plantar region is commonly affected by various clinics and orthopedic disorders recognize the main pathologies that affect this region is mandatory, since this characterization may be the key factor for the proper treatment of plantar pain.

#### PD.05.006

##### NEUROGRAFIA BY RESONANCE PLEXUS LUMBOSACRAL

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**Introduction:** Advances in MRI volumetric techniques (VISTA, CUBE and SPACE) allow evaluation with high resolution peripheral nerves in lumbosacral / pelvic region.

**Methods Involved:** The authors present a protocol for image acquisition and posterior longitudinal reformatting. The main complaints are related to the sciatic nerve: in addition to accessory bands piriformis, other cases of anatomical variants and post-surgical complications will be presented. They show cases of pudendal neuropathy with infiltration Alcock channel and postoperative complications in the obturator nerve and the abdominal wall.

**Discussion:** Neurogenic pain in the pelvic, perineal and gluteal region is a diagnostic challenge clinical as well as imaging. In many of these patients, the etiologic diagnosis is not obtained only with the assessment of the lumbar spine or pelvis / hips.

**Conclusion of the presentation:** Therefore, clinical correlation is needed to guide the radiologist to direct your review and optimize the protocol to be used in different conditions.

#### PD.05.007

##### T1P AND T2 MAPPING ON THE LUMBAR INTER-VERTEBRAL DISCS: COMPARISON OF DIFFERENT METHODS OF SEGMENTATION

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**Brief description of the purpose of the study:** To compare different segmentation methods used to extract T1 $\rho$  and T2 relaxation times of intervertebral discs from MRI. Seven different methods of partial disc segmentations (PDS) were compared using the whole disc manual segmentation (WDS) as the reference standard.

**Methods:** Sagittal T1 $\rho$  and T2 maps generated using a

multi-echo sequence on 1.5T MR in 57 asymptomatic volunteers with mean age  $26.54 \pm 5.0$  years. In WDS the disc was segmented in its whole extent and in all slices. In PDS methods segmentation of the disc was performed in 6, 5, 4, 3 and 1 sagittal slices (respectively PDS-6, PDS-5A, PDS-5B, PDS-4, PDS-3, and PDS-1). Circular ROIs (CROI) positioned in the nucleus pulposus (NP) and annulus fibrosus (AF) were also used to extract T1 $\rho$  and T2 and data was compared to WDS.

**Main results:** Results from PDS-6 and PDS-5B were statistically similar to WDS. All the remaining PDS methods and CROI showed different results from WDS ( $p < 0.001$ ). All partial segmentation methods including CROI showed excellent linear correlation with WDS. CROI relaxation times from NP and AF showed linear correlation with WDS.

**Importance of the conclusions:** Our results suggest that PDS methods have excellent correlation with WDS, with no statistical difference with WDS in the case of methods PDS-6 and PDS-5B.

### PD.05.008

#### INFLUENCE OF AGE, BMI AND GENDER ON EARLY DISC DEGENERATION: EVALUATION THROUGH T1 $\rho$ AND T2 MAPPING

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**Brief description of the purpose of the study:** The aim of this study was to evaluate the influence of factors: age, body mass index (BMI) and gender on early lumbar disc degeneration in asymptomatic young adults.

**Methods:** After IRB approval, sagittal T1 $\rho$  and T2 maps generated using a multi-echo sequence on 1.5T MR scanner in 57 asymptomatic volunteers. These being 32 women and 25 men, aged 20-38 years (mean  $26.54 \pm 5.0$ ) and BMI: 15.9-29.5 kg/m<sup>2</sup> (mean  $23.3 \pm 3.4$ ). The regions of interest were analyzed: nucleus pulposus (NP), anterior fibrous annulus (AAF), posterior annulus fibrosus (PAF) and the whole disc (WD).

**Main results:** The T2 relaxation times of NP and WD decreased as age increased ( $R = -0.26$ ,  $p = 0.04$ ;  $R = -0.33$ ,  $p = 0.01$ ). There was no relationship between the relaxation times and BMI. Among genders, the only significant difference was in the T2 relaxation time of WD and PAF.

**Importance of the conclusions:** T2 relaxometry showed a slight loss of water during the advance of adulthood. Men also had higher water content in the disc than women. There were no significant changes in T1 $\rho$  related to age, gender and BMI in young asymptomatic adults.

### PD.05.010

#### INDIRECT SIGNS FROM MRI THAT MIGHT HELP YOU TO DIAGNOSE POSTERIOR TIBIAL TENDON DYSFUNCTION

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**Brief description of the purpose of the Review of Literature:** PTT dysfunction is a common disease and affects mostly women aged more than 50 years. However, it has been misdiagnosed on MRI. Our purpose is to emphasize the in-

direct signs at MRI that could make an early recognition and intervention preventing progression to a flatfoot deformity.

**Description (s) condition (s), method (s) or technique (s):** Epidemiology and physiopathology of PTT dysfunction. Review of the anatomy of the bony structures, ligaments and tendons that maintain the plantar medial longitudinal arch. Relationship between these altered structures and the PTT dysfunction. Emphasize the indirect signs of initial PTT dysfunction, such as: excessive plantar flexion of the talus; unopposed pull of the peroneus brevis sliding laterally the mid and forefoot; navicular subluxation in relationship to the talus; focal spur in the distal tibia; heel valgus revealed on coronal images; plantar fasciitis; ligament injuries of the tarsal sinus; Spring ligament injuries; focal area of bone marrow edema on the path of the PTT; osteohypertrophic reactions due to talonavicular and subtalar overload.

**Conclusion:** Indirect signs at MRI can help make an early PTT dysfunction diagnosis, which, in turn may help treat and restore the functionality of the foot, and then enhance the life quality of the affected population.

**Brief discussion of the case**

### PD.05.011

#### STRESS FRACTURES OF THE LOWER LIMBS

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**Introduction:** Stress fractures represent 10-15% of sports injuries, particularly impact. Are much more common in the lower limbs, and the tibia is about 50% of cases. Muscle fatigue due to repetitive stress, increases bone impact, creating solutions bone continuity, caused by an imbalance in the osteogenesis / osteoclasts in the adaptation of bone to applied loads process.

**Methods Involved:** This essay aims to demonstrate the most common and frequently reported radiological images of stress fracture, exposing pictures radiographs, computed tomography and magnetic resonance imaging diagnoses of four main diagnostic centers.

**Discussion:** Although many stress fractures are self-limited, with continuous activity, can progress to a complete fracture and require more invasive treatment. In addition, the differential diagnosis (osteoid osteoma, osteomyelitis and metastases) include entities that have a significantly different treatment.

**Conclusion of the presentation:** The diagnostic suspicion of a stress fracture is critical since neither the clinical history nor the radiological images are specific to the diagnosis. Therefore, it is essential that the radiologist is used with the images and their most common sites affected to can recognize them.

### PD.05.012

#### AVULSION FRACTURES OF THE HIP.

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**Introduction:** Sports play a large part in many people's lives, however, the increase of the "weekend warriors", serves as a warning to improve the diagnostic accuracy of avulsion fractures, which occurs when an excess tensile force is exerted at the muscle insertions.

**Methods Involved:** We will use in this pictorial review several cases of chronic and acute avulsion fractures, diagnosed by X-ray (RX) and computed tomography (CT) in four main diagnostic centers, complementing with a literature review.

**Discussion:** Most of this type of fracture, when acute and accompanied by a clinical context, it becomes easy, however, in its chronic form, with no history of a specific traumatic event, the findings can be confusing, leading to incorrect diagnoses and unnecessary procedures when simulating osteomyelitis or bone malignancy.

**Conclusion of the presentation:** The role of image patterns and anatomy muscle-tendon is essential for the recognition and accurate diagnosis of avulsion fractures.

### PD.05.013

#### CHOPART SPRAINS:SENTINEL SIGNS THAT AVOID OVERLOOKING

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**Brief description of the purpose of the Review of Literature:** Although ankle torsions are frequently diagnosed, mid-foot sprains, particularly involving Chopart joint, are commonly overlooked, mostly because the radiologists attention is focused on ligamentous lesions of the hindfoot. Our aim in this study is to exemplify, with Magnetic Resonance imaging exams, what kind of signs and lesions radiologists should look for, to avoid missing Chopart sprains.

**Description (s) condition (s), method (s) or technique (s):** Chopart sprains can be very easy to miss because of their rarity and the lack of obvious radiographic findings in up to 41% of cases according to previous studies. Also radiologists are usually focused on ligamentous lesions of the hindfoot, which are much more frequent. Patients presenting this injury are mostly young and the main mechanisms of trauma are eversion of the foot and ankle, axial load, twisting forces applied to the plantar flexed foot, and may be related to car accidents and sports practice.

**Conclusion:** The importance of precise diagnosis is to allow the best treatment possible, to avoid functional limitations and even chronic pain, frequently associated with misdiagnosed Chopart sprains.

### PD.05.014

#### INFILTRATION WITH PLATELET RICH PLASMA IN THE ELBOW EPICONDYLITIS: CLINICAL EXPERIENCE AND REVIEW OF LITERATURE

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**Brief description of the purpose of the Review of Literature:** Platelet rich plasma (PRP) is the volume of autologous blood plasma, in which platelet concentration is above normal rate. Recently, there was an increase in the use of PRP in sports injuries, including epicondylitis, because of its potential healing properties on musculoskeletal injuries. Epicondylitis is a tendinopathy in the origins of the common extensor tendon and / or flexors of the wrist / fingers, with high treatment-related costs due to lost productivity and expenditures in health plans. This review aims to show the effects of PRP in the treatment of epicondylitis, based on clinical evidence.

**Description (s) condition (s), method (s) or technique (s):** Selecting articles addressing the use of PRP in tendon lesions / epicondylitis; literature review to the main databases were used. In this review aspects related to standardization of PRP application, compared with intravenous corticosteroids, presence of leukocytes in the PRP, use of local anesthetic side effects, contraindications and use of ultrasound during the procedure and color Doppler monitoring are addressed.

**Conclusion:** PRP in refractory epicondylitis demonstrates advantages: early rehabilitation, functional improvement in sports injuries, low potential for allergic reactions / disease transmissions. However, randomized clinical trials with larger numbers of patients are needed to assess benefits / safety and long-term effects of PRP in musculoskeletal injuries.

### PD.05.015

#### RADIOLOGIC ASPECTS OF FIBROUS DYSPLASIA - PICTORIAL ESSAY

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**Introduction:** Fibrous dysplasia is a pseudoneoplastic bone lesion of unknown etiology, with benign and recurrent feature, characterized by the presence of fibrous tissue and osteoid trabeculae replacing normal bone. Ranks in monostotic and polyostotic, coursing with wide spectrum of presentation. This work aims to demonstrate the imaging findings of fibrous dysplasia, using radiography, computed tomography (CT) and magnetic resonance imaging (MRI).

**Methods Involved:** Through the analysis of images available in our image archive, this pictorial essay was developed, illustrating various radiographic features of fibrous dysplasia in the face, skull, femur, pelvis and ribs.

**Discussion:** Clinical manifestations range from asymptomatic to bone pain, repetitive fractures, compression of cranial nerves and bone deformities (femur in shepherd's crook and leonine facies). It can affect any bone, but when solitary, primarily involves the proximal femur, followed by the ribs, bones of the face and skull. The polyostotic form usually affects the femur, tibia, pelvis and bones of the feet. The MRI appearance is variable and may mimic neoplasm, and the correlation with radiographs / CT is useful in this differentiation.

**Conclusion of the presentation:** Can perceive didactic and educational value of this essay, enabling identification of key imaging findings in the diagnosis of fibrous dysplasia, beyond comparative approach using different imaging methods.

### PD.05.016

#### RADIOLOGICAL SPECTRUM OF STRESS FRACTURES – FROM RADIOGRAPHY TO MAGNETIC RESONANCE IMAGING

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**Introduction:** Bone tissue is constantly being subjected to forces or loads by weight bearing or muscle activities, called "stress". These forces stimulate bone remodeling, whose loss of balance results in pathological aspect, called stress fracture, when they occur in the absence of traumatic event, in normal or abnormal bone. The objectives are demonstrate spectrum of stress fractures and the approach of pos-treat-

ment aspects, using radiography, computed tomography (CT) and magnetic resonance imaging (MRI).

**Methods Involved:** The selected cases were obtained from the images file of our service, involving metatarsal, proximal phalanx in the foot, cuboid, tibia, femur, pubic symphysis, sacrum, ulna, and vertebrae.

**Discussion:** The stimulus to sports activities have become more frequent the development of stress fractures in clinical practice. Most often, affecting the lower limbs and manifesting with localized pain of insidious onset, worsening during physical activities. Radiography has low sensitivity for the detection of stress fractures, making it necessary the realization of bone scintigraphy or MRI for early detection of this pathology.

**Conclusion of the presentation:** Thus, we perceive the didactic and educational value of this iconographic essay, enabling the identification of key imaging findings in the diagnosis and monitoring of stress fractures, besides the comparative approach using different imaging methods (radiography, CT and MRI).

### PD.05.022

#### FOREFOOT DISORDERS IMAGING EVALUATION: DIAGNOSTIC EXPANDING BEYOND MORTON'S NEUROMA AND STRESS FRACTURE

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**Introduction:** Several diseases produce pain or deformity in the forefoot region. This symptom is reported, mainly by women. The most common changes are metatarsal stress fractures and Morton's neuroma, but there are numerous other pathologies that may go unnoticed.

**Methods Involved:** Methods with higher sensitivity and more used to evaluate forefoot disorders are: ultrasonography, radiography and magnetic resonance imaging.

**Discussion:** The development of devices with higher resolution and the development of specific analysis protocols to analyze these small forefoot anatomical structures allowed expand these uncommon diagnosis. This work aims to illustrate the other forefoot pathologies that can be painful and disabling as rigidus hallux, plantar plate injury, bunionete, "splay foot", small vessels thrombophlebitis, claw toe, mallet finger, "crossover" among other.

**Conclusion of the presentation:** The forefoot pathologies diagnosis goes far beyond Morton's neuromas and stress fractures. The imaging proper interpretation depends on the active pursuit of these other lesions.

### PD.05.023

#### ANATOMIC VARIANTS OF THE CRUCIATE LIGAMENTS OF THE KNEE JOINT: PICTORIAL ESSAY

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**Introduction:** The anterior and posterior cruciate ligaments of the knee joint are dense connective tissue structures that connect the femur to the tibia, representing fundamental elements for joint stability. They work as stabilizers of the knee joint during translation and rotation motions.

**Methods Involved:** Detailed analysis of the cruciate ligaments' anatomy is best done by magnetic resonance imaging, which can visualize its fibers from origin to insertion, as well as bone abnormalities and other associated findings.

**Discussion:** The spectrum of anatomic variants of the cruciate ligaments is broad, encompassing from aplasia and hypoplasia to the more frequent distal insertion variations. Embryologically, the cruciate ligaments have a common origin with the transverse ligament and meniscus. This fact explains the most common variants, which are the distal insertion in the meniscal horns.

**Conclusion of the presentation:** This essay illustrates the anatomical variants of the cruciate ligaments of the knee joint. Knowledge of these variants is important in order to avoid a misdiagnoses and confusion with lesions.

### PD.05.024

#### ULNA STRESS FRACTURE: REPORT OF 4 CASES AND LITERATURE REVIEW

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**Brief description of the purpose of the report:** Introduction Ulna stress fracture is uncommon, and results of bone repair failure to microscopic cortical injuries, secondary to torsion and flexion overloads to forearm, or excessive traction of the flexor muscles to bone shaft. Clinical history is extremely important because this injury is present in young patients, which primary bone tumors or infection may occur. Magnetic resonance (MR) is the method of choice for diagnosis and follow-up. We present 04 cases of ulna stress fracture in young adults, related to sports activities.

**Medical History:** Material e Method Retrospective review of clinical and MR features of ulna stress fracture.

**Diagnosis:** Results We observed a wide spectrum of periosteal reaction and bone marrow edema at the ulna diaphysis, characterized by low T1 signal and high T2 signal on MR. There were no complete fractures.

**Discussion and summary of the case:** Conclusion All cases of stress fracture occurred in the volar region of ulna diaphysis, at the flexor digitorum profundus muscle origin; supporting the theory of excessive muscle overload.

### PD.05.030

#### CASE REPORT: COMPARTMENTAL SYNDROME

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**Brief description of the purpose of the report:** The Compartmental Syndrome can occur in any tissue, provided that it has compromised blood vascular pedicle corresponding. Patient positioning and duration of major surgeries may be responsible for these changes.

**Medical History:** Clinical history: male patient developed pain in the right shoulder in the second postoperative day pancreatectomy.

**Diagnosis:** That shoulder MRI performed with the use of in-

travenous contrast, which revealed moderate enlargement of the belly of the supraspinatus, with central lesions slightly hypointense appearance on T1 and T2, irregular contours and absence of contrast uptake, consistent with muscle necrosis.

**Discussion and summary of the case:** The image findings corroborate the hypothesis that muscle compartment syndrome due to extended position in abduction during surgery.

### PD.05.033

#### MEASURES IN THE ASSESSMENT OF BALANCE ES-PINO-PELVIC: PICTORIAL ESSAY

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**Introduction:** Introduction: The alignment of the spine was, for years, only assessed in the coronal plane. The need to maintain balance in abnormal postures develops an overload with structural changes and energy consumption. Due to the column present anatomical and functional relationships with the pelvis, it is essential to study the alignment also in the sagittal plane. Parameters are used for pelvic and measured assessment on panoramic radiographs. The present study aims to present the main technical measures in squamous - pelvic balance in panoramic AP and lateral incidences.

**Methods Involved:** Methods: We demonstrate the techniques for assessment of spinal alignment, determining the Cobb angle and Ferguson in the coronal plane and pelvic incidence, sacral slope, pelvic version, lumbar lordosis, thoracic kyphosis and Plumblin in the sagittal plane.

**Discussion:** Discussion: Discussed the changes of the parameters measured in relation to changes in spinal curvatures, emphasizing the pelvic incidence and sacral slope.

**Conclusion of the presentation:** Conclusion: Pelvic incidence is shown as the only anatomical parameter constant and the most used in studies to evaluate the sagittal alignment of the pelvis. A nuanced understanding of alignment in the sagittal plane, allows to correlate the changes in spino - pelvic balance with various pathologies of the spine.

### PD.05.036

#### POLYDACTYLY OF THE FOOT: RADIOLOGICAL ASPECTS

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**Brief description of the purpose of the report:** Polydactyly is an anomaly caused by the manifestation of an autosomal dominant allele with incomplete penetrance, consisting in abnormal quantitative change of the fingers or toes. In this study we discuss radiological aspects to be observed for possible corrective planning.

**Medical History:** Female, 12, referred to the orthopedic clinic, complaining of pain in the right foot and difficulty wearing shoes. The clinical examination included the presence of two supernumerary toes on the right foot.

**Diagnosis:** Additional examinations of the limb (CT, MRI and radiographs) were performed, observing the presence of seven toes with center-axial configuration - proximal, mid-

dle and distal phalanges development. Also, seven metatarsals, four cuneiform bones, a navicular and cuboid. The third showed epiphyseal hypertrophy.

**Discussion and summary of the case:** Isolated or part of a congenital syndrome, polydactyly is usually classified into three groups, depending on the site of duplication: postaxial (lateral margin of the limb) most common; pre-axial and center-axial (medial border) and (less common). The supernumerary toe may contain only soft tissue or development until metatarsal. Imaging studies are used for classification and preoperative planning. The correction usually occurs before patients starts walking, it is indicated in cases of pain, difficulty in wearing shoes or cosmetic reasons.

### PD.05.037

#### ILIOPSOAS MUSCLE: ANATOMY, TRAUMATIC INJURIES, SNAPPING AND IMPACTS.

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**Introduction:** The iliopsoas compartment corresponds to the retroperitoneal space that contains the psoas major, minor and iliopsoas. Several pathologies can affect this compartment including inflammatory, hemorrhagic, traumatic, mechanical or post-hip replacement complications.

**Methods Involved:** We describe the pathologies affecting iliopsoas tendon and its muscle belly through a review of MRI and ultrasound exams obtained from our digital archive. When relevant, video documentation (dynamic maneuvers on ultrasonography) and lively theoretical models will be shown.

**Discussion:** When considering pathologies of the long muscle belly along the paraspinal compartment, we emphasize the importance of coronal T2 fat sat / STIR protocol in lumbar spine routine for proper evaluation of conditions such as extraforaminal hernias, discitis and paraspinal abscesses. At myotendinous plan, peritendinous edema on MRI may infer iliopsoas internal snapping, therefore dynamic ultrasonography should complement patient workup. Post-hip replacement complications, cases of traumatic injuries and iliopsoas bursitis are also described. Finally we demonstrate the role of the iliopsoas tendon in anterior acetabular labrum lesions, currently described as central impact.

**Conclusion of the presentation:** The characterization of the iliopsoas pathologies may be a key factor for the diagnosis of low back and hip pain.

### PD.05.038

#### ROTATOR CUFF INTERVAL IMAGING: ANATOMY AND PATHOLOGY.

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**Introduction:** The rotator interval corresponds to a well-defined portion of the anterior shoulder region, located between the supraspinatus and subscapularis tendons. Rotator interval changes are directly related to shoulder stability, adhesive capsulitis and long head biceps changes.



**Methods Involved:** First, anatomical and functional aspects of the normal rotator interval are shown, including its imaging methods correlation. Following, the major associated injuries will be reviewed by illustrations, ultrasound and magnetic resonance images obtained from the institution's digital archive.

**Discussion:** The rotator interval is bounded by the subscapularis and supraspinatus tendons, and the coracoid process. This space contains the coracohumeral and superior glenohumeral ligaments, the biceps tendon and anterior capsule joint. The injury of these structures may contribute to glenohumeral and biceps tendon instability. On the other hand, the contraction of these structures can manifest as adhesive capsulitis.

**Conclusion of the presentation:** Abnormalities of the rotator interval are underdiagnosed in clinical practice, due to its complex anatomy and the difficulty in visualizing structures in both imaging studies and arthroscopy. The characterization of the pathologies of the rotator interval may be a key factor for the diagnosis and treatment of joint pain.

#### PD.05.040

##### THE EPIDURAL SPACE: FROM ANATOMY TO PATHOLOGY.

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**Introduction:** The epidural space is an anatomic compartment between the dural sheath and the spinal canal. In some areas it is a real space and in others only a potential space. It contains fat, the dural sac, spinal nerves, blood vessels and connective tissue, including ligaments, and is commonly related to various pathological entities, such as tumoral dissemination, infections and inflammatory, vascular and post-traumatic conditions.

**Methods Involved:** Initially we will describe the anatomical landmarks of the epidural space and the structures related to it. Then the aspects on MRI of the diseases affecting the epidural space will be discussed. The study will be illustrated with images of our institution's database.

**Discussion:** The pathologies that involve the epidural space are: primary and contiguity disseminated tumors and infections, inflammation related to rheumatic or post-traumatic conditions, lipomatosis, vascular disorders and those of the dural membrane, such as transdural herniation of the spinal cord.

**Conclusion of the presentation:** Abnormalities involving the epidural space are majorly important in clinical practice. Thus the knowledge and proper evaluation through imaging modalities of this space should be mastered by all radiologists. This pictorial essay aims to illustrate the aspects concerning the normal anatomy and the pathological commitment of the epidural space.

#### PD.05.044

##### PERONEUS LONGUS TENDON INJURY WITH POSTERIOR MIGRATION OF THE OS PERONEUM. MRI AND MDCT3D

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**Brief description of the purpose of the report:** The aim of this case is to show the relationship between the os peroneum topography, and the peroneus longus tendon (PLT) tear, evidenced by magnetic resonance imaging (MRI) and multidetector computed tomography with 3D reconstruction (MDCT3D).

**Medical History:** 38 years old male patient with ankle inversion injury one month earlier, with pain at the lateral region of the left ankle. MR shows PLT discontinuity and probably os peroneum proximal retraction. MDCT3D confirms os peroneum posterior migration and its relation to the PLT injury.

**Diagnosis:** Complete tear of the PLT with os peroneum posterior migration.

**Discussion and summary of the case:** The os peroneum is a round or oval-shaped sesamoid bone within the PLT, single, bi or multipartite, located near the calcaneocuboid joint. Probably always present in a fibrocartilaginous or ossified stage, although its reported radiographic prevalence is only 9%. Os peroneum proximal displacement relative to the calcaneocuboid joint, or fragment separation, are associated with full-thickness tear of the PLT.

#### PD.05.046

##### FOREIGN BODIES OF THE EXTREMITIES: DIAGNOSIS USING DIFFERENT IMAGING MODALITIES

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**Introduction:** Trauma and injuries to the extremities, even mild ones, can lead to loss of skin integrity and the penetration of foreign bodies under it. For an accurate diagnosis, in addition to an appropriate clinical history, the use of more than one imaging method may be necessary.

**Methods Involved:** Cases of superficial foreign bodies in the extremities using different imaging methods: conventional radiography, ultrasound, computed tomography (CT) and magnetic resonance imaging (MRI) will be described to reach a diagnosis.

**Discussion:** The diagnosis of foreign body requires high index of suspicion, supplied through the patient's clinical history, which is often poor, and its exclusion is important, given the risk of allergic, inflammatory and infectious complications of a retained foreign body. Radiographs are useful in identifying radiopaque foreign bodies such as metal and glass and ultrasonography for identifying small radiolucent superficial structures, such as thorns and plastic. CT and MRI can provide the precise location of the foreign body and the presence of complications.

**Conclusion of the presentation:** In case of suspected foreign body or even in a nonspecific image, the radiologist plays an important role and should use the different imaging methods available for an accurate diagnosis and location.

#### PD.05.054

##### TUNNEL CARPAL SYNDROME :CASE REPORT WITH RADIOLOGIC, SURGICAL AND PATHOLOGIC CORRELATION

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**Brief description of the purpose of the report:** Our purpose is to report a case with gout and median nerve entrapment secondary to flexor tenosynovitis with radiologic, surgical and pathologic correlation.

**Medical History:** A 52 year-old men presenting with carpal tunnel syndrome. Diagnosed chronic arthropathy secondary to gout with clinical, laboratory and radiologic features. The main features were the radiocarpic and mediocarpic arthropathy with overhanging edges erosions sclerotis margins in carpal bones, soft tissue masses, synovial thickening, flexor tenosynovitis. The nerve conduction studies demonstrate sensitive conduction abnormal, motor conduction reduction of 35 % with latency of the distal median nerve prolonged. The treatment was retinaculotomy of carpal tunnel and synovectomy. Surgical findings were whitish sclumps within flexor tendons, carpal tunnel floor displaced anteriorly with tophyand partial rupture of the flexor tendons. Median nerve was swollen and with abnormal colour. The diagnosis was confirmed by pathology.

**Diagnosis:** The authors emphasizes the importance of including in differential of degenerative arthropathy, gout, specially in men in the fourth and fifth decades of life and the uncommon association between flexor tenosynovitis, median nerve entrapment and gout.

**Discussion and summary of the case:** Median nerve entrapment secondary to flexor tenosynovitis caused by gout is uncommon

#### PD.05.055

**MEASUREMENTS AND ANGLES IN THE STUDY OF LOWER LIMB RADIOGRAPHS: HOW WE DO IT**  
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**Introduction:** Intro: Radiography is an essential imaging modality when studying the Muscleskeletal System, providing a precise evaluation of anatomy, measurements, the relationship between different body structures, static and dynamic body analysis and particularly the mechanical axis in orthostatic position. The objective of this study is to survey the most widely used measurements acquired on x-ray exams of the lower limbs in the clinical practice, highlighting the need for proper technique when obtaining these radiographic views, as well as perform a literature review for assessing the advantages and disadvantages of the most frequently used methods.

**Methods Involved:** Methods: A research was carried out among orthopedists to survey which are the measurements most frequently used by them in clinical practice and also a survey of the measurements that are most requested in our service. From this research, we performed a bibliographic survey on each of these evaluation techniques.

**Discussion:** Conclusions:

**Conclusion of the presentation:** Knowledge of the most widely used measurements for the evaluation of lower limb radiographies is essential for an adequate study of the locomotor system, therefore determining improved quality and reliability of the information transmitted to the requesting physician.

#### PD.05.056

**CLASSIC SIGNS IN MUSCULOSKELETAL RADIOLOGY.**

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**Introduction:** Musculoskeletal disorders are increasingly present in our daily practice, with the highest incidence in the occupational field and sport activities. In this pictorial essay, we aim to discuss and illustrate through various imaging methods (conventional radiology, computed tomography and magnetic resonance imaging), figures and schematic drawings, some of the signs described and established in this important field of radiology.

**Methods Involved:** David Letterman sign, hamburger, absent bow tie, oil droplets, whiskering, cockade, vacuum disc sign, picture framing, talar beak, half moon, as well as leontiasis ossea, Hill Sachs deformity and butterfly vertebra, are some of the signs discussed in this presentation. The images belong to our archive service.

**Discussion:** Familiarity based on the recognition of a classic sign, through the evocation of metaphorical images, allow us to perform diagnoses with greater confidence.

**Conclusion of the presentation:** New imaging methods may render obsolete some of these signs, but without changing the basic pathophysiology in which they are based.

#### PD.05.059

**REVIEW OF THE ANATOMY AND MAJOR TRAUMATIC INJURIES OF THE EXTENSOR MECHANISM OF THE HAND AND WRIST: A PICTORIAL ESSAY.**

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**Introduction:** The extensor mechanism is compound by the most complex anatomical structures of the hands, being commonly injured in upper limb trauma. Magnetic resonance imaging has a key role in the diagnosis of these pathologies. Knowledge of tendon anatomy in MRI is crucial in performing the correct diagnosis and treatment of these lesions, which if not adequately treated, can lead to severe functional loss.

**Methods Involved:** Images from MRI scans of our institution and personal files, with the goal of making an anatomical review and a brief explanation of the major traumatic injuries of the extensor mechanism.

**Discussion:** The extensor muscles are divided into extrinsic and intrinsic. The intrinsic are located in the hand, while the extrinsic are located in the forearm and connect to the hand bones through long tendons. There is also the interosseous-lumbrical complex. The lumbrical muscles contribute to the extension of the interphalangeal joints. Injuries to the extensor mechanism are common, mainly because of its superficial location and reduced amount of overlying subcutaneous tissue.

**Conclusion of the presentation:** It is very important that the musculoskeletal radiologist know in details the anatomy and major traumatic injuries of the extensor mechanism of the hand and wrist.

## PD.05.060

### REVIEW OF THE ANATOMY AND MAJOR TRAUMATIC INJURIES OF THE FLEXOR MECHANISM OF THE HAND AND WRIST: A PICTORIAL ESSAY.

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**Introduction:** The flexor mechanism is a tendinous complex involved in the flexion of the hands and fingers, being commonly injured in upper limb trauma. Magnetic resonance imaging has a key role in the diagnosis of these pathologies. Knowledge of tendon anatomy in MRI is crucial in performing the correct diagnosis and treatment of these lesions, which if not adequately treated, can lead to severe functional loss.

**Methods Involved:** Images from MRI scans of our institution and personal files, with the goal of making an anatomical review and a brief explanation of the major traumatic injuries of the flexor mechanism.

**Discussion:** There are two flexor tendons to each finger, except the thumb, which has only one. The short flexors are located in the hand, and the long flexors are located in the forearm, connecting to bones by long tendons. Injuries to the flexor mechanism occur due to a contusion or penetrating wound. The shallowness of these tendons and the small amount of subcutaneous tissue overlying the volar aspect of the hand and wrist predisposes these lesions.

**Conclusion of the presentation:** It is very important that the musculoskeletal radiologist know in details the anatomy and major traumatic injuries of the flexor mechanism of the hand and wrist.

## PD.05.061

### CAMPTOCORMIA-BENT SPINE SYNDROME( BSS)- A CASE REPORT

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**Brief description of the purpose of the report:** BSS is defined as an abnormal flexion of the trunk, appearing in standing position, increasing during walking and abating in supine position. The aim of this study was to report a case of BSS emphasizing its main cause which is of muscular origin, relates to a primary idiopathic axial myopathy of late onset in elderly patients.

**Medical History:** It's a 76 yr old woman who developed progressive hypotones of the spinal extensor muscles leading to a progressive forward bending of the trunk

**Diagnosis:** The diagnosis of axial myopathy is based upon CT/MRI examination demonstrating massive fatty infiltration of paravertebral muscles. Axial myopathy is the most frequent cause of camptocormia in elderly patients. When faced with a patient progressively developing a bent spine, an algorithm of clinical, laboratory and eletrophysiological investigation should be undertaken to eliminate other possible etiologies.

**Discussion and summary of the case:** In this context, imaging studies like CT and MRI are the most useful diagnostic tools demonstrating the characteristic abnormalities of primary axial myopathy, as opposed to the muscular atrophy seen in elderly patients with spine osteoarthritis or stenosis

## PD.05.072

### ROTATOR CABLE: ANATOMY, BIOMECHANICAL FUNCTION AND APPEARANCE ON ULTRASOUND AND MAGNETIC RESONANCE IMAGING

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**Introduction:** The rotator cable is a linear condensation of fibers coursing from the interval of rotators posteriorly along the distal articular surface of the supraspinatus and infraspinatus tendons, being considered extension of the coracohumeral ligament. Its relevance lies in the possibility to play a role in the biomechanics of the shoulder, maintaining its function in the case of rotator cuff injuries.

**Methods Involved:** Review of the anatomy of the rotator cable, through normal and pathological illustrative cases, some confirmed with arthroscopy, we will describe its appearance in ultrasound (U.S.) and magnetic resonance imaging (MRI) and discuss its biomechanical function.

**Discussion:** The rotator cable can help prevent the biomechanical insufficiency, distributing the strength between the cuff so as to limit the spread of tears. U.S.: appears as a hyperechoic fibrillar structure, deep and perpendicular to the supraspinatus and infraspinatus tendons. MRI: can be identified in the main plans, particularly in the coronal, presenting as a low signal structure along the lower surface of the supraspinatus and infraspinatus tendons, continuous with the coracohumeral ligament.

**Conclusion of the presentation:** The rotator cable is uncommonly described, but the radiologist needs to know, considering the increasingly well established importance in the biomechanics of shoulder and can be easily evaluated by U.S. and MRI.

## PD.05.073

### FINDINGS OF THE SYNDROME OF BERARDINELLI-SEIP IN MAGNETIC RESONANCE: CASE REPORT

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**Brief description of the purpose of the report:** Brief Description: The purpose of this report is to describe the findings of Berardinelli-Seip Syndrome in Magnetic Resonance imaging (MRI).

**Medical History:** Clinical History: R.W.G.F., 26 years old, male. Presents generalized atrophy in the trunk and legs, muscular hypertrophy and alterations of laboratory tests. Complains of pain in the left lower limb, being subjected to MRI. Performed MRI of femur and left knee, which revealed a reduction of the content of subcutaneous adipose tissue diffusely, muscle groups with homogeneous signal intensity, associated with extensive osteolytic lesion, with intermediate signal intensity on T1 and hyperintense on T2 SPAIR, without post-contrast enhancement, occupying much of the spinal cord of the distal portion of the femur, measuring approxi-

mately 14,0 x 4,8 x 3,6 cm in its largest axis, without signs of cortical rupture or periosteal neoformation.

**Diagnosis:** Berardinelli-Seip Syndrome.

**Discussion and summary of the case:** Discussion summarized: Berardinelli-Seip Syndrome or Congenital Generalized Lipodystrophy, is a rare autosomal recessive disease, with low prevalence of approximately 1:10.000.000. It is clinically characterized by atrophy of adipose tissue, coarse facies, muscular hypertrophy, findings acromegalic, besides hypertriglyceridemia and insulin resistance. In imaging examinations have significant atrophy of the subcutaneous adipose tissue and presence of bone cysts, which are part of the diagnostic criteria of this syndrome.

#### PD.05.078

##### ACUTE SACROIDOSIS WITH MUSCULOSKELETAL INVOLVEMENT: AN EXCEPTIONAL CASE

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**Brief description of the purpose of the report:** Although sarcoidosis may affect virtually any organ, musculoskeletal involvement is infrequent.

**Medical History:** We report a case of 24 years old woman presented with bilateral calf and ankle pain for three weeks. On physical examination there were palpable muscular nodules and signs of erythema nodosum.

**Diagnosis:** Magnetic resonance imaging of the legs showed multiple small muscular lesions in both calves, and multiple small hyperintense foci on T2 STIR sequence in the medullary of the both tibias, most prominent in the distal metaphyseal regions. Biopsy of a nodule in the gastrocnemius muscle revealed non-caseating granuloma of epithelioid cells. The level of serum angiotensin-converting enzyme was normal and chest CT did not show bilateral hilar lymphadenopathy or any other significant finding. These complaints were quickly ameliorated by the administration of prednisolone.

**Discussion and summary of the case:** Symptomatic muscle disease is rare and is seen in less than 0.5% of cases and there are three typical presentations: chronic myopathy, palpable nodules, and acute myositis. The diagnosis of sarcoidosis can be established by means of the following criteria: the presence of granuloma in a biopsy specimen without evidence of tuberculosis, fungus, malignancy, or other cause of granuloma, together with clinical features suggesting sarcoidosis.

#### PD.05.090

##### DIFFERENTIAL DIAGNOSIS OF SOFT TISSUE CALCIFICATIONS: PICTORIAL ESSAY.

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**Introduction:** Soft tissue calcifications are a common feature of several diseases and, thereafter, a daily finding for the radiologist. They show up idiopathically or secondary to another condition, and its morphologic aspect, localization and distribution help defining the pathologic process behind them. We present a review of the main etiologies and characteristics of the different types of soft tissue calcifications.

**Methods Involved:** By radiologic analysis, we correlate findings with the most important underlying pathologies.

**Discussion:** There are several causes for these calcifications, for example, collagen diseases, neoplastic diseases, degenerative diseases, hyperparathyroidism, ossifying myositis, cisticercosis, tumoral calcinosis, progressive ossifying fibrodysplasia. Each of them presents its own clinical aspects, as well as its own morphologic and distribution characteristics. Additional findings of each pathology, not properly related to the calcifications, can help the diagnosis.

**Conclusion of the presentation:** For better etiologic diagnosis, it's important to know patient's clinical history, associated imaging findings and the proper aspect of the calcifications. Despite there are superior technique of morphologic evaluation, such as Magnetic Resonance Imaging, the plain radiography still represents an important diagnostic tool, due to its low cost and its huge availability, and still allowing a detailed analysis of the picture.

#### PD.05.094

##### CORRELATION OF MRI-BASED BONE MARROW BURDEN SCORE WITH GENDER AND SPLENECTOMY IN GAUCHER'S DISEASE.

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**Brief description of the purpose of the study:** Bone disease is a serious complication of Gaucher disease (GD). The purpose of this study was to correlate skeletal pathologic findings quantified by MRI-based bone marrow burden (BMB) score with gender, and splenectomy in patients with type 1 GD.

**Methods:** MRI was performed in femurs and lumbar spine of 41 patients with type 1 GD (17 males, 24 females). The mean age was 33.1 (95%CI, 28.8-37.3). Bone marrow involvement was analyzed using the BMB score, and correlated with gender and spleen status of these patients.

**Main results:** In 41 patients the mean BMB score was 12.51 (95%CI, 11.39-13.62). Bone changes were visible in 40 patients (97.5%). The mean BMB score in the female group was slightly higher, with a mean of 12.87 (95%CI, 11.3-14.3), while the mean BMB score for male patients was 12 (95%CI, 9.94-14.05) but without significant statistical difference (p=0.287). Splenectomized patients showed a significantly higher BMB score with a mean of 13.6 (95%CI, 12.44-14.78) while non-splenectomized showed a mean BMB score of 12 (95%CI, 10.36-13.63) indicating significant statistical difference (p=0.002).

**Importance of the conclusions:** Bone involvement was significantly higher in the group of splenectomized patients, but there was no statistical difference between bone involvement and gender.

#### PD.05.095

##### ENTHESOPATHY OF THE MEDIAL GASTROCNEMIUS

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**Introduction:** Diseases of the origin of the tendon of the

medial gastrocnemius muscle, though frequent, are scarcely reported in MRI exams and constitute cause of posteromedial knee pain, and differential diagnosis for suspected meniscal injuries.

**Methods Involved:** The authors present a case series of enthesopathy of the medial gastrocnemius diagnosed in MRI exams, emphasizing the imaging aspects.

**Discussion:** The medial gastrocnemius muscle originates from the posterior segment of the femoral metaphysis, in close relation to the posterior joint capsule of the knee. The composition of tendon entheses is complex and presents synovial component. Mechanical and synovial processes directly affect this structure, where changes include bone edema, bone irregularities, entesofitos, thickening and signal change tendon, peritendinous cystic formations and partial ruptures. These changes are scarcely reported in MRI studies, however have a high incidence in cases of medial knee pain

**Conclusion of the presentation:** We conclude that the assessment of the origin of the tendon of the medial gastrocnemius muscle should be part of research in magnetic resonance imaging of the knee, especially in cases of posteromedial pain.

### PD.05.098

#### IMPINGMENT MYOTENDINOUS JUNCTION OF THE SUPRASPINATUS

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**Introduction:** Muscle edema involving the anterior segment of the myotendinous junction (MTJ) of the supraspinatus in cases where the tendon is presented within the normal range, may be a cause of pain and differential diagnosis in rotator cuff disease.

**Methods Involved:** The authors present a series of cases where edema is identified in MTJ of the supraspinatus, the segment interposed between the coraco-acromial ligament (ACL) and coraco-humeral (LCU) in patients with clinical suspicion of disease in the rotator cuff, constituting only finding on MRI scans.

**Discussion:** There are several anatomical causes, including variants and functional leading to the acromion-humeral impact. According to Neer, 95% of rotator cuff injuries are due this impact. Some anatomic variations and ligament disorders may contribute to the narrowing of coraco-acromial arch. The supraspinatus JMT is presented interposed between the coraco-humeral and coraco-acromial ligaments. In some MRI scans we can observe edema in the JMT segment of the supraspinatus, accompanied by adjacent muscular atrophy, with or without alterations in those ligaments.

**Conclusion of the presentation:** We conclude that the so called JMT impingement of the supraspinatus constitutes another finding in magnetic resonance imaging in the evaluation of rotator cuff syndromes.

### PD.05.099

#### IMPINGMENT OF THE INFERIOR GLENOHUMERAL LIGAMENT

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**Introduction:** In some cases of glenohumeral instability is iden-

tified a widening of antero-inferior segment of the glenohumeral joint with interposition of the inferior glenohumeral ligament.

**Methods Involved:** The authors report a series of cases with interposition of the anterior band of the inferior glenohumeral ligament, between the glenoid and humeral head, causing changes in signal and thickening of the ligament capsular swelling and adjacent labral changes. We established a correlation with findings of multidirectional instability.

**Discussion:** The glenohumeral multidirectional instability is a frequent indication of magnetic resonance. One of the findings is called static posterior subluxation, probably determined by ligamentous laxity or loss of negative intra-articular pressure. In some of these cases, is identified the inferior glenohumeral ligament interposed between the antero-inferior glenoid and humeral head. In these cases there is a thickening of the ligament and joint capsule adjacent, and labral changes and even adjacent bone remodeling.

**Conclusion of the presentation:** We conclude that the presence of the anterior band of the inferior glenohumeral ligament is another diagnosis so called the gleno-humeral ligament impingement and contributes to the persistence of a multidirectional instability associated with capsulitis.

### PD.05.100

#### Measurement of the lumbosacral lordosis angle: Comparison between Panoramic Radiography and Lumbar Spine MRI

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**Brief description of the purpose of the study:** The aim of this study was to compare the values of lumbosacral lordosis (LL) and lumbar disc space angles between measurements on supine MRI and upright spine panoramic radiography (SPR).

**Methods:** After IRB approval 42 asymptomatic subjects (20-40 years, mean 26.5±4) were included in the study. The volunteers were evaluated with lumbar spine MRI (1.5T) in dorsal decubitus with hips and knees in neutral position. Lateral panoramic spine radiography was obtained in upright position. Measurements on MRI were performed on T2-weighted sagittal images. Two observers blindly and independently measured LL (L1-S1) and the angles formed at each disc space (L1-2, L2-3, L3-4, L4-5 and L5S1).

**Main results:** The LL angles measured by MRI and radiography were statistically different ( $p < 0.0001$ , mean of differences = 6.3°, CI 99% = 2.7-9.8). Likewise, when analyzed angles of each disc space anatomical levels, all angles, except for L4-L5, were statistically different between both measurements.

**Importance of the conclusions:** The value of lumbosacral lordosis obtained from supine MRI is significantly different from that measured at the SPR. Most anatomical levels exert an important influence on the variation of the angle of lordosis between supine and upright position, except L4L5.

### PD.05.102

#### WHIPPLE'S DISEASE COURSING WITH ABDOMINAL PSEUDOTUMOUR, SPONDYLODISCITIS AND SACROILIITIS - CASE REPORT.

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**Brief description of the purpose of the report:** Report of a rare case of Whipple's disease (WD) coursing with abdominal pseudotumor, sacroiliitis and spondylodiscitis caused by the bacterium *Tropheryma whipplei*, documented by computed tomography (CT) of the abdomen and magnetic resonance imaging (MRI) of the lumbosacral spine.

**Medical History:** C. M. S. M., female, 56 years old, complained of long term diarrhea, significant weight loss and abdominal pain. Laboratory tests showed nutritional deficiency. Abdominal CT detected retroperitoneal tumor. Two months after surgical excision and pathological diagnosis of WD, the patient developed right lumbosciatalgia. MRI of the lumbosacral spine showed sacroiliitis and spondylodiscitis.

**Diagnosis:** Whipple's disease coursing with abdominal pseudotumor, sacroiliitis and spondylodiscitis.

**Discussion and summary of the case:** DW is a systemic infection caused by the bacterium *Tropheryma whipplei*, with worldwide incidence estimated in 12 new cases per year. It is characterized by long term of nonspecific symptoms and should be considered in patients with chronic diarrhea of unknown etiology. The imaging findings are important in the diagnosis when associated with clinical and pathological information, helping to identify complications and track treatment progress. Although treatable, delayed diagnosis can lead to high morbidity and mortality.

### PD.05.103

#### PREPATELLAR FASCIITIS?

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**Introduction:** Besides the pre-patellar bursa and swelling of the subcutaneous cellular tissue, sometimes there is edema in the pre-patellar fascia between the quadriceps tendon and the patellar ligament in cases of anterior knee pain, as only finding on MRI scans. Could we call this finding of pre-patellar fasciitis?

**Methods Involved:** The authors present four cases where the swelling of the prepatellar fascia is only finding on magnetic resonance imaging scans of patients with anterior knee pain.

**Discussion:** The patella is inserted anatomically described as a sesamoid bone in the quadriceps tendon / patellar, increasing the knee extensor mechanism. The anterior segment of the patella is covered by an extension of the quadriceps tendon to the patella tendon or ligament called. Beyond enthesopathy and tendinopathy own of those tendons, identifies this edema adjacent to the anterior segment of the patellar fascia. In 2009, Resnick et al. described this anatomy. From the analysis of the cases presented suggest the hypothesis tendinopathy or pre-patellar fasciitis.

**Conclusion of the presentation:** We conclude that the edema prepatellar fascia can be isolated cause of anterior knee pain.

### PD.05.104

**A CASE REPORT AND LITERATURE'S REVIEW OF KNEE INJURY WITH EMPHASIS TO INVOLVEMENT OF THE POSTEROMEDIAL CORNER OF THE KNEE**  
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**Brief description of the purpose of the report:** Objective of this case report is to highlight the importance of diagnostic lesions posteromedial corner of the knee.

**Medical History:** Male patient, 29 years old, with a knee injury during football game.

**Diagnosis:** Injury of the anterior cruciate ligament with involvement of posteromedial corner of the knee.

**Discussion and summary of the case:** The posteromedial corner (PMC) of the knee comprises structures between the posterior border of the superficial medial collateral ligament and the medial edge of the posterior cruciate ligament, including oblique posterior ligament, semimembranosus tendon, oblique popliteal ligament and posterior horn of medial meniscus. The PMC has an important function in maintaining knee stability, and your injury results in anteromedial rotational instability. Unlike the lesions of posterolateral corner (PLC), PMC's injuries are often overlooked, or not clinically demonstrable in ligament rupture tests, either radiologically, considering the few studies and lack of understanding of pattern and context of these lesions. The fundamental importance of this diagnosis is made by the viability and success of your surgical treatment and other associated injuries as anterior cruciate ligament reconstruction. This case report with literature review aims to bring more information about the context and the most common presentations of this type of injury.

### PD.05.105

#### IMAGING FINDINGS OF DISEASES OF THE ILIOTIBIAL TRACT: A TOPOGRAPHICAL APPROACH.

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**Introduction:** The iliotibial tract is a complex anatomical structure, whose inflammatory \ traumatic and degenerative diseases are important causes of pain in the hip and lateral aspect of the knee, more frequent in younger patients and athletes.

**Methods Involved:** MRI scans performed in our department shows cases of the iliotibial tract pathology in the proximal portion (stretching the iliac / insertion enthesitis, tensor fasciae latae muscle injury, injuries resulting in gluteus minimus or medius tendon tears, Morel Lavallée) in the trochanteric level (friction) and distal (friction and breakage).

**Discussion:** The iliotibial tract pathologies were divided didactically and illustrated according to the type (inflammatory, traumatic and degenerative) and for location (proximal insertion, trochanteric and distal insertion), facilitating the understanding of the pathophysiological mechanisms involved.

**Conclusion of the presentation:** Familiarity with the anatomy and pathology of the iliotibial tract and its components is important for its recognition as a potential source of symptoms in the hip and lateral side of the knee.

### PD.05.107

#### REVISÃO DOS CRITÉRIOS RADIOGRÁFICOS DE INSTABILIDADE SEGMENTAR DA COLUNA LOMBAR

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**Brief description of the purpose of the Review of Literature:** A estabilidade é essencial para a unidade funcional da coluna vertebral e proteção da medula espinal e das raízes nervosas. A instabilidade da coluna lombar é um tema controverso e não há consenso quanto ao seu diagnóstico. No nosso serviço utilizamos os critérios propostos por White e Panjabi, que descreveram um sistema de pontuação para avaliação da instabilidade da coluna lombar utilizando parâmetros biomecânicos, danos neurológicos e carga esperada na coluna.

**Description (s) condition (s), method (s) or technique (s):** Devido à sua simplicidade, baixo custo e grande disponibilidade, as radiografias dinâmicas em flexão-extensão funcional são mais estudadas pela literatura e o método mais utilizado no diagnóstico por imagem de instabilidade intervertebral lombar. Revisamos a propedêutica radiológica para este diagnóstico, ilustrando e discutindo as radiografias dinâmicas e os critérios de Panjabi, com exemplos de radiografias normais e patológicas obtidas de pacientes atendidos no nosso serviço, além de citar outros critérios diagnósticos de instabilidade propostos e as possíveis indicações de intervenção e seu momento adequado.

**Conclusion:** O radiologista deve estar familiarizado com os critérios diagnósticos mais comuns da instabilidade de coluna lombar, já que tem papel fundamental em um tema tão controverso em que a imagem radiográfica influencia diretamente a condução do caso.

**Brief discussion of the case**

#### PD.05.111

##### PELVIC RING FRACTURES – DIAGNOSTIC IMAGING EVALUATION

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**Introduction:** The pelvic ring comprises the sacrum and the innominate bones, articulated posteriorly in the sacroiliac joint and anteriorly in the pubic symphysis. Pelvic ring fractures are defined as those in which there are at least two sites of fracture: one in the anterior portion, and another in the posterior one. According to the mechanism of injury they are classified as resulting from lateral compression (57%), anteroposterior compression (15%), vertical shear (7%) and combined mechanical (21%). This study aims to expose, in a systematic way, the main aspects related to the mechanism of injury, classification systems and criteria of instability, from a radiological perspective.

**Methods Involved:** We evaluated diagnostic imaging exams requested for pelvic ring fractures, carried out in 2013 and stored in the PACS of a University Hospital. We selected the most relevant one to this exposition.

**Discussion:** Radiographic evaluation is useful in the initial evaluation of fractures, as well as of significant misalignments, with the inlet and outlet incidences. Computed tomography, using multiplanar and three-dimensional reconstructions, increases the accuracy in identification of radiographically occult fractures, being useful in the evaluation of adjacent structures and surgical planning.

**Conclusion of the presentation:** Radiological examinations are useful in the identification and classification of pelvic ring fractures.

#### PD.05.112

##### LOWER EXTREMITY BONE STRESS INJURIES IN ATHLETE PAIN DIFFERENTIAL DIAGNOSIS

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**Brief description of the purpose of the Review of Literature:** We present a case series review of magnetic resonance (MR) bone stress injuries of lower extremities, with pathophysiology discussion and literature review, according to pain location and most frequent MR study obtained (pelvis, hip, knee, leg and foot).

**Description (s) condition (s), method (s) or technique (s):** Bone stress injuries represent an inability of bone remodeling to support repetitive microtraumas, secondary to training. Pain is a regular complaint of professional and recreational athletes. Imaging investigation is indicated when intensity and duration of pain has increased with activity or persisted. MR is the method of choice for investigation once soft tissues pathologies are more likely to occur and, also, more sensitive to bone stress reactions. Frequently bone stress injuries are the only finding.

**Conclusion:** Diagnosis of bone stress injuries are important once is directly related to overuse, which determines time for rehabilitation and changes on athletes training.

**Brief discussion of the case**

#### PD.05.114

##### PICTORIAL ESSAY OF BENIGN LESIONS MIMICKING MALIGNANT TUMORS OF MUSCULOSKELETAL SYSTEM

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**Introduction:** There are some parameters that can guide us towards low or high aggressiveness of the lesion, as patient age, lesion location, lesion margins, type of periosteal reaction. But some injuries present themselves in unusual ways, making it difficult to conduct where misdiagnosis can have irreparable consequences for the patient. We demonstrate here a pictorial essay of potentially aggressive lesions of skeletal muscle, which the histological study are benign.

**Methods Involved:** All selected cases have imaging tests such as x-rays, CT scans or MRI studies and diagnostic confirmation by histological studies (percutaneous or excisional biopsy).

**Discussion:** The radiologist should be able to distinguish between benign and malignant lesions, to avoid unnecessary biopsies or surgical procedures. A systematic approach to bone lesions, for example, is mandatory. CT and MRI are indicated to clarify the anatomy of artifacts in areas of overlap in conventional radiology and determine the internal structure of an injury, for example, fat, liquid or solid.

**Conclusion of the presentation:** The early and correct diagnosis is undoubtedly of great value to the patient thus avoiding late diagnosis of malignant lesions and iatrogenic procedures in those with benign tumors.

## PD.05.115

### BURSITIS OF THE KNEE. PICTORIAL ESSAY.

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**Introduction:** The knee is the primary joint synovial the “hinge” of the human body. This joint is characterized by complicated and inconsistent forms of its various components. To soften the contact between the various constituents, there are about 8 bursae around the joint. Lesions of these structures are generic and popularly known as bursitis. Our paper proposes a demonstration of these lesions and the description of its main imaging findings.

**Methods Involved:** Methods involved: We evaluated the digital archive of our service, the demand for MRI of the knee that could illustrate the theme.

**Discussion:** Discussion: Describe the precise location of the main bursae of the knee, with their normal dimensions and anatomical relationships as well as the appearance of pathological picture, the symptoms most commonly associated with each type of lesion and the frequency of involvement of each one deriving from acute affections or chronic.

**Conclusion of the presentation:** Conclusion of the presentation: Magnetic resonance imaging of the knee is the method of choice for global assessment of the components of this joint, including bursae, allowing higher spatial resolution and better evaluation of adjacent structures.

## PD.05.116

### PRIMARY BONE LYMPHOMA IN CHILDHOOD

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**Brief description of the purpose of the report:** We report a case of primary bone lymphoma in childhood, rare tumor which incidence is even lower in case of pediatric patients and subtype of major T cell. The higher prevalence of other differential diagnosis and imaging overlapping characteristics make diagnostic imaging even more challenging.

**Medical History:** An 11-years-old female presented with a history of pain in the left thigh for two months. She was subjected to radiography, computed tomography (CT) and magnetic resonance imaging (MRI) for investigation.

**Diagnosis:** Lytic lesions with periosteal reaction involving the acetabulum, ischium and pubis on the left and involvement of obturator, pectineus and adductors muscles at the root of the ipsilateral thigh were identified. Biopsy confirmed the diagnosis of anaplastic large T-cell non-Hodgkin's lymphoma. Then, it was initiated chemotherapy and performed positron emission tomography (PET / CT) during follow-up, with findings suggesting local and distant progression of disease with nodal involvement.

**Discussion and summary of the case:** The presence of lytic lesions, periosteal reaction layers, little cortical destruction and soft tissue mass is suggestive of bone lymphoma. The main differential diagnoses are chronic osteomyelitis, Ewing's sarcoma and metastatic sarcomas. The imaging studies and histopathology are essential for diagnosis and proper conduct.

## PD.05.118

### PELVIC FINGER AS A CAUSE OF PAIN AND FUNCTIONAL IMPAIRMENT

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**Brief description of the purpose of the report:** Rare congenital abnormality, where bone develops in the soft tissues adjacent to normal skeleton. It's important to be aware of this condition in order to establish the proper differential diagnosis with trauma and myositis ossificans.

**Medical History:** Fifty-nine year old man with a history of pelvic pain for two years, radiating to the lower back and difficulty in walking, using analgesics without clinical improvement .

**Diagnosis:** Pelvis Computed Tomography showed tubular bony prominence on the lateral side of the right iliac bone, by the roof of the acetabulum, in discontinuity with the ilium (pseudo-joint).

**Discussion and summary of the case:** This variation occurs during the sixth week of embryogenesis, in the stage of mesenchymal bone growth. Usually, the independent cartilaginous costal primordium of the first coccygeal vertebra fuses with the vertebral column. When this doesn't occur, the cartilaginous center develop independently forming a rudimentary rib. The segmentation of the cartilage center simulates the appearance of a finger. Located at any level of the pelvic bone or the anterior abdominal wall. The differential diagnosis with post-traumatic myositis ossificans and avulsion fracture of the pelvis is done by the presence of cortex and medula, joints and no history of trauma.

## PD.05.119

### FRACTURES AND IMPLANTS: WHAT THE ORTHOPEDIC SURGEON EXPECT FROM YOUR REPORT.

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**Introduction:** Radiologic report is a technical document that transmits the imaging diagnostic specialist opinion for the assistant physician, helping him defining his conduct.

**Methods Involved:** By extense bibliography revision and orthopedic experts opinion, the study demonstrate what kind of information is crucial for cases outcome.

**Discussion:** Facing a traumatism, the radiology has two main tasks: diagnose and evaluate the fracture and luxation type; and to evaluate the treatment results and search for possible complications. Some characteristics may be compulsorily reported, because if they become unsuspected, will affect directly the outcome, by example specials characteristics like impinging, depression or compression. In case of children the involvement of growth plate must be accounted for, using the Salter-Harris classification for best communication with assistant physician. Conventional radiography has main role in evaluation of fracture consolidation and in detection of any post-traumatic complications. When orthopedic implants are used, it must be paid special attention for implants specific complications, life infection and loosening.

**Conclusion of the presentation:** By demonstrating essen-



tial information, but not always reported by radiologists, this presentation contributes to a more appropriate report for daily orthopedic practice.

#### PD.05.120

##### DIFFERENTIAL DIAGNOSES OF ARTHRITIS IN RADIOGRAPHY OF HAND

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**Introduction:** Considered as a functional unit, the wrist and hand are the most common sites of traumatic injuries of the skeletal system, besides being common site of several rheumatic diseases.

**Methods Involved:** This study aims to survey the major radiographic changes of the hands of patients followed up at the Rheumatology sector of our hospital, making a comparative study between different diagnosed diseases.

**Discussion:** Among chronic inflammatory arthritis, rheumatoid arthritis is responsible for 8% of arthropathies involving mainly the wrist, metacarpophalangeal and proximal interphalangeal. Psoriatic arthritis is part of the group of seronegative arthropathies, present in 10-15% of patients with psoriasis. It predominantly affects the distal interphalangeal. Among collagen diseases, systemic lupus erythematosus (SLE) and scleroderma have significant articular manifestations, characteristically symmetric in the metacarpophalangeal and proximal interphalangeal joints. Among microcrystalline arthropathy, the main disease is gout, which is predominantly asymmetric.

**Conclusion of the presentation:** Given that radiographic changes are not always evident, the correct diagnosis is of great importance since it directly affects the treatment. We will review cases from the literature as well as from our Rheumatology sector

#### PD.05.123

##### TIBIAL PLATEAU FRACTURES - RADIOLOGICAL ASSESSMENT

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**Introduction:** Introduction. In standard tibial plateau fractures, characterized by cortical disruption, depression, and displacement of the articular surfaces, bone lesions predominate, instead of injuries to the capsule or ligaments (present in up to 30%). More extensive fractures can present an associated dislocation component, with a higher prevalence of soft-tissue injury. The Schatzker classification is useful in assessing the initial injury, planning management and predicting prognosis. This study aims to review important aspects of the mechanism of injury, classification and complications related to fractures of the tibial plateau, focusing on the evaluation by imaging methods.

**Methods Involved:** Methods. We evaluated imaging exams requested to assess tibial plateau fractures in a University

Hospital, in 2013. The most relevant ones were selected for this exposition.

**Discussion:** Discussion. Plain radiography is useful for the initial assessment of fractures and presence of fragments. Computed tomography has higher sensitivity in the assessment of fracture planes, depressions and displacements of the joint surface. Magnetic resonance is the most accurate method in the evaluation of soft tissue injuries.

**Conclusion of the presentation:** Conclusion. The radiologic assessment of tibial plateau fractures allows proper identification and classification, assisting in treatment planning.

#### PD.05.124

##### CALCANEAL FRACTURES – DIAGNOSTIC IMAGING EVALUATION

SOUZA, P.T.; KITAMURA, F.C.; OLIVEIRA, P.B.; FRANCISCHINELLI, J.D.; TOGNI FILHO, P.H.A.; ARRUDA, M.E.L. KUBOTA, E.S.; FERNANDES, A.R.C.

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**Introduction:** Calcaneal fractures are common, comprising 1-2% of all fractures and 60% of those that affect the tarsal bones. They are more frequent in males aged between 30 and 60 years and are bilateral in 10% of patients, being associated with compressive vertebral fractures in 10% of cases. The primary mechanism of injury is axial overload, and the posterior facet involvement characterizes the intra-articular fractures, which account for 75% of the total. Staging is performed according to the Sanders classification. The main objective of this study was to review concepts related to the mechanism of trauma, classification and complications of calcaneal fractures with radiological relevance.

**Methods Involved:** Diagnostic imaging exams of 96 patients, requested for assessing calcaneal fractures, performed at a University Hospital in 2013, were evaluated, of which 12 were selected, for being considered the most illustrative by the authors.

**Discussion:** Radiographic exams allow the diagnosis of fractures by direct assessment and angle measurements. Computed tomography is the most sensitive method for assessing fracture lines and posterior subtalar involvement. Magnetic resonance imaging helps to identify tendon and ligament injuries.

**Conclusion of the presentation:** Imaging methods allow proper evaluation of calcaneal fractures, being useful in surgical planning.

#### PD.05.125

##### “BUNK BED” FRACTURE: A PEDIATRIC INJURY OFTEN OVERLOOKED.

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**Brief description of the purpose of the report:** The pediatric equivalent of the adult tarsal-metatarsal fracture-dislocation of Lisfranc is the “bunk bed” fracture. This is a common and often not remembered pediatric fracture.

**Medical History:** We present the case of a two-year-old boy with a history of pain and mild edema in the medial region of the left forefoot after fall.

**Diagnosis:** The tomographic images showed incomplete

fracture at the base of the first metacarpal.

**Discussion and summary of the case:** Characterized by a subtle deformity of the proximal first metatarsal, the injury is produced during a fall from a height in a tiptoe position, resulting in a flexion force that produces an injury mechanism that wedges the epiphysis of the first cuneiform and the first metatarsal and advances to joint space between the first and second metatarsals. Bone injury is more severe than that of the radiographic images, once tarsal-metatarsal ligaments can be affected in the mechanism of subluxation.

## PD.05.127

### PERILUNATE INSTABILITY - RADIOLOGICAL WORKUP

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**Introduction:** Perilunate instability results from damage to structures surrounding the lunate, affecting mainly males, with a mean age of 30 years. It comprises 10% of traumatic injuries of the wrist, following high-energy trauma, usually caused by falls, car accidents or sports activities. Only ligaments are affected in lesser arc injuries, while greater arc injuries are characterized by fractures. It is associated with multiple trauma in 26% of cases and other upper limb fractures in 11%. The objective of this study was to review concepts related to mechanisms of trauma and classification of perilunate instability, with emphasis on its radiological evaluation.

**Methods Involved:** Diagnostic imaging exams of 71 patients, requested for the post-traumatic assessment of hands and wrists, performed at a University Hospital in 2013, were evaluated, of which 8 were selected, for being considered the most illustrative by the authors.

**Discussion:** Plain radiography is useful in evaluating fractures, dissociation and other malalignment of the carpal bones; however, it has up to 25% of false-negative results. CT allows identification of radiographically occult fractures and assists in surgical planning. MRI shows possible intrinsic or extrinsic ligament injuries.

**Conclusion of the presentation:** Diagnostic imaging allows proper assessment and grading of perilunate instability.

## 6 - PEDIATRICS

### PD.06.001

#### IMAGING EVALUATION OF SACROCCOCCYGEAL TERATOMA

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**Brief description of the purpose of the report:** Imaging evaluation of sacrococcygeal teratoma (TSC) in the perinatal / neonatal period.

**Medical History:** Newborn female with gestational age (GA) of 26 weeks was demonstrated on ultrasound (US) gestational opening of the spinal canal in the lumbosacral and with 29 weeks GA, it was suggested the hypothesis of sacral

myelomeningocele. Indicated cesarean section at 38 weeks and 6 days of gestation, showed bulging sacral area of soft consistency.

**Diagnosis:** Ultrasonography, computed tomography (CT) and magnetic resonance imaging (MRI) was realized in the neonatal period, with a complex mass being observed with parenchymal calcifications in the sacrococcygeal region with presacral component, being diagnosed sacrococcygeal teratoma type II.

**Discussion and summary of the case:** TSC congenital tumors are derived from pluripotent cells that originate in the node Hense. Rare neoplasm, though common in the neonatal period and in females. One of their differential diagnoses is myelomeningocele. Female newborn with suggestive prenatal diagnosis of myelomeningocele, with an evaluation of imaging (US, CT and MRI), after birth, suggestive of TSC Type II. After surgical resection with a bloc removal of the coccyx, the histopathology confirmed the diagnosis of TSC mature.

### PD.06.002

#### RADIOGRAPHIC SIGNS AND DIFFERENTIAL DIAGNOSIS OF PNEUMOMEDIASTINUM IN THE NEWBORN

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**Introduction:** Pneumomediastinum means air in the mediastinal space and the assisted ventilation with positive air pressure is the main etiological factor of this complication in the newborn. The diagnosis is confirmed through the chest plain radiography. The objectives of this study are to describe the most relevant radiographic signs of the neonatal pneumomediastinum associating with the clinical signs and emphasizing the differential diagnosis.

**Methods Involved:** We reviewed the chest x-ray and the medical records of infants admitted in one Neonatal Intensive Care Unit's University Hospital, with confirmed radiographic diagnosis of pneumomediastinum.

**Discussion:** The pneumomediastinum on a plain chest radiography can appear as the "angel wings sign", uni or bilateral, the "continuous diaphragm sign" and the "rocker-bottom thymus" when associated with pneumothorax. Clinically, preterm infants with Respiratory Distress Syndrome and submitted to assisted ventilation are predominant. The differential diagnosis includes medial pneumothorax, pneumopericardium, and uni or bilateral upper lobar pneumonia or atelectasis. The association with clinical information is important to establish the etiological factors.

**Conclusion of the presentation:** The knowledge of the radiographic signs of the neonatal pneumomediastinum associated with clinical information avoids wrong diagnosis and makes possible the immediate application of relevant decisions.

### PD.06.003

#### BILATERAL PROXIMAL FEMORAL FOCAL DEFICIENCY - CASE REPORT

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**Brief description of the purpose of the report:** Proximal femoral focal deficiency (DFFP) is a rare congenital bone abnormality, with an incidence of approximately 1/52000 births and bilateral in approximately 10-15 % of cases. It is characterized by failure in the development of the proximal femur and acetabulum, with classification based on clinical data and physical examination; however, imaging exams allow earlier diagnosis with better prognosis.

**Medical History:** Extremely premature newborn without prenatal care, with no palpable right thigh and shortened femur at left side.

**Diagnosis:** Lower limbs radiographs and hips ultrasound were performed, being diagnosed bilateral DFFP, classification type Aitken D at right and type A at left side.

**Discussion and summary of the case:** The DFFP can be diagnosed in the prenatal period. It is characterized by a spectrum ranging from shortened femur to complete absence of the proximal femur and acetabulum, promoting discrepancy in leg length, external rotation of the thigh, flexion contractures of the hip / knee and hip instability. It may be related to other malformations, but our patient had no associated anomalies.

#### PD.06.004

##### **GASTRIC PNEUMATOSIS SECONDARY TO DUODENAL WEB IN A PATIENT WITH DOWN SYNDROME: A CASE REPORT AND LITERATURE REVIEW**

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**Brief description of the purpose of the report:** Gastric pneumatosis, defined as gas in the stomach wall, is a very rare condition in childhood. We describe a case of a Down syndrome patient with chronic gastrointestinal obstruction, admitted with acute GI symptoms. Radiography and computed tomography presented with gastric pneumatosis, confirmed by surgery, which revealed the presence of duodenal web as the cause of obstruction.

**Medical History:** 8 month-old baby boy, with Down syndrome and several admissions to emergency services due to vomiting and irritability, was admitted to our department presenting with blood-tainted vomiting. A plain abdominal radiograph showed significant presence of gas outlining the stomach wall and pneumoperitoneum, confirmed by CT performed on the same day. Emergency surgery was indicated, which revealed the presence of duodenal web without perforation of the gastrointestinal tract.

**Diagnosis:** Gastric pneumatosis and pneumoperitoneum secondary to obstruction by duodenal web.

**Discussion and summary of the case:** Gastric pneumatosis in childhood may be related mainly to two causes: ischemia (necrotizing enterocolitis) or chronic obstruction of the gastrointestinal tract. A few reports in the literature suggest that Down syndrome may be related to duodenal membrane and annular pancreas obstructions with increased risk of chronic obstruction and consequent gastric pneumatosis.

#### PD.06.005

##### **MAIN ASPECTS OF INGUINAL HERNIAS IN CHILDREN : PICTORIAL ESSAY**

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**Introduction:** The objective of this study is to illustrate how to perform correct diagnosis of inguinal hernias in children and its possible complications requiring emergency surgical intervention .

**Methods Involved:** We report a series of inguinal hernias emphasizing its various forms of presentation, differential diagnoses, and major complications .

**Discussion:** Inguinal hernia is one of the most common surgical diseases in childhood , predominantly in males and premature . Occurs due to the persistence of peritoniovaginal canal . Staying open, can cause congenital indirect inguinal hernia, allowing the passage of an abdominal viscera . Sometimes the obstruction is irregular , forming cysts along your route or even a connecting hydrocele .

**Conclusion of the presentation:** Although some hernias spontaneously regress , Its incarceration is the main complication , especially in girls , because it may contain the ovary , with high torsion probability.

#### PD.06.006

##### **IMAGING EVALUATION OF GIANT GASTRIC TRICHOBEZOAR**

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**Brief description of the purpose of the report:** Imaging evaluation of giant gastric trichobezoar.

**Medical History:** FSN, age 6, female, admitted at a reference hospital in Brasilia, with dyspeptic symptoms, disposing in small quantities associated with a palpable mass in the epigastric region, and their mothers' reports of her ingestion of hair for 4 years.

**Diagnosis:** Ultrasonography (US), showed hyperechoic image with posterior acoustic shadowing in epigastric topography, suggesting the presence of a foreign body. In contrast examination of the stomach (CER) showed failure of gastric filling and computed tomography (CT) revealed in the gastric body, tangled mass occupying it. Clinical history of the patient with imaging, closed the diagnosis of gastric trichobezoar.

**Discussion and summary of the case:** The term "bezoar" is a formation in the gastrointestinal tract formed from ingestion of various substances. Treatment depends on the size and your location, but usually involves surgery. FSN, 6 years, with clinical epigastric pain and a palpable mass in the epigastric region associated with their mothers' reports of her ingestion of hair for 4 years. Abdominal US, CT and CER associated with the clinical history, the diagnosis of gastric trichobezoar was defined . Laparotomy with removal of a large gastric trichobezoar was the indicated treatment.

### PD.06.007

#### HIP PAIN IN CHILDREN: COMMON CAUSE AND DIFFERENTIAL DIAGNOSIS

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**Introduction:** Hip pain in a child can arise from the hip itself or from remote sites including the spine, abdomen, pelvis, or knee. Clinical history and examination can help to choose the better imaging method. Hip pain may result from infective, inflammatory, traumatic, neoplastic, or developmental causes.

**Methods Involved:** Discussion and illustrative cases of hip pain in children who were attended at the Sabará hospital.

**Discussion:** We will discuss the imaging methods and differential diagnosis in hip pain.

**Conclusion of the presentation:** Hip pain is common in children may result from different causes and can be investigated by different imaging methods. Radiologists should be familiar with the different causes of hip pain and with the best investigative imaging method.

### PD.06.008

#### GENERALIZED LYMPHANGIOMATOSIS WITH BONE INVOLVEMENT

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**Brief description of the purpose of the report:** Lymphangiomas are benign malformations of the lymphatics characterized by abnormal proliferation of the lymphatic channels. Generalized lymphangiomas are a rare disorder affecting bones, soft tissues and viscera, except the central nervous system, and occurs mainly in children and young adults. The most common site of involvement is in the head and neck, where it manifests as cystic hygromas. The spleen is the most common in visceral involvement. The bony involvement is not usual, and affects mainly the pelvis, the vertebrae, the shoulder girdle, and the femora. Symptoms and prognosis vary greatly between individuals and according to the organs involved. The symptoms, clinical presentation, and typical radiographical findings can assist in the diagnosis.

**Medical History:** We report a case of generalized lymphangiomas with bone involvement in 11 years old boy with a history of cervical cystic hygroma, bone pain and an incidental finding of humeral bone cyst.

**Diagnosis:** Computed tomography of the abdomen showed multiple, hypodense and diffuse splenic nodules, without enhancement and multiple osteolytic lesions.

**Discussion and summary of the case:** In this report, we demonstrate the rare bone involvement in lymphangiomas, an uncommon disease.

### PD.06.010

#### MAGNETIC RESONANCE PROTOCOLS IN PEDIATRIC ABDOMEN AND PELVIS

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**Brief description of the purpose of the Review of Literature:** The improvement of new technologies of magnetic resonance imaging (MRI) coupled with recent studies that indicate a possible increase in cancer risk due to examinations using ionizing radiation changed the diagnostic investigation of diseases in pediatric patients. Following the concepts ALARA (As Low As Reasonable Achievable), there has been an increasing need to use methods that do not use ionizing radiation like ultrasounds and MRI. The aim of this review is to address the particularities of the examination of abdominal and pelvic MRI in pediatrics and detailing the most widely used protocols, as well as the latest techniques.

**Description (s) condition (s), method (s) or technique (s):** Topics such as techniques to reduce examination time and consequent reduction of anesthesia, as well as methods for reducing respiratory motion artifacts will be addressed through literature review and our daily practice experience at our institution. Protocols for abdominal tumors, MR Cholangiopancreatography (MRCP) and Whole-Body MRI will be detailed as well as the latest techniques such as MR Enterography (MRE) and Functional MR Urography (MRU).

**Conclusion:** MRI plays an important role in Pediatric Radiology. Pediatric radiologist must know the key concepts and protocols that can be used to guide specific and individualized MRI examination of each child.

### PD.06.011

#### INFECTIOUS ABDOMINAL AORTIC ANEURYSM IN AN INFANT : CASE REPORT

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**Brief description of the purpose of the report:** Infectious aneurysms, or mycotic aneurysms are rare and may occur in the aorta and peripheral, cerebral and visceral arteries, in descending order of frequency.

**Medical History:** The routes of infection can be spread through the blood, infection in a pre-existing defect in the intima layer of the vessel, by contiguity or trauma. The most common causes are streptococcus and staphylococcus infections.

**Diagnosis:** Early diagnosis is extremely important due to its rapid growth and rupture risk. Angiography by Multi-detector Computed Tomography (MDCT) is the exam of choice for diagnosis, characterized by saccular dilatation usually filled by contrast with central or eccentric lumen, uni or multilocular.

**Discussion and summary of the case:** The authors report a case of a male infant, that postoperative mitral valve replacement complicated with infective endocarditis and mycotic aneurysm of the infrarenal abdominal aorta, demonstrated by MDCT angiography.

### PD.06.013

#### SPONTANEOUS MULTILOCULATED PNEUMOMEDIASTINUM IN A NEWBORN : A

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**Brief description of the purpose of the report:** Mediastinal loculated air cystic image is always a diagnostic challenge for the radiologist, which varies from malformation to birth trauma. The report below illustrates an important differential diagnoses.

**Medical History:** Term newborn, cesarean delivery without complications and normal pregnancy ultrasounds. Hours after birth, showed tachypnea and dyspnea.

**Diagnosis:** The chest radiograph showed left apical opacity and computed tomography revealed a cystic lesion with air content in the left anterosuperior mediastinal compartment, with thin septa, promoting poor mass effect on the mediastinal structures, displacing superolateramente the thymus, it was independent of the lung parenchyma and had no communication with the esophagus or subcutaneous emphysema.

**Discussion and summary of the case:** Spontaneous pneumomediastinum in the newborn is rare but should be considered in the presence of sudden dyspnea without other causal factor, such as pneumonia, meconium aspiration syndrome, hyaline membrane disease, mechanical ventilation or obstetrics traumas. It can be loculated and multiseptado due to restriction promoted by the fascia that surrounds the thymus and that continues with the fascia fibrous pericardium, parietal pleura and persistent esternopericárdic ligament. The loculated appearance makes differential diagnosis with cystic adenomatoid malformation, congenital lobar emphysema, and thymic cysts. Spontaneous pneumomediastinum is usually self-limited, requiring no specific treatment.

### PD.06.014

#### CONGENITAL DERMAL SINUS: CASE REPORT AND REVIEW OF THE LITERATURE

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**Brief description of the purpose of the report:** A dermal sinus is an epithelial fistula that connects neural tissue or meninges to the skin surface. Occurs most frequently in the lumbosacral region and is often associated with a spinal dermoid at the level of the cauda equina or conus medullaris. Patients present with a midline dimple and may also have an associated nevus, hyperpigmented patch, or capillary hemangioma. Surgical repair is importance because the fistulous connection between neural tissue and the skin surface can result in infectious complications.

**Medical History:** Describes a case of a male patient two years of age with dermal sinus diagnosed during MRI requested due to the presence of cutaneous depression in the midline of the lumbosacral region associated with changes in skin color.

**Diagnosis:** MRI determined the topography of the lesion, showing the orifice of the dorsal dermal sinus, spinal canal surface.

**Discussion and summary of the case:** Dorsal dermal sinus is an epithelial connection between skin and deepest tissues, resulting from a incomplete separation between the cutaneous ectoderm and the neuroectoderm. MRI is the most specific method to evaluate the spinal canal, allowing diagnostic confirmation and a more detailed analysis, which is important to rule out the risk for recurrent meningeal infection, epidural or subdural abscess, and intramedullary spinal cord abscess.

### PD.06.015

#### PRE AND POSTNATAL IMAGES OF CONGENITAL PULMONARY AIRWAY MALFORMATION (CPAMS): ULTRASONOGRAPHY (US), COMPUTED TOMOGRAPHY (CT) AND MAGNETIC RESONANCE IMAGING (MRI)

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**Introduction:** The CPAMs has been detected more frequently in routine prenatal ultrasound. They are a heterogeneous group of pulmonary cystic lesions that result from an abnormality in the development of airways. This study aims to review the most recent classification of CPAMs and discuss the imaging features of congenital malformations of the respiratory tract in different imaging methods: fetal US and MRI and postnatal CT.

**Methods Involved:** This study includes patients with CPAMs of our archive images of prenatal US, fetal MRI and postnatal CT. These images were analyzed retrospectively and were correlated with clinical features and the postnatal development of the disease.

**Discussion:** Early diagnosis allowed a better understanding of the pathophysiology of the spectrum of malformations, enabling better perinatal planning. When not recognized in the prenatal period, CPAMs are usually discovered until 2 years of age, manifesting as dyspnea or recurrent respiratory infection.

**Conclusion of the presentation:** With advances in fetal ultrasound and MRI, chest abnormalities are increasingly being diagnosed earlier, allowing to anticipate treatment and appropriate management of patients. The postnatal evaluation of CPAMs in CT allows correct classification, thus impacting the treatment and improving the prognosis.

### PD.06.016

#### TRACHEAL DIVERTICULA IN HIV INFECTED PATIENTS: TWO CASE REPORTS AND LITERATURE REVIEW.

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**Brief description of the purpose of the report:** Tracheal diverticulum is a rare entity that has been scarcely described, especially in patients with congenital HIV infection. We will present two cases of HIV infection and this finding in thoracic computer tomography, and compare them with current literature.

**Medical History:** Two patients with congenital HIV infection and currently in treatment with antiretroviral therapy, one 16 and the other 18 years old, underwent computer to-

mography for evaluation of acute respiratory illness, with incidental findings of cystic paratracheal images.

**Diagnosis:** Tracheal diverticula

**Discussion and summary of the case:** Current autopsy data suggests that the incidence of tracheal diverticulum is approximately 1% and has been associated with chronic obstructive lung disease, chronic cough and recurrent pulmonary infections. To our knowledge there is only one case review in the literature of a tracheal diverticulum in a patient with congenital HIV infection, who also presented with asthma and recurrent pulmonary illness. In our review both patients also presented with recurrent pneumonias. Its cause and whether the incidence of these diverticulum is higher in congenital HIV infection patients or not are still uncertain, and for that a study with a larger number of patients is still necessary.

## PD.06.017

### THE THYMUS IN THE PEDIATRIC POPULATION

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**Introduction:** The purpose of this study is to show different anatomic aspects, as well as pathologic or physiologic changes the thymus may present and how different imaging modalities may aid in specific situations.

**Methods Involved:** We evaluated thymic changes through chest x ray, computerized tomography and ultrasound based on clinical information.

**Discussion:** The normal thymus presents great variability in morphology and dimensions, however changes in shape and aspect may occur in adverse situations (depletion, hyperplasia and hemorrhage), as well as in some inherited immune disorders. Thymic masses are rare in the pediatric population. Chest x ray usually is the first method in the evaluation of the mediastinum. Ultrasound is a great method, free of radiation, and can be useful to establish its presence or absence and in the characterization of cervical ectopic thymic tissue. Computed tomography (CT) is used for differential diagnosis of mediastinal masses. Magnetic resonance imaging is an alternative to CT, due to concerns about radiation, but there's frequent need for anesthesia, especially in small children.

**Conclusion of the presentation:** Knowledge of thymic anatomy, embryology, anatomic variants, changes under adverse conditions and most prevalent pathologies in children are fundamental in the correct diagnosis and choice of an imaging modality, avoiding unnecessary tests and radiation exposure.

## PD.06.018

### MALPOSITION IN CENTRAL VENOUS CATHETER (CVC) INSERTION IN PEDIATRIC INTENSIVE CARE UNIT (PICU): THE ROLE OF THE RADIOLOGIST

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**Introduction:** CVC is widely used in PICU for resuscitation, nutritional support, and long-term vascular access. Technical knowledge of deep anatomy minimizes complications and the adequate positioning.

**Methods Involved:** A retrospective review, by two expert radiologists, of 99 the X-rays performed after a CVC insertion in a PICU of a private hospital between July 2012- November 2013.

**Discussion:** The most common site of insertion was the superior vena cava (SVC) that occurred in 61 patients, although some of them didn't required repositioning. Malposition in CVC were found in 38 X-rays, the common sites of inadequate position were in order of frequency: 27 in the right atrium, 4 in the subclavian vein, 3 in brachycephalic veins, 2 in the inferior vena cava and 2 cervical. There were no catheter-related infections, no pneumothorax, only one arterial insertion, five obstructions and two catheter-related thrombosis

**Conclusion of the presentation:** Incidence of malposition and complications was low in our population when compared with the literature because of the important use of ultrasound to guide the venous catheter insertion reducing failures.

## PD.06.020

### METASTATIC RETINOBLASTOMA - CASE REPORT AND LITERATURE REVIEW

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**Brief description of the purpose of the report:** Retinoblastoma is the most common intraocular tumor in childhood (2.5-4% of all cancers in this age group). Generally, involvement is unilateral. Clinically, it presents with leukocoria. When extraocular, presents with proptosis. The most common is spreading to central nervous system and bones of the orbit and skull, however it can spread through the blood.

**Medical History:** MCM, 03 y.o., from Salvador / BA, complaining of convulsion, reduced visual acuity and left ocular proptosis. On physical examination, she had fixed left pupil with corneal clouding. Brain MRI showed a mass in the left eye, thickening of the ipsilateral optic nerve and two other lesions of the same features in topography of seal and extra-axial right temporal area. In combination with the results of mielogram and bone marrow biopsy, it was diagnosed metastatic retinoblastoma.

**Diagnosis:** Metastatic Retinoblastoma

**Discussion and summary of the case:** Imaging methods are indispensable in the diagnosis and delineation of the extent of the injury. Generally, survival is 100% for localized tumor. However, if there is damage to the optic nerve, the survival rate is reduced to 23%.

## PD.06.021

### EVALUATION OF ABDOMINAL FAT DISTRIBUTION IN EUTROPHIC, OVERWEIGHT AND OBESE PRE-PUBERTAL CHILDREN

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**Brief description of the purpose of the study:** Childhood obesity is a worldwide problem and epidemiological studies have shown that the accumulation of fat in the abdomen is related to metabolic and cardiovascular diseases. The aim of

this study is to compare the pattern of abdominal fat distribution considering the subcutaneous-abdominal adipose tissues(SCA-AT) and the internal-abdominal adiposity(IA-AT) in eutrophic, overweight and obese children

**Methods:** Ultrasound evaluation of SCA-AT and IA-AT in prepubertal children, 80 obese, 18 overweight and 31 eutrophic, without comorbidities and sorted by body mass index Z-score(BMI). The measurements were performed by two observers, 2cm below the emergence of the superior mesenteric artery. To measure the SCA-AT it was considered from the skin to the anterior surface of the linea alba and for the IA-AT from the rear face of the linea alba to the anterior wall of the aorta

**Main results:** The median SCA-AT in eutrophic children was 5.8, overweight 9.8, 19.3mm in obese( $p < 0.0001$ ). The median IA-AT was, respectively, 24.4, 29.0 and 39.8mm( $p$ -value  $< 0.001$ ). For comparison of groups(BMI, SCA-AT and IA-AT) Kruskal-Wallis test was used as well as the post-test of Student-Newman-Keuls

**Importance of the conclusions:** The gain of weight in prepubertal children increases the thickness of SCA-AT and the same happening regarding in IA-AT, both being statistically significant correlations

#### PD.06.022

##### INFLUENCE OF WEIGHT GAIN IN PREPUBERTAL CHILDREN IN THE CAROTID ARTERY INTIMA-MEDIA COMPLEX THICKNESS

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**Brief description of the purpose of the study:** Childhood obesity is a worldwide public health problem and its consequences on the vascular endothelium can be measured by ultrasound. This study intends to evaluate the behavior of the intima-media thickness (CIMT) comparing eutrophic, overweight and obese children

**Methods:** Carotid ultrasound was performed in prepubertal children, 80 obese, 18 overweight and 31 eutrophic, all without comorbidities and classified by body mass index Z-score. The measurements were performed manually by two independent observers, with at least three measurements in the common carotid artery (CIMT Right) and the left common carotid artery (CIMT Left), the plane located about 2.0 cm below the bifurcation

**Main results:** The median CIMT Right was 0.040 in eutrophic children, in that of overweight, 0.045, and 0.050mm ( $p$ -value 0.35) in the obese ones. Concerning the CIMT Left, it was respectively 0.040, 0.047 and 0.050mm ( $p$ -value 0.03). The mean CIMT Right and Left was 0.045, 0.045 and 0.050 successively in the three groups ( $p$ -value 0.07). There was no difference in relation to gender ( $p$ -value = 0.46) or mean age ( $p$ -value = 0.27)

**Importance of the conclusions:** The increased weight in children directly affects the thickness of the intima-media, although it is only statistically positive in the left carotid artery

## 7 - BREST IMAGING

#### PA.07.004

##### FIBROADENOMAS: CHARACTERISTICS AND ITS ASSOCIATION WITH MALIGNANCY

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**Brief description of the purpose of the Review of Literature:** Literature review illustrated with cases of fibroadenomas of the institution, frequent breast tumors and is being increasingly diagnosed by the growing number of screening tests. We characterize the histological, imaging and genetic factors related to increased risk associated with malignancy targeting individualization of conduct.

**Description (s) condition (s), method (s) or technique (s):** Classified as complex and non - complex, have increased relative risk for malignant epithelial or stromal according to the presence of fibrocystic changes within, adjacent parenchymal proliferative disease or family history of breast cancer, Despite being a usually benign and conservative approach, some aspects of body image may suggest atypical changes such as internal cysts or calcifications, indicating histopathological investigation.

**Conclusion:** The fibroadenomas are common and are being increasingly diagnosed, generating monitoring and interventions are often unnecessary, burdening the healthcare system and causing insecurity in patients. Despite their benign appearance, some may exhibit signs related to increased risk for malignancy. Recognize them is critical to the proper management of these lesions avoiding both under-diagnosis of neoplasms as excess interventions typically benign lesions.

#### PA.07.010

##### SILICONE LIVRE INTRAMAMÁRIO: ASPECTO DE IMAGEM E COMPLICAÇÕES

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**Introduction:** Silicone livre nas mamas decorre da rotura de implantes mamários ou da injeção direta de silicone líquido, prática ilícita. Como consequência podemos ter migração do gel de silicone, processo inflamatório crônico e formação de granulomas (siliconomas).

**Methods Involved:** Demonstrar e descrever os aspectos mamográficos, ultrassonográficos e de ressonância magnética do silicone livre intramamário.

**Discussion:** Complicações relacionadas a migração do silicone livre incluem disseminação pelo parênquima mamário, extensão intraductal, infiltração do subcutâneo e, mais raramente, comprometimento da musculatura peitoral, pleura e fígado. Linfadenopatia axilar por silicone está presente em grande parte dos casos de silicone livre e, nas pacientes com implantes, pode estar relacionado à ruptura extracapsular ou a "gel bleed", com implantes íntegros. Granulomas de silicone representam resposta natural do corpo a substâncias estranhas e são amplamente encontrados neste cenário. Algumas vezes este processo inflamatório pode se manifestar como

lesões espiculadas, sendo necessário correlação histológica para elucidação diagnóstica.

**Conclusion of the presentation:** Os aspectos de imagem relacionados ao silicone livre serão amplamente ilustrados nesta revisão. Apesar destes achados serem relativamente comuns e vastamente descritos na literatura, alguns achados ainda permanecem extremamente desafiadores para o radiologista mamário.

#### PA.07.014

##### LIMPHOCYTIC LOBULITIS AS A SUSPICION FINDING AT BREAST MRI AND MOLECULAR BREAST IMAGING

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**Brief description of the purpose of the report:** Lymphocytic lobulitis is a rare fibro-inflammatory disorder, which is also known as fibrous mastopathy and lymphocytic mastitis. It is a benign condition with clinical and radiologic features that can mimic breast cancer. This report describes a lymphocytic lobulitis case presenting as suspicious lesion at Magnetic Resonance (MR) and Molecular Breast Imaging (MBI).

**Medical History:** A 43 year-old woman with familiar history of breast cancer at annual screening. Mammography, tomosynthesis and ultrasound had no evidence of suspicious findings. MBI as a screening method was performed showing a suspicious finding. Vacuum biopsy was done MR guided.

**Diagnosis:** MBI showed a 4 cm moderate intensity non-mass capitation area at right upper outer quadrant, without correspondence at mammography, tomosynthesis or ultrasound. MRI guided vacuum biopsy were performed at a segmental non-mass enhancement. The histopathological diagnosis was lymphocytic lobulitis.

**Discussion and summary of the case:** Lymphocytic lobulitis is a benign breast disorder, sometimes indistinguishable of breast cancer. Its recognition is, therefore, very important to avoid unnecessary biopsies. The case shows a 43 woman with suspicious findings at MBI and MR. As seen in published papers, we noticed that MBI has similar findings to MR and may be its substitute, where MR is not available.

#### PD.07.002

##### LINFOMA PRIMÁRIO DE MAMA: RELATO DE CASO

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**Brief description of the purpose of the report:** O linfoma primário de mama (LPM) é um tumor raro, correspondendo até 0,5% dos cânceres de mama.

**Medical History:** Apresenta-se o caso de uma paciente do sexo feminino, de 81 anos, que apresentava um nódulo na união dos quadrantes laterais da mama direita, medindo 3,0 x 2,0 cm, há cerca de 2 anos, com aumento progressivo. Na axila direita haviam ultrassonográficos de comprometimento linfonodal. A mamografia identificou três nódulos em mama direita, lobulados e definidos, confirmados à ultrassonografia. O diagnóstico inicial, feito através de punção aspirativa por agulha fina (PAAF) e biópsia por agulha grossa, foi de

um carcinoma ductal invasor de mama. O exame imuno-histoquímico para definição de receptores hormonais, acompanhado de revisão de lâminas, evidenciou um linfoma difuso de grandes células com fenótipo B e CD20 positivo.

**Diagnosis:** A paciente foi submetida a tratamento radioterápico exclusivo, com resposta clínica completa.

**Discussion and summary of the case:** O tipo mais comum de LPM é o linfoma não Hodgkin difuso de grandes células, que corresponde a aproximadamente 2% de todos os linfomas extranodais. Os métodos de imagem disponíveis não têm alta especificidade para o diagnóstico definitivo, porém têm alta acurácia para detecção de lesões. O tratamento consiste em quimioterapia e radioterapia, e cirurgia reservada para casos selecionados.

#### PD.07.003

##### MALIGNANT FIBROUS HISTIOCYTOMA: CASE REPORT AND LITERATURE REVIEW

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**Brief description of the purpose of the report:** Malignant fibrous histiocytoma is a rare malignant sarcoma, high grade, whose predominant clinical aspect is a moving, painless and fast-growing mass, occurring on people with an average age of 60 years. Bilaterality and axillary involvement are rarely reported.

**Medical History:** The diagnostic is not always easy, being determined through histopathology and immunohistochemical analysis after surgical removal of the lesion.

**Diagnosis:** Patient E.J.S, 58 year-old, with dense 4-cm retroareolar nodule in the right breast (BI-RADS® 4), whose tumorectomy 's histopathology resulted in a chronic inflammatory process without further histological particularities, and later evolved into a bleeding necrotising exophytic lesion, undergoing mamotome procedure which resulted in isolated atypical cells in situ. The patient developed an increase in tumor mass, with extensive cystic area and local inflammatory reaction. A breast ultrasound showed heterogeneous bulky solid mass, with cystic areas in between.

**Discussion and summary of the case:** A mastectomy was performed along with histopathological study of the resulting fragment, showing an mesenchimal lesion within an extensive necrotic and bleeding area, measuring 3,5 x 2,0 x 0,4 cm, and positive D34, HHF and vimentin antibodies, suggesting a malignant fibrous histiocytoma. This case report discusses incidence, image patterns and diagnostic difficulty of malignant fibrous mammary histiocytoma in breast.

#### PD.07.004

##### BREAST SARCOMA: CASE REPORT

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**Introduction:** Primary sarcoma of breast is a rare tumor, representing less than 1% of all breast cancer tumors. Its clinical predominant aspect is a movable and painless mass, with quick and diffuse growth, happening in patients with an average age of 60 years. Axillar involvement and bilaterality are almost not reported. The diagnosis is determined by histopathology after surgical removal of the lesion, in which one of



the differential diagnostics may be a metaplastic carcinoma. **Methods Involved:** Patient M.L.P., 63 years old, G5P5A0, refers mass growth in the left breast for the past 3 months before looking for medical care, having used anti-inflammatory drugs as previous treatment.

**Discussion:** At physical examination, it was observed a large mass, measuring around 30 cm, in the left breast, with skin thickening, necrotising areas and discontinuous areas of skin from which fetid material exits, yet being highly vascularized.

**Conclusion of the presentation:** Histopathological analysis was performed, showing unknown histogenesis tumor infiltrating the dermis and its posterior immunohistochemical study demonstrated skin infiltration by the sarcoma, which may correspond, to sarcoma of the breast stroma. There was positivity for vimentin, actin, CD10 and p53 antibodies in the immunohistochemical study. This case report discusses multiple aspects of breast sarcoma, such as incidence and image patterns.

### PD.07.005

#### BI RADS 3 LESIONS WITH HISTOPATHOLOGIC CORRELATION

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**Brief description of the purpose of the Review of Literature:** Brief description of purpose Literature Review BI-RADS category 3 includes benign-appearing lesions. In special situations they are referred for percutaneous biopsy. Malignancy frequency is less than 2%. Our purpose was to describe and to analyze the BIRADS 3 lesions that were biopsied.

**Description (s) condition (s), method (s) or technique (s):** Description of pathology (ies), methodology (ies) or technique Retrospective review of 3872 (39%) BIRADS 3 findings from 9850 percutaneous breast biopsies (PBB) (2837 US guided (fine needle biopsy device = 1970, core needle biopsy device = 867), 741 stereotactically guided) were analyzed. 714 surgical biopsies (237 ultrasound-guided and 477 stereotactically guided) were also included. 3743 (96.7%) biopsies resulted benign, 49 (1.3%) high risk lesions and 80 (2%) malignant lesions. Mammographic findings were 608 microcalcifications (homogeneous), 536 well-defined masses and 74 asymmetric densities. The ultrasonographic features were 913 cysts, 50 heterogeneous parenchymal areas, 1596 hypoechoic masses and 81 well defined masses.

**Conclusion:** Conclusion Homogeneous microcalcifications and well defined masses were the most common lesions. The percentages of malignancy were within the category. We emphasize the importance of rational use of BIRADS classification so as to avoid unnecessary biopsies and to decrease complications and costs of the health system.

### PD.07.006

#### LOBULAR CARCINOMA IN SITU OF THE BREAST: MAMMOGRAPHY, ULTRASONOGRAPHY AND PATHOLOGICAL CORRELATION

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**Brief description of the purpose of the Review of Literature:** LCIS has been described as clinically undetectable and

with no known distinguishing radiologic features. By retrospectively reviewing cases of LCIS directly associated with imaging findings which were the target for biopsy, we seek to better understand the spectrum of imaging findings that prompt image-guided biopsy and yield a diagnosis of LCIS.

**Description (s) condition (s), method (s) or technique (s):** Between 2000 to January 2013, identified 29 patients with LCIS associated with an imaging abnormality that had imaging available for review. LCIS was diagnosed by Stereotactic breast biopsy or excision biopsy. Patients subsequently underwent excisional biopsy. Patients' mammography, ultrasonography (US) images were reviewed using the American College of Radiology Breast Imaging Reporting and Data System lexicon together with relevant clinical and pathology data. Twenty-seven of 31 (87%) lesions yielding LCIS had a mammographic abnormality, 4/31 (13%) lesions had a US abnormality. Calcifications were the most common mammographic finding, seen in 26/27 (96%) lesions. All four lesions seen on US were masses; microlobulated, hypoechoic, avascular, and had posterior reinforcement.

**Conclusion:** LCIS can have associated imaging abnormalities, most commonly grouped amorphous calcifications on mammography, avascular, microlobulated, hypoechoic mass on US.

### PD.07.007

#### BREAST MASSES IN CHILDREN AND ADOLESCENTS: ULTRASONOGRAPHIC FEATURES

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**Brief description of the purpose of the Review of Literature:** Knowledge of the spectrum of pathologic conditions that affect the pediatric breast allows the radiologist to play an important role in providing an age-appropriate differential diagnosis. The vast majority of conditions that cause breast masses or breast enlargement in children and adolescents are benign. The aim of this paper is to describe the symptoms and ultrasonographic features of benign breast lesions in a case serie of pediatric and adolescent patients.

**Description (s) condition (s), method (s) or technique (s):** Between November 2006 to November 2013, were founded 320 newborn children and adolescents, aged between 45 day and 16 years. We reviewed all ultrasonographic images. The ultrasonographic findings were: Development of breast tissue in 9 infants; retroareolar cysts in 73 patients, Abscesses in 3 cases, solid nodules compatible with fibroadenomas in 205 patients, gynecomasty in 28 cases, and lipomasty in 2 cases.

**Conclusion:** The histologic spectrum of breast masses in children and adolescents is quite different from that in adults, and most of them are benign entities. Knowledge of the clinical and imaging features allows the radiologist to appropriately manage these patients.

### PD.07.008

#### PSEUDOANGIOMATOUS STROMAL HYPERPLASIA OF THE BREAST

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**Brief description of the purpose of the Review of Literature:** Pseudoangiomaticous Stromal Hyperplasia (PASH) of

the breast is a benign lesion that can present as a palpable nodule or as an incidental finding in breast biopsies. The purpose is to describe the imaging characteristics of pseudoangiomatous stromal hyperplasia.

**Description (s) condition (s), method (s) or technique (s):** We performed a retrospective review of our institution database for the histologic diagnosis of PASH from January 2000 through July 2013. Sixty-three cases of PASH were identified, which occurred in women with a mean age of 38 (Range 21 - 52). The mean size of the lesion was 15 mm. In all, 16 % of patients presented with a clinically palpable mass in the breast and in 84 % the lesion was an incidental finding. The most common appearance on mammography was of a solitary, non-calcified mass (90%). The sonographic appearance was of a well-defined hypoechoic mass.

**Conclusion:** The most common mammographic and sonographic finding is a mass. The features are not sufficiently specific to allow for a prospective diagnosis. Histological confirmation, preferably with core biopsy, to be considered.

### PD.07.009

#### FOCAL FIBROSIS OF THE BREAST: A CAREFUL DIAGNOSIS

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**Brief description of the purpose of the Review of Literature:** Brief description of purpose Literature Review FFB (focal fibrous of the breast) is an infrequently described entity that may mimic carcinoma. Our purposes were: a) To characterize mammographic and ultrasonographic (US) features. b) To compare the radiologic and histopathologic findings.

**Description (s) condition (s), method (s) or technique (s):** Description of pathology (ies), methodology (ies) or technique. Retrospective review of findings from 9850 percutaneous breast biopsies (PBB) (204 US guided, 583 stereotactically guided) revealed 787 (7.9%) diagnoses of FFB. On review, 23 patients needed surgical excision confirmed Diagnosis. Patients ranged in age from 24 to 84 years (mean, 52 years). Mammographic findings were: 288/583 microcalcifications, 232/583 obscured masses, 52/583 architectural distortions and 11/583 asymmetric densities. The US characteristics of FFB were 14/204 architectural distortions, 173/204 hypoechoic masses and 10/204 ill-defined masses. Lesions were categorized: 213 BIRADS 3 (27%), 563 BIRADS 4 (71.6%) and 11 BIRADS 5 (1.4%) Histological examination revealed FFB.

**Conclusion:** Conclusion: FFB has radiographic findings that may be suggestive of cancer. It is an acceptable result of PBB provided that careful radiologic-histopathologic clinical correlation is performed. In our study the most frequent imaging findings visible at both mammography and US were masses defined BIRADS 4.

### PD.07.010

#### RADIOLOGICAL FINDINGS OF MASTITIS

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**Brief description of the purpose of the Review of Literature:** Brief description of purpose Literature Review Mastitis can clinically and radiologically mimic a carcinoma. Our

purpose was to describe the most important radiological findings.

**Description (s) condition (s), method (s) or technique (s):** Description of pathology (ies), methodology (ies) or technique. Retrospectively reviewed of 53 females (0.53%) (mean age 50 years) from 9850 percutaneous breast biopsies (PBB) with mastitis and abscesses diagnosis were analyzed. Clustered microcalcifications (6/53) were the most common sign of mammography. Ultrasound revealed cysts (23/53), collections (8/53), hypoechoic masses (6/53), nonhomogeneous masses (5/53), ductal dilatation (2/53), echogenic areas (2/53) hypoechoic masses suggestive of malignancy (1/53) MRI findings (2 patients) showed in a case non-mass-like enhanced lesions and in the other one signs of collection. The most common seed crop was *S. Aureus*. Histology revealed: acute (10/22) and chronic processes (12/22), pericyclic lymphocytic mastitis (11/22), chronic periductal mastitis (7/22), abscesses (7/22), nonspecific mastitis (3/22), granulomatous mastitis (3/22)

**Conclusion:** Conclusion: The imaging findings were non-specific. In our patients the most frequent ultrasound signs were the cyst with internal echoes and collections and microcalcifications on mammograms.

### PD.07.011

#### ANGIOSARCOMA OF THE BREAST

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**Brief description of the purpose of the report:** Angiosarcoma of the breast is a rare tumor, with high degree of aggressiveness and low response to treatment, furthermore, it is frequently associated with lung metastasis. These factors makes this tumor expresses high mortality rates and a ominous prognosis as well. The tumor have an accelerated progression and hematogenic dissemination. The predominant clinical aspect is a large painless mass, with diffuse increase thickness and violet color of the skin, contiguous to the nodule. The difficulty of the diagnosis, makes the histological study imperative.

**Medical History:** We report a case of a 22-year-old female, referred from another service already with diagnosed of angiosarcoma in the right breast, where she underwent a right mastectomy, with no response and bilateral recurrence.

**Diagnosis:** In our service, was performed a mammography, that detected lobulated nodule, measuring 5cm in the infero lateral quadrant of the left breast

**Discussion and summary of the case:** The patient was submitted to a neoadjuvant chemotherapy, left mastectomy and right lesion resection with removal of the skin and pectoralis major muscle with latissimus dorsi muscle reconstruction

### PD.07.012

#### ARTIFACTS THAT SIMULATE CALCIFICATIONS ON MAMMOGRAPHY: A CHALLENGE FOR THE RADIOLOGIST

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**Introduction:** Artifacts in mammograms represent failure in quality of the images and can simulate or impair the detection of breast changes. There are numerous causes and classifications of mammographic artifacts, and our goal is to focus on the artifacts that simulate calcifications, due to the clinical importance of the subject.

**Methods Involved:** To demonstrate cases of mammographic artifacts that simulates calcifications.

**Discussion:** Artifacts that simulate calcifications include deodorant, talc and lotions containing radiopaque components, such as zinc, magnesium and aluminum. Therefore, the recommendation not to use cosmetic breast on mammography. Other causes include gold salts, tape, tattoo pigments and metal fragments or particles of glass coming from direct trauma. In these cases, the investigation of personnel, procedures, and medication use history may help in interpreting the findings.

**Conclusion of the presentation:** The correct interpretation of the artifacts that simulate calcifications is extremely relevant to the daily practice of the radiologist. Whereas one of the possible presentations of breast cancer are calcifications, the proper assessment of mammographic finding encompasses the recognition of artifacts as a possible confounding factor.

### PD.07.013

#### **LIPOFILLING: A NEW CHALLENGE FOR THE RADIOLOGIST?**

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#### **Brief description of the purpose of the Review of Literature:**

The purpose of this work is to describe the breast lipofilling technique, illustrate with examples the possible imaging findings secondary to this procedure and comment on the consequences this technique has on the adequate handling of patients with history of breast cancer.

#### **Description (s) condition (s), method (s) or technique (s):**

The lipofilling technique is commonly used to treat breast asymmetries or deformities secondary to partial mastectomy, quadrantectomy and/or radiotherapy. The procedure involves the injection of autologous fat tissue into the breast. The controversies surrounding this technique revolves around the generation of nodules and calcifications due to fat necrosis, fibrotic changes and inflammation that can become indistinguishable from breast cancer recurrence.

**Conclusion:** Knowledge and understanding of this technique and its impact on the different breast imaging methods and in some cases, biopsy are the cornerstones to differentiate between breast cancer recurrence and lipofilling related changes.

### PD.07.017

#### **REVIEW: DIAGNOSTIC GUIDANCE IN PREGNANCY-ASSOCIATED BREAST CANCER**

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#### **Brief description of the purpose of the Review of Literature:**

**Objective:** Update the radiologist about the best indica-

tion and safety of diagnostic exams, such as mammography, ultrasonography, magnetic resonance, sentinel lymph node biopsy and staging workup. **Methods:** We performed an English and portuguese literature review of the last 10 years in online database (Pubmed and Google Scholar) combining the following terms: "pregnancy-associated breast cancer", "radiology", "pregnancy", "breast cancer", "mammography", "ultrasound", "magnetic resonance", "sentinel lymph node biopsy", "staging".

**Description (s) condition (s), method (s) or technique (s):** Breast cancer during childbearing affects around 1 in 100.000 gestations, which can represent up to 2.6% of all breast malignancies. Nowadays, due to the growth of pregnancies with advanced maternal age (35 years or more), it's expected an increase of pregnancy-associated breast cancer (PABC). Once this is an uncommon association, doctors have few or none experience to securely handle this type of situation and the radiologist may be ready to provide diagnostic management guidance.

**Conclusion:** Conclusion: Childbearing should not be an impairment to initiate the diagnostic investigation and, with some additional cautions, all imaging studies can be performed safely.

### PD.07.018

#### **HISTOLOGICAL ANALYSIS INJURIES AND STATISTICAL CATEGORY BI-RADS 5 IN THE LAST 3 YEARS IN HOSPITAL XXXX**

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#### **Brief description of the purpose of the study:**

Mammography is the primary method for screening of early breast cancer in asymptomatic patients. The use of BI-RADS reports allows standardize the language of mammographic reports and systematized the findings and direct the follow-up of patients. Standardized reports also allow comparative statistical studies on the incidence of breast cancer. There are six categories BI-RADS assessment, beyond the zero category. The injuries that can include as BI-RADS 5, or highly suggestive of malignancy lesions, are spiculated nodules, irregular masses with high density and fine linear calcifications, with over 95% probability of being malignant.

**Methods:** In this retrospective descriptive study, the authors present the results of the histopathological analysis of all reports mammographic BI-RADS 5 made in the last three years (from April 2010 to April 2013) in Hospital XXXX, totaling 127 reports. The results found in our service were compared with data from the literature as well as the description was made of the most prevalent histological types.

**Main results:** The percentage of malignant lesions was 95.4% and the value of the main histological type was found to be invasive ductal carcinoma

**Importance of the conclusions:** The results are in agreement with the findings in the literature.

### PD.08.001

#### TUBERCULOSIS? DO NOT TAKE IT FOR GRANTED...

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**Introduction:** Tuberculosis is the most common granulomatous infection in Brazil being a ubiquitous diagnostic possibility when it presents as typical imaging findings. However, it's not pathognomonic and other differential diagnosis must be considered.

**Methods Involved:** Illustrative cases of the many faces of tuberculosis and its differential diagnosis, pointing out their similarity and imaging findings that may help at correct diagnosis.

**Discussion:** Tuberculosis have a multitude of imaging findings such as cavitary mass, tree-in-bud opacities, and miliary nodules. However, other diseases may mimic these imaging findings, such as cavitary primary lung tumor, tumor embolia simulating tree-in-bud opacities, and miliary metastasis. A careful analysis must be done.

**Conclusion of the presentation:** Despite being a common call in our country, imaging findings suggestive of tuberculosis must be put in perspective when one considers the differential diagnosis illustrated in this exhibit.

### PD.08.002

#### STERNAL LESIONS: WHAT THE CHEST RADIOLOGIST SHOULD KNOW

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**Introduction:** The sternum is a site often affected by a variety of abnormalities, either congenital anomalies or medical conditions, such as infectious, inflammatory, traumatic and neoplastic diseases.

**Methods Involved:** The study reviews and illustrates pathologies arising from the sternum to be recognized by the radiologist.

**Discussion:** The pectus excavatum and pectus carinatum are the two most common developmental anomalies of the chest cavity with a generally benign course. In addition, postoperative complications affecting the sternum, as the secondary osteomileite, are noteworthy because they may have a fatal outcome due to the imminent risk of mediastinitis. The sternum may also be the site of cancer, especially metastases (melanoma and breast cancer), although primary tumors are relatively uncommon, especially benign, including the desmoid tumor and bone cysts.

**Conclusion of the presentation:** Most sternal lesions are benign, but the treatment, many times surgery is necessary, especially when there is compression of vital structures. Thus, it is essential to its early and accurate diagnosis, which was made possible with the advent of computed tomography (CT), since these lesions are difficult to identify in clinical practice and even on the chest radiograph.

### PD.08.004

#### MULTIDETECTOR CT FINDINGS OF PULMONARY THROMBOTIC TUMORAL MICROANGIOPATHY: CASE REPORT AND LITERATURE REVIEW

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**Brief description of the purpose of the report:** Pulmonary thrombotic tumoral microangiopathy (PTTM) is a rare and usually fatal form of pulmonary tumor embolism, and is characterized by the presence of widespread tumor emboli to the small pulmonary arteries and arterioles, associated with thrombus formation, fibrocellular and fibromuscular intimal proliferation, and rapid development of severe pulmonary arterial hypertension. The vast majority of cases are diagnosed at autopsy and there is limited information about the computed tomography (CT) manifestations.

**Medical History:** We report the multidetector CT findings in a 46-year-old man who presented with a history of progressive dyspnea over several months and severe pulmonary hypertension.

**Diagnosis:** The CT findings included centrilobular nodular and branching opacities ("tree-in-bud") pattern, enlargement of the central pulmonary arteries, and absence of pulmonary emboli. The diagnosis of PTTM was made prospectively based on the clinical history and CT findings and confirmed at surgical lung biopsy.

**Discussion and summary of the case:** The aim of this exhibit is to describe the CT and histologic findings in this patient, to discuss the radiological differential diagnosis and to present a literature review of this rare but important clinical entity. The most frequent primary site is the stomach and the most common histological type adenocarcinoma, as in our case.

### PD.08.006

#### THE EFFECTS OF DYNAMIC HYPERINFLATION ON CHEST CT EMPHYSEMA MEASUREMENTS IN PATIENTS WITH COPD

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**Brief description of the purpose of the study:** a) Aim and Background: Dynamic hyperinflation (DH) influences in the symptoms of dyspnea and on intolerance to exercise in patients with chronic obstructive pulmonary disease (COPD). Computed tomography densitovolumetry (CTd) is the modality of choice for quantifying lung damage in COPD patients. To our knowledge, there are no studies assessing the effects of DH on CTd.

**Methods:** b) Materials and methods: We studied the variation between total lung volume (TLV), emphysema volume (EV) and emphysema index (EI) values on CTd, before and after DH induction, in GOLD III or IV patients referred for a computed tomography (CT) of the chest.

**Main results:** c) Main results: 66 CT scans of 33 patients who fulfilled the inclusion criteria were evaluated. A significant increase ( $p < 0.0001$ ) was observed in EV and EI, after DH maneuvers, despite no significant increase in the TLV.

**Importance of the conclusions:** d) Emphasis on conclusions: CTd showed significant increase in EV and EI after DH induction in GOLD III or IV COPD patients. We would suggest adopting a period of rest before CTd in COPD patients, as DH could mimic disease progression. Further CTd studies on the effect of DH could expand our knowledge for delaying the disease progression in COPD.

#### PD.08.007

##### **LUNG CANCER AND PET-CT : THE ROLE IN UPSTAGING OR DOWNSTAGING.**

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**Introduction:** Lung cancer is currently the malignancy with the highest mortality rate in the world and second cause of death in women. The correct staging implies at its treatment and prognosis and the PET-CT (Positron Emission Tomography) plays an important role in the clinical-decision making.

**Methods Involved:** Illustrative cases of patients with lung cancer who had had their staging changed after PET-CT.

**Discussion:** Patients with clinical stages equal or below IIIb of lung cancer, and therefore potentially surgical candidates, may have their stages changed after undergoing a PET-CT, highlighting the important clinical role of this method.

**Conclusion of the presentation:** The PET-CT is a valuable tool on lung cancer staging, becoming more and more needed for treatment planning and prognosis estimation.

#### PD.08.012

##### **PULMONARY NODULES: UNUSUAL DIAGNOSES CONFIRMED BY PERCUTANEOUS BIOPSY SHOWN BY COMPUTERIZED TOMOGRAPHY (CT SCAN).**

BASSITT, T.N.; GALVES JR, R.; NAKAO UEDA, S.K.; PIMENTEL, F.F.O.; ALBUQUERQUE, A.S.; CARVALHO NETO, C.W.B.; PAVANI, A.V.B.

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**Introduction:** The image characteristics of a pulmonary nodule and its correlation with clinical and laboratory data indicate a probable diagnosis. However, sometimes we are surprised with uncommon diagnoses.

**Methods Involved:** Cases selected of pulmonary nodules evaluated by CT multislice of the thorax with percutaneous biopsy and anatomic pathology correlation.

**Discussion:** With the arrival of multidetector CT, a significant increase in the detection of pulmonary nodules has taken place. Its characteristics per image and correlation with clinical data are still extremely important in thoracic semiology today. Nevertheless, a biopsy often turns out surprising us with unusual diagnoses, therefore it is gaining more recognition as the definitive method for the diagnosis of lesions.

**Conclusion of the presentation:** A lung biopsy is an important diagnostic tool. Principally in the evaluation of pulmonary nodules, since their characteristics in images are often similar. This makes an accurate diagnosis difficult based solely on these findings.

#### PD.08.017

##### **SILICA-RELATED THORACIC DISEASES: UNDERDIAGNOSED BUT ALWAYS HERE**

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**Introduction:** Objectives: After viewing this exhibit, the viewer should be able to: 1. Recognize the main thoracic diseases related to acute, subacute and chronic silica exposure. 2. To discuss the main differential diagnosis of silica-related thoracic diseases. 3. To explain the utility of HRCT for the diagnosis and follow-up of these conditions.

**Methods Involved:** Principal Information: The authors intend to present the following points: 1. Epidemiological aspects of silica-related thoracic diseases 2. Pathogenesis of thoracic manifestations due to acute, subacute and chronic silica exposure 3. Clinical aspects of silica-related thoracic diseases 4. Role of imaging methods, especially HRCT, for diagnosis and follow-up of: 4.1. Acute Silicosis (silicoproteinosis) 4.2 Subacute silicosis 4.3 Chronic silicosis 4.4 Sili-cotuberculosis 4.5 Lung cancer related to silica exposure 4.6 Rare diseases (Caplan and Erasmus syndromes)

**Discussion:**

**Conclusion of the presentation:** Conclusion: Although very underdiagnosed, silica-related diseases can be promptly evaluated with radiographs and HRCT. The chest is one of the main sites of disease, especially the lungs. The main clinical forms are acute silicosis (silicoproteinosis) and chronic silicosis, and tuberculosis and lung cancer are potential serious complications. The knowledge of the main thoracic findings of silica-related diseases are crucial, in order to avoid workers' continuous exposure to silicates.

#### PD.08.019

##### **TROPICAL AND SUBTROPICAL PARASITIC INFECTIONS OF THE CHEST: SPECTRUM OF IMAGING FINDINGS**

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**Introduction:** Objectives: The purpose of this exhibit is to: 1. Describe the main tropical and subtropical parasitic diseases in terms of their geographic distribution, with emphasis on South American infections. 2. Demonstrate their most common imaging, clinical and pathological findings.

**Methods Involved:** Principal Information: The authors will focus on the following points: 1. Geographic distribution of tropical and subtropical parasitic diseases. 2. Review of clinical, imaging and pathological findings of the following diseases, with sample cases: 2.1 Amebiasis 2.2 Schistosomiasis 2.3 Hydatid lung disease 2.4 Malaria 2.5 Trypanosomiasis 2.6 Strongyloidiasis 2.7 Dirofilariasis 2.8 Paragonimiasis 2.9 Cisticercosis 3. Summary of findings and conclusions.

**Discussion:**

**Conclusion of the presentation:** Conclusion: The major teaching points of this exhibit are: 1. Parasitic infections are common in tropical and subtropical regions, but their chest imaging findings are unknown to the majority of radiologists. 2. Familiarity with their geographic distribution, besides their clinical and imaging features, may help in the differential diagnosis.

## PD.08.027

### PERICARDIAL FAT NECROSIS: AN UNUSUAL CAUSE OF CHEST PAIN

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**Brief description of the purpose of the report:** Report two cases of pericardial fat necrosis, highlighting the key aspects from the imaging findings, emphasizing the importance of familiarity of the radiologist with this uncommon, benign, self-limited entity that is the differential diagnosis of aggressive disorders.

**Medical History:** Two young adult patients presented to emergency department with acute pleuritic chest pain, without fever, dyspnea or other symptoms, and no history of trauma. Physical examination, laboratory test results and analysis of the electrocardiogram showed no changes. Computed tomography scan shows encapsulated low attenuation lesion with strands inside, associated with increased attenuation of the adjacent epipericardial fat, indicating inflammatory changes.

**Diagnosis:** PERICARDIAL FAT NECROSIS

**Discussion and summary of the case:** Pericardial fat necrosis is a benign, self-limited and unusual cause of chest pain, with few cases reported in the literature. The possible pathophysiological mechanism is the vascular pedicle torsion, with associated thrombosis. It is treated with analgesics and anti-inflammatories, with satisfactory results. Computed tomography scan allows accurate diagnosis of pericardial fat necrosis and may also exclude other conditions which invasive and aggressive emergency treatment is mandatory. Therefore, it is important to be familiar with this benign and self-limited entity, avoiding unnecessary invasive treatments.

## PD.08.031

### PRIMARY PULMONARY AMYLOIDOSIS

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**Brief description of the purpose of the report:** Case report of rare incidence with typical findings at diagnostic image.

**Medical History:** Ploughman 79, refers dyspnea during vigorous exercises for 6 months, recurrent cough, sputum production white/yellow, episodic hemoptysis and daily wheezing. Dyspnea progressed to moderate efforts, keeping coughing, wheezing, without hemoptysis. Smoker, 35 pack-years. Denies tuberculosis or exposure to chemicals or asbestos. Physical examination: eupneic, 16 bpm, O<sub>2</sub> sat on RA 91%, PEF 220 L/min, HR = 80 bpm. Hyperinflation and decreased breath sounds. Laboratory exams: CBC, CRP, ESR normals. Culture for Haemophilus, BAAR, fungal, BK and Gram was negative. Work-up for multiple myeloma, including urine protein electrophoresis and bone marrow biopsy was negative. The patient was submitted to bronchoscopy with biopsy.

**Diagnosis:** CRX: nodules and masses bilaterally. Thorax CT: pulmonary nodules and masses of soft tissue density, irregular contours, diffusely and bilaterally. Calcifications, but none cavitated. No lymph node enlargement. Pathology: extracellular deposition of amorphous material, infiltrating respiratory epithelium and vessels, with eosinophilic-eosin staining and

apple-green birefringence on Congo Red histological staining. Diagnostic: Primary Pulmonary Amyloidosis.

**Discussion and summary of the case:** The former has been associated with a monoclonal plasma cell dyscrasia, as at least 30% of primary amyloidosis patients will eventually progress to multiple myeloma. The median survival is 1.5 years.

## PD.08.032

### CONGENITAL VASCULAR MALFORMATIONS OF THE THORAX

SANTANA, P.R.P., TREVISAN, E.M.R., BASSI S.G., GRUNEWALD, T., WAGNER, S., LIMA, A.P.S., ESCUISSATO, D.L., GOMES, A.C.P.

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**Introduction:** Congenital thoracic vascular malformations may compromise both systemic as well as pulmonary vessels and may present as single or complex anomalies, and be associated with congenital heart disease in most of the cases. Enhanced chest computed tomography (CT) is an excellent noninvasive method to evaluate congenital vascular malformations, especially multidetector row CT (MDCT), which allows volumetric acquisitions and high resolution images during a single apnea. These anomalies can sometimes be found unexpectedly and even in non-enhanced CT scans. However, thoracic radiologists can easily establish the correct diagnosis in most situations.

**Methods Involved:** We analyzed chest Ct scans from patients with congenital thoracic vascular malformations.

**Discussion:** MDCT provides a combination of high speed, high spatial resolution, multiplanar reformatting (MPR) and three-dimensional reconstructions (3D), which makes it an ideal noninvasive method for the evaluation of congenital vascular malformations of the chest.

**Conclusion of the presentation:** The aim of this study is to illustrate the spectrum of common and rare congenital thoracic vascular malformations demonstrated by enhanced and non-enhanced chest CT.

## PD.08.033

### AMIODARONE-INDUCED PULMONARY TOXICITY

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**Introduction:** Amiodarone is a pharmacological agent used presently to control atrial and ventricular arrhythmias. Nearly all the patients using this drug for a long period of time develop side effects. It is known that amiodarone use may cause adverse reactions in almost any system of the organism, but of all amiodarone adverse effects, the pneumonitis is the most severe, which restricts more significantly its clinical use.

**Methods Involved:** We analyzed CT scans from our service of patients in continuously use of amiodarone, presenting clinical and imaging findings consistent with drug reaction.

**Discussion:** About 5% to 15% of patients treated with this drug may develop signs and symptoms consistent with pulmonary toxicity, and such complication may eventually lead to death. The early diagnosis of amiodarone-induced pulmonary toxicity is difficult, because its onset is insidious and its signs and symptoms are similar to those caused by the underlying disease. The computed tomography may show high

attenuation consolidation, septa thickening, pleural effusion, ground-glass opacities, pulmonary masses and, in more advanced stages, findings of fibrosis.

**Conclusion of the presentation:** The objective of this study is to describe the main findings identified at chest CT in patients with amiodarone-induced pulmonary toxicity.

### PD.08.036

#### ADENOLEIOMYOMATOUS HAMARTOMA OF THE LUNG

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**Brief description of the purpose of the report:** Hamartomas are the most common benign lung tumors. However, adenoleiomyomatous hamartoma is extremely rare and can be found in middle-aged men and women. This lesion displays distinct radiological and histological patterns of classic hamartomas and can mimic neoplasms.

**Medical History:** We report a rare case of adenoleiomyomatous hamartoma in a 56-year-old male patient, ex-smoker, who was admitted to our hospital, reporting right chest pain for eight months. Computed tomography scan of the chest was performed and demonstrated a large solid-cystic mass, with rare faint foci of calcification, centered in the upper lobe of the right lung, measuring about 14.2 x 10,8 x 8,6 cm.

**Diagnosis:** The lesion was biopsied. The histopathology revealed fascicles of spindle cells without atypia and immunohistochemical study was positive for desmin and actin HHH - 35 and 1A4. Based on these findings, the diagnosis was smooth muscle neoplasm without histological signs of malignancy in the sample. Subsequently, the patient underwent surgical resection and morphological findings associated with immunohistochemical panel were consistent with the diagnosis of adenoleiomyomatous hamartoma.

**Discussion and summary of the case:** The adenoleiomyomatous hamartoma is a very rare, benign entity that can form large masses, simulating neoplasm in the lung.

### PD.08.039

#### ACHADOS TOMOGRÁFICOS DO TROMBOEMBOLISMO PULMONAR CRÔNICO RELACIONADO À HIPERTENSÃO PULMONAR

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**Brief description of the purpose of the study:** O tromboembolismo pulmonar crônico (TEPC) ocorre a partir da resolução incompleta dos casos agudos, podendo levar ao aumento da resistência arterial e hipertensão pulmonar. A prevalência da hipertensão pulmonar por TEPC é subestimada, sendo a angiotomografia importante método para o diagnóstico. Objetiva-se analisar as características tomográficas do TEPC associado à hipertensão pulmonar

**Methods:** Foram estudadas angiotomografias de 12 pacientes com hipertensão pulmonar e diagnóstico radiológico de TEPC. As variáveis tomográficas foram classificadas de acordo com o sítio de acometimento (sinais vasculares, pul-

monares e cardíacos) e de acordo com a forma de apresentação (sinais diretos e indiretos)

**Main results:** Foram identificados sinais vasculares em 100% dos casos, sinais pulmonares em 75% e sinais cardíacos em 75%. Entre os sinais vasculares, aumento do calibre da artéria pulmonar (83,3%), presença de trombos excêntricos (83,3%) e irregularidades parietais (75%) foram os mais frequentes. Entre os sinais pulmonares, predominaram a atenuação em mosaico (66,67%) e afilamento de ramos arteriais distais (58,3%). Entre os sinais cardíacos, predominaram o aumento volumétrico do ventrículo direito (75%) e abaulamento do septo interventricular (75%). Foram identificados sinais diretos em 100% e indiretos em 91,6% dos pacientes.

**Importance of the conclusions:** No presente estudo, houve predomínio de achados tomográficos diretos e vasculares no TEPC relacionado à hipertensão pulmonar.

### PD.08.041

#### RADIOLOGICAL FINDINGS IN MOUNIER-KUHN SYNDROME: REVIEW OF THE LITERATURE.

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**Brief description of the purpose of the Review of Literature:** The purpose of this study is to describe the main radiological changes found in Mounier-Kuhn syndrome (MKS).

**Description (s) condition (s), method (s) or technique (s):**

The MKS or tracheobronchomegaly is a rare condition related to atrophy of muscle, cartilage and elastic tissues, resulting in increased airways, which become widened during inspiration and collapse during expiration. Dilation of the cartilaginous tracheal rings allows the tissue between them exit out the trachea and the central bronchi, causing diverticula. It is mainly seen in men between 30 and 50 years. The difficulty in mobilizing secretions, causes its accumulation, causing respiratory infections and functional impairment, ranging from normal to respiratory failure leading to death. Chest radiography is able to demonstrate dilatation of the trachea and main bronchi and Computed Tomography (CT) features the tracheobronchial dilation, still showing the wavy appearance of the tracheal wall and bronchi. Also evaluates complications such as bronchiectasis, fibrosis, emphysema, tracheobronchomalacia and recurrent infections.

**Conclusion:** The syndrome should be suspected in patients with recurrent respiratory infections and ineffective cough, chest radiograph showing the increased caliber of trachea. CT is an important method in the detailed study of the lung parenchyma.

### PD.08.045

#### EXTRAPULMONARY TUBERCULOSIS: A PICTORIAL ESSAY

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**Introduction:** Perhaps one of the oldest and well known diseases, tuberculosis can present in various forms beyond the lung. Almost all organs can be affected: skin region, gastrointestinal tract, urogenital tract, eye, lymph node, pleural, even the central nervous system.

**Methods Involved:** The aim of this work is to characterize the main extrapulmonary manifestations of tuberculosis. To do so, we review the literature and will make use of cases from our hospital.

**Discussion:** Many of these extrapulmonary lesions are non-specific, and the diagnosis can be a challenge because of difficulties in performing biopsies. Moreover, these patients are often paucibacillary and has no apparent pulmonary involvement, which further complicates the correct diagnosis. Across the globe, tuberculosis is the fourth leading cause of death from infectious diseases - second only to septicemia, HIV and Chagas disease. The country currently holds the 17th place in a ranking of 22 nations considered "high stress" (where there are large circulation of the disease). Despite a reduction of 9.6% between 2002 and 2012 have been detected, tuberculosis remains an important diagnostic as well as their extra-pulmonary manifestations

**Conclusion of the presentation:** The extra-pulmonary form can have multiple presentations. The radiologist should be therefore aware of this important differential diagnosis.

### PD.08.046

#### THORACIC COMPUTED TOMOGRAPHY FINDINGS IN 14 PATIENTS WITH FAT EMBOLISM SYNDROME

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**Brief description of the purpose of the study:** To describe the most frequent tomographic findings in patients with fat embolism syndrome.

**Methods:** We performed a retrospective analysis of thoracic computed tomographic (CT) scans in 14 patients with long bones fractures and fat embolism syndrome. CT data was collected from patients of different nosological institutions. CT scans were reviewed by two radiologists with experience in thoracic imaging and one radiology resident, with posterior literature review.

**Main results:** The most frequent findings were: ground-glass opacities (100%) mostly dependent, consolidations (85.7%) which were also frequently peripheral and dependent, and centrilobular ground glass nodules (50%) with predominance in middle and superior pulmonary fields. Subtle smooth septal thickening (35.5%) and small pleural effusions (71.4%) were also observed.

**Importance of the conclusions:** Our findings agree with those in literature, with high frequency of ground glass, consolidations and centrilobular micronodules, which although nonspecific, can be useful to suggest fat embolism syndrome in patients with long bone fractures.

### PD.08.048

#### MOSAIC ATTENUATION PATTERN : IMAGING FINDINGS THAT SUPPORT AT DIFFERENTIAL DIAGNOSIS

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**Introduction:** The increasingly frequent realization of imaging methods in diagnosis has allowed various patterns of involvement of the lung parenchyma are observed. The pattern of mosaic attenuation stands out among these patterns . In many situations this finding is only described in the report , without determining the causal factor .

**Methods Involved:** Computed tomography

**Discussion:** Through images of their files , the authors present findings that can guide the radiologist not only to perform a descriptive report but make an active search by certain characteristics that allow it suggest the cause of the observed pattern .

**Conclusion of the presentation:** So will be demonstrated characteristics of diseases of the airways ( bronchiolitis , asthma , cystic fibrosis ) and vascular , predominantly causes of hypertension pre -capillary pulmonary artery ( idiopathic , associated with immune disorders , secondary to chronic pulmonary thromboembolism , congenital heart defects ) and post-capillary ( disease of the left chambers ) assisting the clinician in the etiology of the patient base.

### PD.08.049

#### MAGNETIC RESONANCE IMAGING OF THE CHEST AND LUNGS: HOW WE DO IT.

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**Introduction:** Introduction: Lack of dedicated protocols and unawareness of the true potential of the method are among the factors that collaborate for underutilization of chest/lungs Magnetic Resonance Imaging (MRI). In this work we present our experience with a clinically applied protocol for chest MRI.

**Methods Involved:** Involved methods: We use a basic protocol without contrast media that can be followed by post-contrast pulmonary perfusion and/or MR angiography (MRA), plus a GE T1 3D with fat-suppression. Basic protocol: axial/coronal HASTE T2; bSSFP free breathing (cine effect) axial, coronal and sagittal; axial GE T1 in/out phase; axial STIR; GE T1 3D with fat-suppression axial/coronal (pre-contrast). Pulmonary perfusion: ultra-fast GE 4D sequence in coronal plane (radial acquisition and eco share). MRA: GE 3D sequence with better spatial resolution. There are also "backup" sequences for more specific situations.

**Discussion:** Discussion: The non-enhanced basic protocol can be used in cases of chest wall deformities and diaphragmatic hernias. Pulmonary perfusion is important in cystic fibrosis, COPD and pulmonary lesions, while MRA in cases of pulmonary hypertension and embolism.

**Conclusion of the presentation:** Conclusion: Chest and lungs MRI can be done in a simply and fast way in clinical routine. An optimized protocol and knowledge of indications are important for adequate implementation of the method.

### PD.08.050

#### THE "HALO SIGN" ON CHEST COMPUTED TOMOGRAPHY - ASPECTS AND DIFFERENTIAL DIAGNOSIS

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**Introduction:** The objective of this paper is to present and discuss the findings on computed tomography of pulmonary nodules lined with ground-glass opacities, the so-called “halo sign”.

**Methods Involved:** We present some cases performed at our institution, with discussion of the imaging findings and differential diagnosis of the “halo sign”, with a large literature review.

**Discussion:** The “halo sign” can be detected in patients of all ages, both male and female and was initially described as compatible with angioinvasive aspergillosis, but it can be present in a wide variety of diseases, such as in infectious processes, for example in tuberculosis, histoplasmosis, candidiasis, aspergillosis itself and viral pneumonia, and can also occur in non-infectious inflammatory diseases such as Wegener’s granulomatosis and Churg-Strauss syndrome, and in neoplasms such as Kaposi’s sarcoma, adenocarcinoma or haemorrhagic metastasis.

**Conclusion of the presentation:** The “halo sign” is relatively frequently seen on chest CT scans, and the radiologist needs to know how to recognize it, correctly characterize it and have knowledge to discuss the possible differential diagnoses.

#### PD.08.051

##### HIGH RESOLUTION COMPUTED TOMOGRAPHY AND HISTOPATHOLOGICAL FINDINGS OF HYPERSENSITIVITY PNEUMONIA: PICTORIAL ESSAY

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**Introduction:** Hypersensitivity pneumonitis (HP) is a diffuse interstitial and granulomatous lung disease of inhalational origin, with several antigens implicated. Our goal is to illustrate high resolution computed tomography (HRCT) and histopathologic findings.

**Methods Involved:** We retrospectively reviewed HRCT scans of patients who had a HP diagnosis established in clinical-radiological or clinical-radiological-pathological correlation in those who were submitted to open lung biopsy.

**Discussion:** HP is clinically divided in acute, subacute and chronic presentations. HRCT findings correlate to the time of exposure, and are eventually combined. Centrilobular micronodules, ground glass and air trapping are characteristic in the subacute form, where histopathologically shows lymphocytic inflammatory infiltrates, bronchiolitis, variable degrees of organizing pneumonia and giant cells. HRCT shows signs of lung fibrosis with traction bronchiectasis and honeycombing in the chronic presentation, with upper predominance, and the biopsy findings also show fibrosis.

**Conclusion of the presentation:** A multidisciplinary approach is definitive on HP diagnosis, correlating clinical findings, exposure history, HRCT and lung biopsy.

#### PD.08.052

##### INTERSTITIAL PNEUMONIAS AND ITS SUBTYPES

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**Introduction:** Interstitial pneumonia is a group of parenchymal lung diseases of known or unknown etiology, characterized by the presence of varying levels of inflammation and fibrosis. Through a dynamic interaction between the radiologist, pathology and pulmonologist, one can reach a definitive diagnosis and its subtype. It is important for radiologists to be familiar with the different image patterns to assess and collaborate in the diagnosis, therefore, in their treatment.

**Methods Involved:** Extensive bibliography review and cases of the hospital.

**Discussion:** The purpose of this pictorial essay is to demonstrate aspects of the image of high resolution computed tomography, more commonly seen in our service, such as usual interstitial pneumonia, nonspecific interstitial pneumonia, organizing pneumonia, among others. For this we conducted a comprehensive literature review and survey of the cases of our hospital for illustration file of such changes.

**Conclusion of the presentation:** It is very important to review the characteristics of interstitial pneumonias, since its diagnosis has undergone changes due to the evolution of diagnostic imaging.

#### PD.08.053

##### THORACIC LUNG DISEASES: A CT PATTERN APPROACH

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**Introduction:** Thoracic fungal diseases lead to significant mortality and morbidity, presenting both in endemic or opportunistic forms. Our objective is to present a computed tomographic (CT) pattern approach of the main fungal diseases of thorax.

**Methods Involved:** We reviewed chest CT scans of patients with lung mycosis with clinical and eventually histopathological diagnosis. Six patterns were identified: ground glass opacities, nodules / consolidations, millitary pattern, mediastinal disease, airway disease and cavitory lung disease.

**Discussion:** Usually, histoplasmosis, coccidioidomycosis, and paracoccidioidomycosis compromises immunocompetent patients, and aspergillosis, candidiasis, cryptococosis and pneumocystosis cause disease in immunocompromised patients. Pneumocystosis and paracoccidioidomycosis usually leads to ground glass opacities. Nodules and consolidations are findings in angioinvasive fungal diseases, cryptococosis, paracoccidioidomycosis and coccidioidomycosis. Millitary disease is a common presentation to multiple fungal diseases, including histoplasmosis, coccidioidomycosis, paracoccidioidomycosis and candidiasis. Adenomegaly and fibrosing mediastinitis are observed in the mediastinal pattern. Airway disease is usually related to bronchopulmonary allergic aspergillosis and airway invasive aspergillosis. Cavitory lung disease is also common in multiple fungal agents, including chronic cavitory histoplasmosis and saprophytic aspergillosis.

**Conclusion of the presentation:** Knowledge of the epidemiology, immunologic status and the most common tomographic patterns of each fungal disease is essential to the radiologist in order to a correct diagnosis.

## 9 - CARDIOVASCULAR

### PD.09.002

#### RIGHT ATRIAL ANGIOSARCOMA: CASE REPORT AND LITERATURE REVIEW

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**Brief description of the purpose of the report:** Report and discuss the diagnostic imaging methods from a primary tumor of the heart.

**Medical History:** Male patient, 63 years old, history of dyspnea and sporadic coughing and underwent radiological examinations, which showed heterogeneous mass in the right atrium topography extending to the superior vena cava and pulmonary artery and pulmonary nodules of probable secondary nature. Biopsy of one of the pulmonary nodules, confirming the diagnosis of angiosarcoma.

**Diagnosis:** Angiosarcoma of the right atrium

**Discussion and summary of the case:** The primary angiosarcomas are the most common cardiac sarcomas, but are rare. They affect more men, mean age 20-50 years. Metastases occur in 66-89% of cases and most can already be detected when the diagnosis was established. There is a predilection for the right atrium and pericardium and the most frequent clinical presentation is cardiac tamponade, but can also manifest as heart failure and arrhythmia. Computed Tomography (CT) and Magnetic Resonance Imaging (MRI) exams show them as diffuse or focal wall thickening mass involving the right atrium, with heterogeneous enhancement after the administration of intravenous iodinated contrast. The available treatment modalities have little success with increased survival in just a few months.

### PD.09.003

#### BEAM HARDENING ARTIFACTS REDUCTION IN MYOCARDIAL PERFUSION EVALUATION WITH DUAL ENERGY CT

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**Brief description of the purpose of the report:** PURPOSE Computed tomography (CT) myocardial perfusion is a potential tool to evaluate the functional repercussion of an anatomical coronary stenosis. One limitation is the susceptibility of MDCT to beam-hardening artifacts (BHA) from conventional single-energy CT (SECT) scanning which can mimic myocardial perfusion defects. The objective of this paper is to evaluate the diagnostic performance of single-energy CT (DECT) in the segments that usually can present BHA in SECT.

**Method and Materials:** Twenty patients with suspected coronary artery disease were evaluated with SPECT studies and Stress-Rest DECT (Discovery CT750 HD, GE Medical Systems). For the stress scan 0.56 mg/kg dipyridamol were used. DECT scans were evaluated by an experienced Level III certified radiologist who was blinded to SPECT findings. A 17 segmental-model analysis was done to determine myo-

cardial segments with perfusion defects. Special analysis was done in segments where BHA appear in SECT (segments 5, 13, 14, 15 and 16). DECT images were evaluated using the monochromatic images at 70 keV. SPECT was considered the gold standard modality. Correlation between DECT and SPECT studies was done using the kappa coefficient. Sensitivity, specificity, positive and negative predictive values were calculated by the exact binomial method with 95% confidence interval of the proportions. The prevalence of false positive findings in the segments where BHA can appear in SECT was calculated. **Results:** There were 200 segments evaluated. Correlation between DECT and SPECT showed a kappa coefficient of 0.82 (0.68 to 0.96). Sensitivity, specificity, NPV and PPV were 88% (75.7-95.5), 96% (91.5-98.5), 96% (91.5-98.52) and 88% (75.7-95.5) respectively. In order to accurately determine the false positive rate, the CT angiography data was evaluated in the segments where DECT and SPECT were discordant (n=11). In 5/11 segments where CT showed myocardial hypoperfusion, a severe coronary stenosis was found.

**Conclusion Deet:** showed excellent results in the evaluation of myocardial perfusion defects in those segments where BHA can appear in SECT scans. Only 6 segments were found as false positive findings attributed to BHA.

### PD.09.005

#### DUAL ENERGY CT ANGIOGRAPHY OF THE AORTA USING HALF-DOSE IODINE CONTRAST

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**Brief description of the purpose of the report:** To evaluate the feasibility of reducing 50% of the contrast volume without detriment in image quality on dual energy CT scans. **Method and Materials:** Twenty patients with an indication of CTA of the aorta were studied using a dual-energy CT scanner. A 50% of the theoretical contrast volume (for a single-energy CT scanner) was injected. The aortic lumen enhancement was evaluated at the beginning of the scan, at different keV (40 to 80). The signal to noise ratio was calculated. The best keV in relation to greater aortic lumen enhancement and higher signal-to-noise was determined. In each study, image quality was ranked using a 4-point scale. **Results:** All studies were diagnostic. The best keV for the image analysis was 60 (in 80% of the scans) and 70 (in the other 20% of the scans). The signal to noise ratio for the 60 keV serie was 7.34 UH, for the 70 keV series 7.5 HU, for the 60 keV series was 5.82 HU, for the 70 keV series 6.1 HU and for the 80 keV series 6.8 HU. Image quality was ranked as excellent in 70% of the patients and good in the 30% of the patients. **Conclusion Deet:** Dual Energy CTA of the aorta can be performed with 50% reduction in volume contrast. Spectral images at 60 keV showed the best image quality, with the best signal-to-noise ratio using 50% level of iterative reconstruction.

### PD.09.006

#### DUAL ENERGY CT VERSUS SINGLE ENERGY CT ANGIOGRAPHY IN THE EVALUATION OF CAROTID ARTERY STENOSIS

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**Brief description of the purpose of the report:** To determine the accuracy of dual energy CT angiography (DECTA) versus single energy CTA (SECTA) in the evaluation of carotid artery stenosis considering Doppler as the gold standard. **Method and Materials:** Twenty patients were evaluated with SECTA, DECTA and Doppler. For analysis, 4 arterial segments were defined. Artery segments were evaluated for the detection of stenosis according to the NASCET criteria. In DECTA, the vascular analysis was done using the monochromatic data. Sensitivity and specificity were calculated for CTA in stenosis  $\geq 50\%$ . The relationship between CTA and Echo-Doppler in terms of categories of stenosis was analyzed by using the Spearman rank correlation coefficient. **Results:** Mean radiation dose for DECTA was 1.14 mSv and for SECTA was 1.28 mSv. Correlation of DECTA versus Doppler ( $r=0.97$ ) was higher than DECTA versus Doppler ( $r=0.75$ ). For moderate and high-grade stenosis ( $\geq 50\%$ ), sensitivity and specificity of SECTA were 90% and 96% respectively, whereas for DECTA, they were 100% and 99% respectively. Compared with Echo-Doppler results, DECTA overestimated the grades of stenosis less than SECTA (1.89% versus 10.06%,  $P<0.05$ ), and also underestimated the grades of stenosis less than SECTA (0.63% versus 5.03%,  $P<0.05$ ). **Conclusion Dect:** DECTA showed higher sensitivity and specificity for quantifying carotid stenosis as well as less underestimation and overestimation in comparison with SECTA. DECT monochromatic images allowed more precise stenosis quantification.

#### PD.09.007

##### IODINE MAPS IN DUAL ENERGY CT FOR MYOCARDIAL PERFUSION ASSESSMENT WITH SPECT CORRELATION

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**Brief description of the purpose of the report:** To evaluate the role of iodine-water decomposition material obtained from a dual energy CT (DECT) scan data in the assessment of myocardial perfusion in correlation with SPECT studies.

**Method and Materials:** Twenty patients were evaluated with SPECT and Stress-Rest cardiac DECT. Dipiridamol was used for stress imaging. A 17 segmental model analysis was done using the DECT iodine-water images for the detection of myocardial perfusion defects. A qualitative and a quantitative analysis were carried out calculating the quantity of iodine  $\mu\text{g}/\text{cm}^3$  in each myocardial segment. SPECT analysis was done and compared with DECT. Differences between normal and pathologic myocardial segments were calculated by unpaired t-student test. Correlation was done by Spearman rank order correlation.

**Results:** There were 680 segments analyzed. Only 1.57% was non-evaluable due to motion artifacts. Cardiac CT mean radiation dose was 7.1 mSv. The mean iodine concentration in the hypoperfused myocardial segments was  $10.5 \pm 5.13 \mu\text{g}/\text{cm}^3$ , whereas for normal myocardial segments it was  $26.1 \pm 6.3 \mu\text{g}/\text{cm}^3$ . There was a statistical significant difference between normal and hypoperfused myocardial segments:  $15.6 \mu\text{g}/\text{mm}^3$ ,  $p<0.001$ . Correlation between methods showed a kappa coefficient = 0.77.

**Conclusion Dect:** There was good correlation between DECT iodine-water image analysis and SPECT studies for the identification of myocardial perfusion defects. Iodine measurements showed a great reduction of iodine concentration in hypoperfused segments.

#### PD.09.008

##### STRESS REST DUAL ENERGY CT MYOCARDIAL PERFUSION

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**Brief description of the purpose of the report:** To determine the usefulness of Stress-Rest DECT myocardial perfusion in the evaluation of myocardial perfusion defects in correlation with SPECT findings.

**Method and Materials:** We evaluated 20 patients with known or suspected coronary disease. Prospective ECG-triggered cardiac DECT was performed with a 128 slice CT scanner. First a stress CT and 30 minutes later a rest CT scan was complemented. Dipiridamol was used for stress myocardial perfusion imaging in both CT and SPECT studies. A 17 segmental model analysis was done using the DECT monochromatic data at 70 keV. SPECT analysis was done and compared with DECT. The 95% confidence interval of the proportions was calculated by the exact binomial method to determine the presence of myocardial perfusion defects. Correlation between DECT and SPECT was measured by the kappa coefficient.

**Results:** There were 680 myocardial segments for analysis. For the detection of myocardial perfusion defects, sensitivity was 82.1%, specificity 96.74%, PPV 85.48% and NPV 96.04%. The correlation between DECT and SPECT studies was  $k=0.78$ . The mean radiation dose for each patient was 7.1 mSv.

**Conclusion Dect:** Stress-Rest DECT myocardial perfusion demonstrated good sensitivity and specificity as well as adequate correlation with SPECT findings for the detection of myocardial perfusion defects, with a similar radiation dose than the reported for single energy CT myocardial perfusion scans.

#### PD.09.009

##### DECREASED RADIATION DOSE USING DUAL ENERGY CT MYOCARDIAL PERFUSION IMAGING

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**Brief description of the purpose of the report:** To evaluate the feasibility of decrease the radiation dose in myocardial perfusion CT scans using Stress-Rest Dual energy CT (DECT), without impairment of the diagnostic performance.

**Method and Materials:** Forty patients were included. Twenty patients were scanned using a DECT scanner and the other 20 using a single energy (SECT) scanner. All patients performed a SPECT scan and Dipiridamol was used for stress myocardial perfusion imaging. Monochromatic images at different keV from the DECT data and SECT images were evaluated for the detection of myocardial perfusion defects based on Hounsfield units. The 95% confidence interval of the proportions was calculated by the exact binomial method. Correlation between DECT, SECT and SPECT studies was measured by the kappa coefficient. **Results:** The mean radiation dose for each patient was  $7.1 \pm 1.2$  mSv on DECT exams and  $8.1 \pm 1.1$  mSv on SECT scans. For detection of the presence of myocardial perfusion defects, DECT showed a sensitivity of 82.1%; specificity 96.7%; PPV 85.5%; NPV 96%, with a  $k=0.77$  whereas SECT 70.3%; 90.7%; 79.3%; NPV 85.7%

respectively, with a  $k=0.62$ . **Conclusion Dect**): Stress-Rest DECT myocardial perfusion allowed decreasing the effective radiation dose and a higher sensitivity and specificity than SECT for the detection of myocardial perfusion defects

#### PD.09.010

##### LERICHE SYNDROME: WHAT RADIOLOGIST MUST KNOW

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**Brief description of the purpose of the report:** To evaluate the feasibility of decrease the radiation dose in myocardial perfusion CT scans using Stress-Rest Dual energy CT (DECT), without impairment of the diagnostic performance.

**Method and Materials:** Forty patients were included. Twenty patients were scanned using a DECT scanner and the other 20 using a single energy (SECT) scanner. All patients performed a SPECT scan and Dipiridamol was used for stress myocardial perfusion imaging. Monochromatic images at different keV from the DECT data and SECT images were evaluated for the detection of myocardial perfusion defects based on Hounsfield units. The 95% confidence interval of the proportions was calculated by the exact binomial method. Correlation between DECT, SECT and SPECT studies was measured by the kappa coefficient.

**Results:** The mean radiation dose for each patient was  $7.1 \pm 1.2$  mSv on DECT exams and  $8.1 \pm 1.1$  mSv on SECT scans. For detection of the presence of myocardial perfusion defects, DECT showed a sensitivity of 82.1%; specificity 96.7%; PPV 85.5%; NPV 96%, with a  $k=0.77$  whereas SECT 70.3%; 90.7%; 79.3%; NPV 85.7% respectively, with a  $k=0.62$ .

**Conclusion Dect:** Stress-Rest DECT myocardial perfusion allowed decreasing the effective radiation dose and a higher sensitivity and specificity than SECT for the detection of myocardial perfusion defects.

#### PD.09.011

##### IMAGE QUALITY IN A REDUCED CONTRAST MEDIA PROTOCOL FOR CORONARY CT ANGIOGRAPHY USING DUAL ENERGY CT

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**Brief description of the purpose of the report:** To evaluate the feasibility of reducing 50% of the contrast volume without detriment in image quality on dual energy coronary CT angiography (CCTA).

**Method and Materials:** Twenty patients were studied with a single-energy CT (SECT) acquisition and full-dose of contrast material and with a dual-energy CT acquisition and 50% of the theoretical contrast volume. To obtain objective parameters of image quality of the proximal coronary arteries, image noise, attenuation, and contrast of the proximal coronary arteries as well as signal-to-noise ratio (SNR) and contrast-to-noise ratio (CNR) were determined at the different keV (40 to 60) without iterative reconstruction (IR), at 60 keV with iR and in SECT images. All variables are expressed as mean value  $\pm$  SD. Statistical analyses were performed using

commercially available software.

**Results:** Image noise was significantly lower at 60 keV series (mean 22.6 UH;  $p < 0.05$ ). Best SNR was obtained at 60 keV with IR (mean 12.8 vs. 7.8 of 60 keV without IR and 12.1 of SECT scan). Best CNR was obtained at 60 keV with IR (mean 17.4 vs. 10.8 of 60 keV without IR and 15.1 of SECT scan).

**Conclusion Dect:** Dual Energy CCTA can be performed with 50% reduction in volume contrast without impairment on image quality.

#### PD.09.012

##### ISOLATED INNOMINATE ARTERY ANEURYSM: CASE REPORT AND LITERATURE REVIEW.

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**Brief description of the purpose of the report:** Report a case of an isolated innominate artery aneurysm, with the purpose of its inclusion among mediastinal widening differential diagnosis. Therefore, give radiologists enough knowledge to suspect this disease in plain radiographs and to avoid errors during computed tomography (CT) interpretation.

**Medical History:** FIS, 50 years-old man, referred to Hospital XXX because of a single episode of retrosternal throbbing pain, that lasted nine minutes. Chest radiographs in postero-anterior and side views were taken and demonstrated a mediastinal mass extending to the right upper lung zone. Chest CT was then used to complement the study.

**Diagnosis:** The chest CT with intravenous injection of iodinated contrast characterized a fusiform aneurysm to the fullest extent of the innominate artery (diameter up to 5,1 cm and 9,1 cm of extension), without any signs of dissection, mural thrombi or involvement of the supra-aortic trunk arteries.

**Discussion and summary of the case:** Innominate artery aneurysms are rare, representing less than 3% of aortic aneurysms. The major risk factor is atherosclerotic disease. Most cases are incidental findings in asymptomatic patients. Definitive treatment should always be performed in symptomatic patients and should be ventured in asymptomatic ones due to the high risk of thromboembolic complications.

#### PD.09.013

##### VARIATIONS IN RENAL ANATOMY DEMONSTRATED BY CT ANGIOGRAPHY IN LIVING DONOR CANDIDATES - PICTORIAL ESSAY.

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**Introduction:** The decision to transplant a kidney from a living donor is of great responsibility, because several factors may compromise the success of the procedure. Among these factors, it is important the analysis of anatomical arterial, venous, and the collection system, to be able to advance planning of anastomoses and ligatures.

**Methods Involved:** A total number of 88 kidney donors candidates were examined at our clinic with a 64-detector scanner, between April 2012 and May 2013. Anatomical variations were present in forty-four kidneys donors (50%), the

most common being the multiplicity of arterial branches with 36% of the total. Other relevant findings are early bifurcation of the renal artery with 18.2% and renal venous branches multiplicity with 12.5%.

**Discussion:** Nowadays, with quick and easy viewing of CT angiography, is less frequent the surgeon to be surprised during the procedure with an unexpected anatomical structure or pathology. Choice of the appropriate kidney (side) for transplantation should ensure the lowest risk of thrombosis, rejection and inadequate blood perfusion.

**Conclusion of the presentation:** Knowledge of anomalous conditions in the anatomy of the donor is essential for proper functioning and post-transplant preservation of graft. CT angiography can provide key information for success of the procedure.

#### PD.09.014

##### **MAY THURNER SYNDROME: A COMMON CAUSE RARELY CONSIDERED WITHIN THE DIFFERENTIAL DIAGNOSIS OF DEEP VEIN THROMBOSIS.**

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**Brief description of the purpose of the report:** This case report seeks to familiarize the medical community with an anatomical variant, which is rarely considered within the differential diagnosis of deep vein thrombosis.

**Medical History:** 44 year old male, complaining of pain in left leg, which progressively worsened over the last 2 years, associated with edema. Doppler study with diagnosis of chronic deep vein thrombosis.

**Diagnosis:** May-Thurner Syndrome

**Discussion and summary of the case:** May-Thurner Syndrome is an uncommon cause of venous symptoms and signs related to the left lower limb. It is characterized by compression of the left common iliac vein by the right common iliac artery and, when such anatomical change causes symptoms that may impair the patients' quality of life, thus surgical treatment is indicated. This variant has been shown to be present in over 20% of the population; however, it is rarely considered in the differential diagnosis of DVT, particularly in patients with other risk factors. Systemic anticoagulation alone is insufficient treatment, and a more aggressive approach is necessary to prevent recurrent deep vein thrombosis. It is because of these reasons that this case report would like to increase the knowledge of the medical community regarding this common finding easily overlooked.

#### PD.09.015

##### **MAGNETIC RESONANCE IMAGING OF CARDIAC AMYLOIDOSIS**

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**Introduction:** Cardiac amyloidosis (CA) is the most common manifestation of diffuse amyloidosis in the chest. Although myocardial biopsy remains the gold standard for diagnosis, currently the diagnosis of CA is established by obtaining a positive non-cardiac biopsy and supportive non-invasive imaging characteristics. This pictorial essay presents the range of CMR imaging of cardiac amyloidosis.

**Methods Involved:** The pathophysiologic basis of CA will be briefly discussed, followed by demonstration of how different CMR imaging sequences can help on characterizing amyloidosis of the heart.

**Discussion:** CMR imaging has become invaluable in the diagnosis of CA with the development of tissue characterization techniques and late gadolinium enhancement (LGE). Poor contrast between the myocardium and blood pool as well as difficulties with choosing the appropriate inversion time during LGE should lead to suspicion of CA. We also advocate performing SSFP imaging after gadolinium enhanced images in order to corroborate findings on late gadolinium images, and to provide additional information should difficulty arise in acquiring adequate late gadolinium images.

**Conclusion of the presentation:** CMR imaging has revolutionized imaging of the cardiac amyloid patient and although endomyocardial biopsy remains the gold standard of diagnosis, CMR imaging has established itself as an invaluable noninvasive diagnostic tool.

#### PD.09.017

##### **MULTIMODALITY IMAGING APPROACH TO CYSTIC ADVENTITIAL DISEASE OF POPLITEAL ARTERY (CADP): AN UPDATE USING HIGH-RESOLUTION STEADY-STATE FREE PRECESSION SEQUENCE (3D-FIESTA) MR**

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**Introduction:** Cystic adventitial disease (CAD) is a rare entity, characterized by mucinous cysts involving the adventitial layer of peripheral arteries and may lead to stenoses. It predominates in males subjects, usually between 40 and 50 years old, affecting popliteal artery in 85% of cases. Progressive unilateral calf claudication without atherosclerosis, worsened by physical activity, is the typical presentation. Moreover, noninvasive imaging methods have a major importance in such diagnosis.

**Methods Involved:** Studies of patients with CAD from the archives of a tertiary hospital.

**Discussion:** CAD was described in 1947 with varied etiological hypotheses: repetitive microtraumas, manifestation of a systemic connective tissue disease, synovial cysts implants and presence of ectopic mucin-secreting cells within the adventitia originating from and connecting with the adjacent joint. This study proposed the use of high resolution three-dimensional balanced free-precession MRI sequences (3D-FIESTA) to detail cystic lesions and their possible communication with the joint. In the four cases studied, it was possible to identify the communication, contributing to understand the etiopathology, surgically-proven in one case; non-ligation of such communication may lead to recurrence.

**Conclusion of the presentation:** Multimodality approach the CAD including 3D-FIESTA allows better understanding of the etiology of disease and contributes in planning the surgical approach.

### PD.09.018

#### **CORONARY COMPUTED TOMOGRAPHY ANGIOGRAPHY OF ANOMALOUS CORONARY ARTERIES FROM THE OPPOSITE SINUS OF VALSALVA: A PICTORIAL ESSAY.**

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**Introduction:** Anomalous origin and proximal course of the coronary arteries are uncommon entities. These anomalies can be associated with sudden cardiac death, with anomalous origin of the left coronary artery from the right sinus of Valsalva accounting for the majority of fatal cases. The diagnosis may be challenging with conventional coronary angiography. Coronary computed tomography angiography (CTA) has become the diagnostic modality of choice in suspected cases of anomalous coronary artery (ACA).

**Methods Involved:** This pictorial essay will demonstrate the spectrum of coronary CTA findings in cases of ACA from the opposite sinus of Valsalva, with particular attention to potential markers of increased risk.

**Discussion:** The risk of sudden cardiac death in patients with ACA has been associated with vigorous exercise and a true interarterial course. Additional morphological features have been associated with a worse prognosis, including a slit-like ostium, an acute angle take-off and a proximal intramural course. The anatomic characterization and subtype classification is optimal with coronary CTA.

**Conclusion of the presentation:** Coronary CTA is the reference standard for definition and classification of anomalous coronaries. The radiologist must be aware of the spectrum of findings to be able not only to diagnose the anomaly but also to identify features suggestive of increase risk in these patients.

### PD.09.027

#### **AORTIC DISEASE PREVALENCE IN PATIENTS UNDERGOING CT ANGIOGRAPHY IN A REFERRAL HOSPITAL IN SAO PAULO-SP**

CASTRO, R.N.C.; LUCARELLI, C.L.; CERRI, G.G.; MELO, E.R.; SANTOS, M.G.; POSSAGNOLO, D.T.; INSTITUTO DO CORAÇÃO, InCor (HC-FMUSP)

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**Brief description of the purpose of the study:** To determine the prevalence of aortic disease in patients undergoing CT angiography (CTA) in a referral hospital in the city of Sao Paulo.

**Methods:** Cross-sectional, retrospective, descriptive and analytic observational study. Data were collected from electronic medical records of all patients undergoing CTA of the aorta from august to october 2013th in a referral hospital in the city of São Paulo.

**Main results:** The sample consisted of 218 patients, 133 (61%) male. The mean age was 54.7 years old. Most tests performed were CTA of the thoracic aorta, 109 (50%). The most prevalent disease was atheromatous disease of the aorta, involving 138 patients (63.3%), followed by dilation of the aorta, 91 patients (41.7%), coarctation of the aorta in 26 patients (11.9%) and aortic dissection 23 patients (10.5%).

**Importance of the conclusions:** The high prevalence (63.3%) of atheromatous disease of the aorta in this cases series is justified by being a tertiary referral hospital, reference

in the diagnosis and treatment of vascular comorbidities. The atheromatous disease of the aorta is an important risk factor for other diseases, especially aortic ectasia.

### PD.09.030

#### **MAGNETIC RESONANCE IMAGING(MRI) FINDINGS OF SOFT TISSUE VASCULAR ANOMALIES(STVA)**

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**Introduction:** STVA can be divided into two major groups: vascular tumors and vascular malformations (VM). This differentiation is critical since the management and morbidity differ substantially. Clinical information and physical examination may provide important clues. However, diagnosis and classification is frequently confirmed by imaging studies and MRI is the single most valuable modality for this assessment. **Methods Involved:** The most didactic cases of STVA were selected from our digital image archive to illustrate their characteristics.

**Discussion:** MRI is very helpful to determine the full anatomical extent of the STVA, to follow up treatment response, to confirm diagnosis and to provide correct classification in challenging cases. VM are subcategorized according to their flow dynamics as low-flow or high-flow malformations. Magnetic Resonance Angiography (MRA) with dynamic sequences is an important part of any MRI protocol for the evaluation of STVA, because it demonstrates the hemodynamics of the anomaly, provides valuable information regarding the feeding arteries and draining veins when present, and it can serve as a roadmap for the interventional procedures.

**Conclusion of the presentation:** Familiarity with the MRI and MRA dynamic appearance of STVA facilitates accurate diagnosis, classification and, then, treatment planning.

### PD.09.031

#### **HYPEREOSINOPHILIC SYNDROME AND LOEFFLER ENDOCARDITIS: CASE REPORT AND LITERATURE REVIEW**

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**Brief description of the purpose of the report:** Idiopathic hypereosinophilic syndrome is a rare disease characterized by persistent eosinophilia (over 6 months) with unknown cause, leading to organic damage mediated by eosinophils, particularly in cardiac, respiratory and neurological systems. Cardiac involvement is the most common non-hematologic manifestation, and is characterized by a slow and progressive heart failure, which is the main cause of death in these patients.

**Medical History:** WLO, 18 y.o., from Sao Bernardo do Campo, Brazil, complaining of malaise, myalgia, decreased appetite, weight loss ( 5kg ) and fever for 2 weeks. Complete blood count with leukocytosis and eosinophilia . Myelogram showed hypercellular bone marrow with severe eosinophilia. MRI of the brain revealed small lesions of probable ischemic nature, suggesting cardioembolic etiology. Echocardiography and MRI showed a mass at the apex of the left ventricle, suggesting of ventricular Loeffler endocarditis.

**Diagnosis:** Loeffler Endocarditis

**Discussion and summary of the case:** The prognosis of patients with Loeffler endocarditis is poor. The treatment of eosinophilia slows disease progression, but the damage already made may result in lethal consequences. Therefore, early recognition of this entity is extremely useful to an early institution of appropriate therapy, in a stage that there are no significant injuries.

### PD.09.033

#### PREVALENCE OF AORTIC DISSECTION IN PATIENTS UNDERGOING CT ANGIOGRAPHY IN A REFERRAL HOSPITAL IN SÃO PAULO-SP

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**Brief description of the purpose of the study:** To determine the prevalence of aortic dissection in patients undergoing CT angiography (CTA) in a referral hospital in the city of São Paulo .

**Methods:** Retrospective prevalence study, collected from electronic medical records of all patients undergoing CTA of aorta from august to october 2013th in a referral hospital in the city of São Paulo.

**Main results:** The sample consisted of 218 patients, with mean age of 54.7 years old. The prevalence of aortic dissection was 10.5% (23 patients). Regarding the type of dissection, 13 (56.5 %) were Stanford type A and 10 (43.5 %) type B. The most common affected segment was the thoracic aorta, the aorta in its infrarenal portion and dissection covering all portions of the aorta, with 6 patients each (26.1 %).

**Importance of the conclusions:** Aortic dissection is an uncommon cardiovascular emergency, with a high rate of mortality. In our study the prevalence was 10.5%. Accurate and prompt diagnosis, as well as the identification of the affected segment, are essential for prognosis and therapeutic management.

### TL.09.005

#### QUANTIFICATION OF LEFT VENTRICULAR FUNCTION DURING REST AND PHARMACOLOGICAL STRESS BY CARDIAC CT AND SCINTIGRAPHY: CORRELATION BETWEEN DIFFERENT METHODS

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**Brief description of the purpose of the study:** To identify the methods that best correlate the functional assessment at rest and pharmacological stress for myocardial scintigraphy (SPECT) and 64-slice CT.

**Methods:** The Germano (G) and Emory methods (E) were studied by SPECT and simplified (QS) and modified (QM) Quinones methods by 64-slice CT (CT). For statistical evaluation we used Pearson correlation, the Bland-Altman and t-test. The criterion for significance was  $P < 0.05$ .

**Main results:** The ejection fraction (EF) at rest by SPECT\_G was  $65 \pm 15\%$  and SPECT\_E was  $71 \pm 13\%$ . Using TC\_QS the EF was  $58 \pm 16\%$  and  $55 \pm 14\%$  by TC\_QM. The SPECT\_G and SPECT\_M has a moderate positive correlation with TC\_QS and TC\_QM ( $r > 0.55$ ,  $p < 0.001$ , for all). The EF between SPECT\_G vs TC\_QM were not significantly different at rest ( $p = 0.08$ ). Using dipyridamole stress no EF measure-

ment was different from each other when comparing SPECT vs TC ( $p > 0.05$ , for all) and the best correlation was between SPECT\_G vs TC\_QS ( $r = 0.76$ ,  $p < 0.001$ ).

**Importance of the conclusions:** Our study showed that SPECT\_Germano and TC\_Quinones has the best correlation for stress and rest quantification by SPECT and 64-slice CT. Other methods will be better evaluated.

### TL.09.012

#### VENTRICULAR GEOMETRY AND MYOCARDIAL REMODELING AS ISCHEMIC RESPONSE EVALUATED BY DIPYRIDAMOLE STRESS CARDIAC COMPUTED TOMOGRAPHY.

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**Brief description of the purpose of the study:** To evaluate stress-induced remodeling of the left ventricle (LV) using cardiac computed tomography (CT).

**Methods:** Cross-sectional study, which included every patient that was scanned using a 64 channel CT with dipyridamole stress between july and december of 2013. The main indexes and measures used to determine myocardial remodeling were evaluated at rest and under stress. Concentric and excentric hypertrophy were considered as ischemic responses under stress. Concentric remodeling and normal geometry were considered non-ischemic responses under stress.

**Main results:** LV geometry at rest was normal in 58,3% of the cases and the most prevalent remodeling was excentric hypertrophy (33,3%), followed by concentric hypertrophy (8,3%) and no cases of concentric remodeling. Under stress, 17% of the cases presented ischemic responses and 40% of the patients with abnormal remodeling at rest showed improvement of the geometry under stress.

**Importance of the conclusions:** Dipyridamole stress doesn't affect LV geometry in non-ischemic patients, but showed good correlation with severity of coronary disease in ischemic patients. Therefore, evaluation of cardiac geometry by dipyridamole stress cardiac CT appears to be a promising prognostic marker and a good technique to select patients with reversible ischemia for invasive treatment, specially when associated with myocardial perfusion and angiography CT.

## 10 - INTERVENTIONAL

### PA.10.013

#### ANEURYSMAL BONE CYST OF THE JAW: IMAGE-GUIDED PERCUTANEOUS TREATMENT WITH BONE ALLOGRAFT AND AUTOLOGOUS BONE MARROW - CASE REPORT AND REVIEW OF LITERATURE

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**Brief description of the purpose of the report:** To present a

case of a child with an aggressive aneurismal bone cyst (ABC) of the jaw treated successfully by a minimally invasive image-guided approach and to review the state-of-the-art options to treat this condition in the interventional radiology field.

**Medical History:** A six-year old boy with an ABC of the jaw was treated by single percutaneous injection of bone allograft particles mixed with autologous bone marrow under computed tomography (CT) guidance and general anesthesia. Three years follow-up confirmed clinical improvement and progressive tumor healing.

**Diagnosis:** Aneurismal bone cyst of the jaw.

**Discussion and summary of the case:** The natural history of an ABC is divided into four phases: lysis, expansion, stabilization, and healing. Spontaneous healing, or after biopsy, is uncommon. Surgical management - most commonly, curettage with or without bone grafting, is usually the therapy of choice. The induction of ABC healing with use of demineralized bone and autologous bone marrow has been already reported. We mixed autologous bone marrow with crushed frozen bone allograft and injected it percutaneously in the tumor. Clinical improvement was observed in the first two weeks after treatment. Three years follow-up showed healing and bone remodeling. Further research is required to clarify the exact mechanisms of this potential treatment.

#### PA.10.027

##### USING WHATSAPP® TO DISCUSS INTERVENTIONAL RADIOLOGY CASES: CLINICAL BENEFITS VERSUS LEGAL BARRIERS

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**Introduction:** Collaborative networks aimed to clinical discussion by mobile devices can contribute to better outcomes. We will discuss aspects of these technologies, their impact on interventional radiology and their limitations concerning information privacy.

**Methods Involved:** We are 11 interventional radiologists with different levels of professional experience acting at a high complexity medical center. We believe that a tool for fast information exchange and opinion sharing could help technical uniformity and individualized treatments. We simulate a collaborative network in a popular XMPP message application (WhatsApp®) and, based on real clinical cases, intend to show the utility of such tools at the Center of Interventional Medicine and legal/technical barriers for its implementation.

**Discussion:** About 80% of doctors own smartphones. Constant connectivity is an inherent characteristic of new generations and communication by mobile devices is usual among health providers. However, we must consider information privacy and security issues, as regular chat apps and social networks don't follow health policy.

**Conclusion of the presentation:** We believe that mobile communication can contribute to better outcomes. However, technical, ethical and legal barriers of such applications justify a more deep discussion on their use on healthcare.

#### PD.10.001

##### NEPHROGENIC SYSTEMIC FIBROSIS

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**Brief description of the purpose of the Review of Literature:** Nephrogenic systemic fibrosis is a disease that affects regions of the dermis, subcutaneous fascia and muscles and thus can arise in various organs such as heart, lung, liver. This disease affects patients with acute or chronic renal failure, dialysis treatment and hepatorenal syndrome.

**Description (s) condition (s), method (s) or technique (s):** It is based on research papers published on the internet in the years 2007-2012 in the data bank. Research will be raised by the articles stating that there is a great large concern the use of gadolinium contrast. Because they have number marks linear Omniscan, Magnevist Optmark and presenting a risk for the development of pathology.

**Conclusion:** Nephrogenic systemic fibrosis is a recent breakthrough in health, so should be treated with other looks, being taken into account the degree of patient's renal disease through laboratory tests for the identification of glomerular filtration rate.

**Brief discussion of the case**

#### PD.10.005

##### PREVALENCE OF AORTIC ANEURYSM IN PATIENTS UNDERGOING CT ANGIOGRAPHY IN A REFERRAL HOSPITAL IN THE CITY OF SAO PAULO.

CASTRO, R.N.C.; LUCARELLI, C.L.; CERRI, G.G.; MELO, E.R.; SANTOS, M.G.; POSSAGNOLO, D.T; SIGRIST, R.M.S.

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**Brief description of the purpose of the study:** To determine the prevalence of aortic aneurysm in patients undergoing CT angiography (CTA) in a referral hospital in the city of Sao Paulo.

**Methods:** Retrospective prevalence study, collected from electronic medical records of all patients undergoing CTA of the aorta from august to october 2013th in a referral hospital in the city of Sao Paulo.

**Main results:** The sample consisted of 218 patients, 133 (61%) male. The minimum age was 1 month old and maximum 95 years old, mean 54.7 years old. Most tests performed were CTA of the thoracic aorta, 109 (50%). The prevalence of aortic dilatation was 41.7% (91 patients), most had fusiform appearance, 81 patients (89%). The most frequent site was the ascending aorta, 51 cases (56.0%). The maximum size of the aorta was 111 mm, mean of 37.6 mm.

**Importance of the conclusions:** The aging population, associated with greater access to diagnostic means explains the rising prevalence of aortic aneurysm. The high prevalence (41.7%) in this case series is justified by being a referral hospital in diagnosis and treatment of vascular comorbidities.

#### PD.10.006

##### PERCUTANEOUS BIOPSY OF MASSES IN OR AROUND THE PANCREATIC HEAD: VARIOUS APPROACHES AND RELEVANT ANATOMIC AND TECHNICAL CONSIDERATIONS

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**Introduction:** To describe the most used approaches for performing computed tomographic (CT) or ultrasound (US)-guided biopsies in the pancreatic head, with emphasis on the anatomical references and description of the procedures.

**Methods Involved:** The authors retrospectively reviewed the records of 100 patients with lesions located within the pancreatic head who underwent CT or US-guided biopsies in the institution. The most relevant approaches were chosen to be described, with emphasis on anatomic and technique considerations. Drawings and tomographic / ultrasound images were used to better describe and illustrate each access.

**Discussion:** Transcaval access requires a posterior positioning of the needle, traversing the inferior vena cava. Before entering the target lesion, the needle must be angled upward into the pancreatic lesion, thus avoiding the posterior costophrenic pleural recess. The anterior approach can be used to avoid retroperitoneal vascular structures. However the needle path is longer and requires the transgression of the gastrointestinal tract, the mesenteric vessels, or both, which increases the risks of the procedure.

**Conclusion of the presentation:** The most used approaches for pancreas head biopsy were: anterior approach, right anterior, transcaval, transhepatic, transgastric and transvisceral. The patient position varied according to the chosen approach and axial CT scans or US analyses were performed to localize the biopsy site.

## PD.10.009

### INTRA-ARTERIAL ACCESSES IN INTERVENTIONAL RADIOLOGY: INDICATIONS, TECHNIQUE AND COMPLICATIONS.

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**Introduction:** Intra-arterial accesses, using Seldinger's technique, are the milestone of many minimally invasive procedures. When properly used, they are the most effective form to access the aorta and its tributaries, providing diagnostic and therapeutic approaches to target lesions. Knowledge of indications and contraindications are essential to understatement complications and provide a safer approach.

**Methods Involved:** Angiographic images of the puncture sites (femoral, radial, brachial, axillary, and transpopliteal retrograde) were selected and correlated with schematic illustrations. A literature review was conducted to elucidate and synthesize the most relevant points of each intra-arterial access.

**Discussion:** The advent of intra-arterial accesses was crucial for diagnostic and therapeutic developments in angiology and internal medicine. Thus, knowledge of indications, contraindications, advantages and disadvantages are paramount to theoretical introduction to interventional radiology specialty.

**Conclusion of the presentation:** The knowledge of percutaneous intra-arterial accesses nuances, using Seldinger's technique, is extremely relevant to interventional radiology. Although it represents the first stage of treatment by intra-arterial route, the correct choice of the puncture site is crucial to the success of the whole procedure.

## PD.10.010

### CT-GUIDED NEEDLE BIOPSY OF PULMONARY NODULES SMALLER THAN 13 MM

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**Brief description of the purpose of the study:** The increased number of incidental and very small pulmonary nodules (PN) detected by CT has created a new scenario for its transthoracic approach by interventional radiology. Our purpose is to emphasize educational points regarding CT-guided needle biopsy of pulmonary nodules <13mm based on our institutional experience and review of literature.

**Methods:** All CT-guided biopsies of PN <13mm performed in our interventional radiology department from 2010 to 2013 were reviewed in order to identify factors that could have influenced its feasibility and diagnostic accuracy. We assessed direct and indirectly issues related to the procedures, including clinical status of the patient, use of general anesthesia, size and localization of the nodule, type and caliber of the needle, number of tissue samples obtained and presence of "in loco" pathologists to perform their prompt evaluation. The complication rates of the procedures and all the pathology analysis results were obtained from medical records.

**Main results:** CT-guided needle biopsies provided conclusive diagnosis for 12/15 cases (80%). Pneumothorax drainage was performed in only one case.

**Importance of the conclusions:** Transthoracic CT-guided needle biopsy has become widely accepted as a safe and accurate method for establishing the diagnosis of pulmonary lesions. Although small lesions may offer higher technical difficulty, the procedure is feasible and yields very good results rates.

## 11 - ULTRASOUND

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### PD.11.003

#### NONALCOHOLIC FATTY LIVER DISEASE – IMAGE COMPOSITION OF ULTRASOUND AND HISTOLOGY - PICTORIAL ESSAY.

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**Introduction:** Histological analysis of liver biopsy is the gold standard for diagnosis of nonalcoholic fatty liver disease (NAFLD), although it ultrasound to can indicate its presence. To present image composition of ultrasound and histology of NAFLD in pictorial essay.

**Methods Involved:** With the use of software for image composition, based on the ultrasonographic image of liver with NAFLD degrees mild, moderate and severe associate the corresponding histological image and it's presented a pictorial essay. The results are shown correlating the ultrasound image with the image corresponding histological.

**Discussion:** NAFLD is a hepatic disorder with histological features of alcohol induced liver disease that occurs in individual who do not consume significant alcohol. Liver biopsy is an important part of the evaluation in term of both grade

and stage. Assessment of liver echogenicity is of value for detection or exclusion of NAFLD. Results of studies show that the ultrasound parameter has a correlation with the degree of hepatic fatty infiltration.

**Conclusion of the presentation:** The ultrasound of the NAFLD present imaging characteristics which may correlate with histological aspects.

#### PD.11.004

##### **METAVIR FIBROSIS SCORE - IMAGE COMPOSITION OF ULTRASOUND AND HISTOLOGY**

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**Introduction:** The METAVIR score was specifically elaborated and evaluated in chronic hepatitis C, is scoring system for evaluation the inflammatory activity and fibrosis on liver biopsies, although it ultrasound may indicate the fibrosis degree. **Methods Involved:** With the use of software for image composition, based on the ultrasonographic image of liver with fibrosis degrees joined the corresponding histological image (METAVIR) and it's presented a pictorial essay. The results are shown correlating the ultrasound image with the image corresponding histological.

**Discussion:** The METAVIR Score is a system to quantify the degree of inflammation and fibrosis of a liver biopsy. The fibrosis score is also assigned a number from 0-4: 0 = no scarring, 1 = minimal scarring, 2 = scarring has occurred and extends outside the areas in the liver that contains blood vessels, 3=bridging fibrosis is spreading and connecting to other areas that contain fibrosis, 4=cirrhosis or advanced scarring of the live. The results of studies showed a significant correlation between the ultrasound liver fibrosis degree and the METAVIR fibrosis degree.

**Conclusion of the presentation:** The ultrasound characteristics of the liver fibrosis present imaging may correlate with histological aspects METAVIR.

#### PD.11.013

##### **HYALINIZING TRABECULAR ADENOMA OF THE THYROID: A CASE REPORT AND EVALUATION THROUGH ARFI ELASTOGRAPHY**

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**Brief description of the purpose of the report:** Hyalinizing trabecular adenoma (HTA) is an infrequent thyroid pathology with few cases reported on literature.

**Medical History:** Represents a diagnostic challenge on the differentiation from other thyroid pathologies and prognostic importance due to its possible invasive behavior.

**Diagnosis:** This case was presented on ultrasonography as a solid and hypoechogenic nodule, with regular borders, taller than higher, without halo or calcifications, with central and peripheral flow pattern (Chammas IV), measuring 12x07 mm and with 0,79 IR. Elastography shown harden nodule with soften areas on the periphery. ARFI evaluation was performed on the superior and inferior halves of the nodule, with 1.50 and 1.61 as average values

**Discussion and summary of the case:** Cytology demonstrated follicular lesion of undetermined significance (Category III of Bethesda). After surgery frozen section and microscopy were inconclusive. Immunohistochemistry defined the final diagnosis of HTA. Literature review upon this diagnosis and ARFI elastography shown relation between benign nodules and low velocity values.

#### PD.11.014

##### **ULTRASONOGRAPHY AND ARFI ELASTOGRAPHY ON THE EVALUATION OF PAPILLARY THYROID CARCINOMA: INITIAL PROTOCOL**

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**Brief description of the purpose of the report:** ARFI (Acoustic Radiation Force Impulse) Elastography it's a new imaging method that has shown promising results on the evaluation of thyroid nodules.

**Medical History:** Upon this initial approach, we analyzed ten nodule from 8 patients with histopathologic diagnosis of papillary carcinoma.

**Diagnosis:** The following characteristics were considered on ultrasound: dimentions, echotexture, borders, shape, halo, micro or macrocalcifications and the flow pattern based on Chammas classification. Elastography was conducted by qualitative manner through visual mode and quantitative measures off hardness athwart ARFI technology, obtaining the average of five measurements for each nodule and in the thyroid parenchyma.

**Discussion and summary of the case:** The authors report ultrasound and elastographic characteristics of the nodule along with analysis and literature review.

#### PD.11.015

##### **RECURRENT PAROTITIS OF CHILDHOOD**

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**Brief description of the purpose of the report:** The recurrent parotitis of childhood (PRI) is a rare clinical manifestation, which may have several causes. Here we report a case of PRI and a brief discussion of the possible etiology, diagnosis and treatment.

**Medical History:** RSS, male, 3 years old, reported pain and swelling in the right parotid region, three days ago, associated with fever. Previous history of 5 episodes of mumps in the past 15 months. Denies comorbidities.

**Diagnosis:** Recurrent parotitis of childhood (PRI)

**Discussion and summary of the case:** The PRI is a rare disorder defined by recurrent nonobstructive parotid inflammation, with unknown pathophysiology. The most common clinical presentation of PRI is the presence of bulging, pain and redness in the parotid region. Generally, symptoms begin between three and six years. There are several etiological hypotheses for children with recurrent parotitis. Performing imaging studies is essential to exclude the presence of obstructive conditions (malformations, calculations) and malignancies.

nancies, as well as diagnose the PRI. The U.S. is the parotid examination, more affordable and less invasive imaging of lower cost, and indicated to start the investigation of PRI.

### PD.11.016

#### CASE REPORT: WANDERING LIVER

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**Brief description of the purpose of the report:** The wandering liver is a rare entity, the incidence still uncertain due to the small number of cases described in the literature.

**Medical History:** VOR, male, 11 years old, with West syndrome, presented with uncontrollable vomiting during one week and diffuse abdominal pain. Ultrasonography showed liver without parenchymal abnormalities, located in the right upper quadrant, but with the patient in the left lateral decubitus (LLD) the right hepatic lobe mobilizes, on the transverse axis, leaving the liver shadow on the left hypochondrium. The same maneuver was performed with fluoroscopy of the abdomen, featuring the wandering liver. Conservative treatment was adopted, with clinical improvement after the third day of admission to hospital, discharged after one week.

**Diagnosis:** Wandering liver

**Discussion and summary of the case:** The wandering liver is characterized by hypermobility in the transverse axis, caused by congenital absence of the fixing ligaments the liver to the diaphragm (coronary ligament, triangular and sickle). Clinically presents with obstructive symptoms of the digestive tract. Gastric and colon volvulus seems to be related to this abnormality and are present in some cases from the literature. The diagnosis is made by imaging methods performed with the patient in different positions. There is no formal indication for surgical treatment.

### PD.11.018

#### REPRODUCIBILITY OF SONOGRAPHIC MEASUREMENTS OF THE THYROID GLAND

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**Brief description of the purpose of the study:** Objective—Determine the intraobserver and interobserver agreement in sonographic examination of the thyroid gland, as well as to evaluate the effect that specific variables have on the calculation of the thyroid volume.

**Methods:** Methods—Three independent sonographers measured the longitudinal diameter, the transverse diameter, and the anteroposterior diameter—for both lobes and for the isthmus—in the thyroid gland of eight volunteers. The anteroposterior diameter was measured in the longitudinal plane, as well as in the transverse plane.

**Main results:** Results—The intraobserver agreement, for all three sonographers, were excellent, as was the interobserver agreement. Including isthmus volume in the calculation had less effect on the thyroid volume than did the other variables. The thyroid volume was 8.5% lower when the constant was

0.479 than when it was 0.523. There was a linear correlation between the volume of the isthmus and its anteroposterior diameter. The thyroid volume trended lower when the anteroposterior diameter was measured in the longitudinal plane.

**Importance of the conclusions:** Conclusions—In ultrasound measurements of the thyroid, the intraobserver and interobserver agreement are excellent. However, the lack of standardization, in terms of the techniques and equations employed, can lead to significant differences.

### PD.11.020

#### SONOGRAPHIC FINDINGS IN THE COURSE OF NIEMANN-PICK DISEASE

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**Brief description of the purpose of the report:** Niemann-Pick (NP) is a rare autosomal recessive disease with deposition of sphingomyelin due to insufficient production of the sphingomyelinase enzyme. There are six subtypes: subtype A or acute neuropathic form, subtype B or visceral form, subtype C or chronic neuropathic form, subtype D or new Scottish form, subtype E or adult form and subtype F or sea-blue histiocytes. Type B disease involves especially the spleen, liver and lungs and does not affect the neurological system at the beginning, thus allowing the persistence until adulthood.

**Medical History:** The purpose of this study is to analyze the sonographic findings of abdominal viscera in a patient with NP disease.

**Diagnosis:** The main sonographic findings in the course of the disease are hepatosplenomegaly and intracellular fat accumulation of abdominal viscera. Other changes include growth retardation and respiratory symptoms due to interstitial pulmonary infiltrates.

**Discussion and summary of the case:** Detailed anamnesis and physical examination are required for diagnosis, besides determining the sphingomyelinase activity and a bone marrow biopsy, revealing typical sea-blue histiocytes. The sonographic follow-up is mandatory, especially to evaluate the disease progression.

### PD.11.023

#### ULTRASONOGRAPHY IN EVALUATION OF INGUINAL REGION - ANATOMY AND MAIN PATHOLOGIES

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**Brief description of the purpose of the Review of Literature:** Numerous pathologies, acute and chronic, affect the inguinal region. The structures of this region are superficial and can be evaluated by ultrasound with linear transducers (10 MHz) or in obese patients with lower frequencies (7 MHz). The abnormalities of the inguinoscrotal region can be divided into three groups: extratesticular, intratesticular and trauma. Orchitis, epididymitis, orchiepididimites, cryptorchism, tes-

ticular torsion, varicoceles, thrombosis of the pampiniform plexus, hydroceles, Fournier syndromes, hernias, deferentites, trauma, benign and malignant neoplasms are examples of diseases that may affect the inguinal region.

**Description (s) condition (s), method (s) or technique (s):** Healthy spermatic cord is seen as heterogeneous hypoechoic tubular structure with vessels and tubules that originate at the internal inguinal ring. Testicles have homogeneous granular echogenicity and testicular mediastinum is seen as an echogenic linear band. Is an echogenic albuginea tunica surrounding the testicular line, with a small amount of liquid between its layers. The head of the epididymis is well seen in the sagittal plane, resting on the testicle.

**Conclusion:** Ultrasonography is the primary method in the initial evaluation of this region, with Doppler and, in recent studies, elastography and microbubbles contrast. Characteristics such as low cost, wide availability, high accuracy and absence of ionizing radiation confer a prominent role in diagnostic accuracy and definition of conduct.

### PD.11.024

#### ABERRANT RIGHT SUBCLAVIAN ARTERY AS DOWN SYNDROME PREDICTOR: CASE REPORT AND BIBLIOGRAPHIC REVIEW.

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**Brief description of the purpose of the report:** Gestational ultrasonographic findings that indicate increased risk of Down Syndrome (DS) are of great practical and research relevancy. Aberrant right subclavian artery (ARSA) detection in second trimester ultrasound has been strongly associated with fetal DS.

**Medical History:** We present the case of a 41-year-old child-bearing woman with ultrasound diagnosis of fetal ARSA.

**Diagnosis:** This sonographic finding predicted DS diagnosis of the concept.

**Discussion and summary of the case:** ARSA is a rare vascular variant that have been studied as a sonographic marker of DS since 2005. Its successful evaluation is achieved in more than 95% of cases. Found in 1% of normal individuals, its incidence is increased in cases of DS, where it can be in up 36% of cases. The presence of ARSA in the 16- to 23-week gestational age-range increases the risk DS by about 20-fold, as an independent marker of DS, being included among the three most powerful independent ultrasound indicator of DS, together with nasal bone and nuchal fold assessment. In 7% of cases, DS could have been diagnosed only through the recognition of ARSA, with other markers absent. Additionally, it is possibly related to increased risk of associated congenital heart disease.

### PD.11.025

#### ULTRASONOGRAPHIC FINDINGS OF INTRAOSSEOUS VARICOSITIES: CASE REPORT.

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**Brief description of the purpose of the report:** Lower extremities venous varices are common, affecting 10-40% of

adults. Tibial intraosseous continuation of varices may occur when its concomitant nutrient channel or cortical osteolytic defect are present, a condition described recently and with 13 case reports so far.

**Medical History:** We present a case of a 50-year-old male with anteromedial right leg swelling and previously diagnosed lower extremities venous varicosities.

**Diagnosis:** Ultrasonographic findings of pré-tibial varicosities with tibial intraosseous continuation through osteolytic cortical defect, indicating intraosseous venous drainage, which was confirmed by radiography and magnetic resonance imaging (RMI). Venous varicosities can have primary or secondary physiopathology due to valvar insufficiency or deep venous obstruction, respectively. Color Doppler ultrasound is a great diagnostic method for its detection and evaluation for causal mechanisms and complications.

**Discussion and summary of the case:** Intraosseous venous drainage anomaly can occur with concomitant cortical osteolytic defect, increasing deep venous thrombosis risk. The best diagnostic methods for its confirmation are venography and MRI. Detecting this anomaly is important for therapeutic guidance, consisting of ligation, sclerotherapy or percutaneous ablation, avoiding therapeutic failure.

## 12 - FETAL MEDICINE

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### PD.12.007

#### ADVANCED SECOND TRIMESTER TUBAL PREGNANCY: CASE REPORT AND LITERATURE REVIEW

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**Brief description of the purpose of the report:** Tubal pregnancy has been always considered as a complication of the first trimester pregnancy and tubal rupture usually occurs around the 7th week of gestation. This report presents an unusual advanced second trimester tubal pregnancy.

**Medical History:** Clinical History: A young patient of 16 years presented with acute abdomen and increased lower abdominal volume was admitted at our hospital and history revealed period of undefined amenorrhea and pregnancy test was found positive.

**Diagnosis:** Diagnosis and Evolution : Ultrasound examination showed presence of a gestational sac with a single fetus, located in the region parauterina right outside the uterine cavity , endometrium was thickened measuring 20mm with fetal biometry estimated at 16/17 weeks, the patient also performed a MRI which also confirmed the findings and demonstrated the presence of fluid within the pelvic cavity. The patient underwent a surgical procedure where an advanced right tubal pregnancy was found with gestational sac and was also found isthmus fallopian tube ruptured and hemoperitoneum. Right salpingectomy was done and patient had no postoperative complications.

**Discussion and summary of the case:** Discussion: Ectopic pregnancy at any location is a serious problem and rupture of such an advanced gestation may result in catastrophic haemorrhage with a high mortality rate. The purpose of the report was to present an unusual case of advanced second trimester tubal pregnancy and literature review.

## PD.12.008

### HETEROTOPIC PREGNANCY: CASE REPORT AND LITERATURE REVIEW

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**Brief description of the purpose of the report:** The coexistence of intrauterine and ectopic pregnancy is extremely rare, with an estimated incidence of 0.015 %. The purpose of this report is to demonstrate the role of the sonographer in the management of these patients in an attempt to reduce morbidity and mortality.

**Medical History:** We present the case of a 30 years old patient with menstrual delay of about five weeks, pelvic pain and moderate vaginal bleeding for 2 days. She reported 2 previous pregnancies, the first being through in vitro fertilization. The transvaginal ultrasound showed topic pregnancy, besides ectopic pregnancy in the left adnexal region, both about 6 weeks and heartbeat. After salpingectomy, topical pregnancy progressed satisfactorily.

**Diagnosis:** Heterotopic pregnancy

**Discussion and summary of the case:** In recent years, there has been an increase in the incidence of heterotopic pregnancy being due to increase in cases of endometriosis, pelvic inflammatory disease, and methods of assisted reproduction. The sonographic findings of heterotopic pregnancy are not specific and include adnexal mass, free in fund net bag or hemoperitoneum. The finding of extrauterine gestational sac with viable fetus is unusual. Despite treatment with minimal manipulation of the uterus, the rate of resolution was only 50%.

## PD.12.009

### FETAL ARTERIOVENOUS FISTULA: CASE REPORT.

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**Brief description of the purpose of the report:** Arteriovenous fistula (AVFs) is a abnormal and rare connections of intracranial vessels and usually not associated with the vein of Galen. It can be solitary or multiple and may be associated with aneurysms or AVMs. Neonates can present cardiac failure and a cranial bruit; cardiomegaly and cardiac failure can occur in fetus.

**Medical History:** We reported one case of AVFs. S.R.C, 37-year-old, G6P3C1A1, that was referred to our tertiary care unit at 31 weeks' gestation due mass cystic in posterior fossa, and the suspicion was arachnoid cyst.

**Diagnosis:** Target ultrasonography revealed polyhydramniotic, hypoechoic and well-defined extra-axial cystic mass, measuring 5,5x4,5 cm. Color Doppler, tomography and 3D angiography ultrasound showed swirling red and blue color turbulent flow. Four chamber view ultrasound showed cardiomegaly, abnormal contractility and tricuspid regurgitation, confirmed by echocardiography. Magnetic resonance imaging complementary was performed.

**Discussion and summary of the case:** At 38 weeks gestation, a cesarean section was performed due acute fetal distress. At birth, the conditions of the infant were bad. A therapeutic approach by arterial embolization was not attempted

because of the massive extension of the brain lesion. The neonate died despite maximal intensive care at 9 days of age from cardiac insufficiency.

## PD.12.010

### FETAL CLOACAL EXSTROPHY: CASE REPORT

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**Brief description of the purpose of the report:** Cloacal exstrophy is a spectrum of abnormalities owing to abnormal development of cloacal membrane, resulting in exstrophy of both bowel and bladder; the most severe form of anomalies in the exstrophy-epispadias complex. The prevalence is 0.25 to 0.5 in 10.000. Etiology is unknown and sporadic incidence. Commonly associated with other anomalies. Differential diagnoses: bladder exstrophy, gastroschisis, isolated omphalocele.

**Medical History:** We present one case of cloacal exstrophy. P.M.S, 24-year-old, G3P1A1, transferred for mass and abdominal wall defect, diagnosed at 29 weeks.

**Diagnosis:** Repeated ultrasound at our institution at 31 weeks confirmed the prior findings and non-visualization of the urinary bladder, abnormal external genitalia. The urinary stream was visualized (Color Doppler) from mass. The fetus was suspected to have bladder exstrophy.

**Discussion and summary of the case:** At 34 weeks gestation, cesarean section was performed to acute fetal distress. Delivery of the infant was bad with Apgars of 4/8/9. On physical examination, a large defect in the abdominal wall and perineal topography with exstrophy of the bladder, characterized as cloacal exstrophy. The newborn karyotype revealed 46XY normal male. The baby underwent operation for an ileostomy at 9 days and died at 2 months by septicemia.

## PD.12.011

### ABDOMINAL ECTOPIC PREGNANCY - A CASE REPORT

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**Brief description of the purpose of the report:** In our department, the patient was referred for ultrasonography (US) ectopic pregnancy was performed. Examination performed showed empty uterus and extra-uterine pregnancy.

**Medical History:** Patient 30 years, primigravida with gestational age of 28 weeks and 5 days by amenorrhea, came to our service for suspected of ectopic pregnancy. Asymptomatic patient with no signs of intestinal obstruction, vomiting or other gastrointestinal symptoms.

**Diagnosis:** Ultrasound examination showed empty uterus, abdominal fetus and placenta with mesenteric insertion. The diagnosis was complemented by magnetic resonance imaging (MRI). This showed the same changes and signs of mesenteric vasculature of the placenta.

**Discussion and summary of the case:** Ectopic pregnancy comprises 0.3 to 1% of all pregnancies and is the cause of 26% of maternal deaths. Clinical signs and symptoms are nonspecific. The abdominal type is one that the intraperitoneal implantation is a result of abortion or tubal rupture and

subsequent reimplantation of the conceptus. The diagnosis can be made by US and be complemented by MRI for better viewing. Abdominal pregnancy is a serious condition and potential risk to life, both mother and fetal life, and is resolved laparoscopically, which has a great chance of bleeding.

### PD.12.012

#### CARDIOVASCULAR STRUCTURES AVAILABLE AT FETAL MRI: AN ANATOMICAL AND BIOMETRIC ANALYSIS

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**Brief description of the purpose of the report:** Introduction The cardiovascular system has been considered the "black hole" of fetal MRI as ultrafast T2-weighted sequences (SSFSE) commonly used for fetal MRI, are highly sensitive to flow and show the blood-filled heart and vessels as signal-void structures. The aim of our study was to evaluate which of the cardiovascular structures are visible at fetal MRI and which are their expected normal values at MRI by gestational age.

**Medical History:** Method Balanced steady state free precession (SSFP) sequences improve blood pool homogeneity and allow faster acquisition, which results in feasibility of imaging the fetal cardiovascular structures.

**Diagnosis:** Discussion We reviewed our fetal MRI studies to evaluate the anatomical features of the fetal cardiac and vascular system. We analyzed: the cardio/thorax ratio, the angulation of the ventricular septum axis to the sagittal midline, the four chambers diameter and area, the ventricular and atrial septum thickness, the right and left ventricular wall thickness, the great arterial and venous vessels diameter. A scatterplot by gestational week was obtained for all measurable parameters.

**Discussion and summary of the case:** Presentation conclusion The major teaching points of this exhibit are: - Which are the cardiovascular structures visible at fetal MRI - Which are the expected biometric values of cardiovascular major structures

## 13 - EMERGENCY

### PD.13.004

#### LEMIERRE SYNDROME - THE FORGOTTEN DISEASE

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**Brief description of the purpose of the report:** Lemierre's syndrome (LS) is a rare and potentially fatal condition characterized by clinical or radiologic evidence of internal jugular vein thrombosis following an oropharyngeal infection, most commonly by *Fusobacterium necrophorum*. It is an often un-diagnosed disease seen in previously healthy young subjects that is associated with significant morbidity and mortality if not recognized and treated early.

**Medical History:** This case reports to the management of a previously healthy 10-year-old girl who presented to the emergency room with frontal headache and vomiting. She

had been medicated with amoxicillin for an acute otitis media for 5 days. Physical examination revealed unilateral neck pain and swelling associated. An emergency ultrasound scan revealed a right cervical adenophlegmon and the presence of a thrombus in the right internal jugular vein. MRI showed lack of flow on the right internal jugular vein and transverse sinus, as well as an abscess on the posterior cervical space. A cranial CT scan indicated the presence of otomastoiditis and atlantooccipital septic arthritis.

**Diagnosis:** This clinical presentation and imaging findings strongly suggests a Lemierre Syndrome.

**Discussion and summary of the case:** Though this complication appears to be rare, this often "forgotten" condition needs a high degree of clinical suspicion and a multidisciplinary approach to improve the outcome of this patients.

### PD.13.006

#### CT FINDINGS OF POST-TRAUMATIC FAT EMBOLISM IN THE INFERIOR VENA CAVA AND FEMORAL AND EXTERNAL ILIAC VEINS.

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**Brief description of the purpose of the report:** Fat embolism is a rare complication that occurs in patients with bone fractures during the proceedings of orthopedic prostheses and trauma. Its main complication is pulmonary embolism.

**Medical History:** We report a case of a 22 year-old-man with polytrauma and a comminuted fracture of the femur who underwent CT exam that showed an incidental finding of fat-contrast level within the inferior vena cava, external iliac and femoral vein. In evolution exams after 4 days, the patient developed dyspnea and pulmonary findings consistent with fat embolism.

**Diagnosis:** The diagnosis of fat embolism was based on clinical history and radiological findings. It was proven with the completion of surgery and placement of a vena cava filter, with imaging documentation. The final pathologic finding was a recent bone marrow thrombus fragment.

**Discussion and summary of the case:** The CT finding of post-traumatic fat embolism in the venous system is rare. We found some case reports in the literature describing a similar look with fat-contrast level in the vessel. These CT findings in polytrauma patients should alert the attending physician to the possibility of subsequent fat emboli syndrome.

### PD.13.009

#### BILATERAL OVARIAN TORSION – A CASE REPORT

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**Brief description of the purpose of the report:** Ovarian torsion refers to the complete or partial rotation of the ovary on its ligamentous supports, often resulting in impedance of its blood supply. It is one of the most common gynecologic emergencies and may affect females of all ages. In adults, an ovarian physiologic cyst or a neoplasm are the most likely factors

**Medical History:** We report a case of bilateral ovarian torsion in a 30 years-old patient coming from emergency de-

partment with 5 days of pain in left iliac fossa. Initial ultrasound reported bilateral ovarian enlargement surrounded by clear mild amount of free fluid. Magnetic resonance imaging (MRI) study showed bilateral hyperintense signal on T2-weight with poor central enhancement post gadolinium and twisted vascular pedicle.

**Diagnosis:** Laparoscopic surgery has confirmed the diagnostic of bilateral ovarian torsion and oophoropexy of both ovaries was done.

**Discussion and summary of the case:** Compression of the ovarian vessels impedes lymphatic and venous outflow and arterial inflow. However, the arterial supply to the ovary is not initially interrupted to the same degree as the venous drainage. Continued arterial perfusion in the setting of blocked outflow leads to ovarian edema with marked ovarian enlargement and further vascular compression. Ovarian ischemia then occurs and can result in ovarian necrosis, infarction, and local hemorrhage.

### PD.13.013

#### OMENTAL LIPOMA IN PEDIATRIC AGE: A QUITE RARE PRESENTATION, IMAGING FEATURES, EMERGENCY RESEARCH

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**Brief description of the purpose of the report:** The objective of this paper is to review the literature of these few cases and report this new case of a bulky omental lipoma seen in a child of two years old in mesogastric / hypogastric topography with clinical symptoms of pain.

**Medical History:** Ultrasonography was the initial examination, suggesting that this is mass of predominantly fat composition, with complementation of MRI of overlapping findings. The proposed treatment was the video-laparoscopic surgical resection, with anatomy-pathological confirmation of the diagnosis of lipoma of the omentum.

**Diagnosis:** The main criteria for the diagnosis are asymptomatic abdominal mass, sometimes palpable, with characteristics of fat in the main imaging modalities (CT, MRI, and ultrasound). The main differential diagnosis is lipoblastoma.

**Discussion and summary of the case:** Omental lipoma is a benign tumor of mature fat cells, with very rare presentation, with few reports in children (tumors of this lineage account for only 6% of pediatric tumors, 94% benign and 6% malignant). Its incidence varies depending on the site of presentation, there are few cases of intraperitoneal lipomas in literature, especially in the topography of the greater omentum.

### PD.13.016

#### LIPOMATOSIS OF THE APPENDIX MIMICKING ACUTE APPENDICITIS IN A PREGNANT WOMAN

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**Brief description of the purpose of the report:** Describe a case of lipomatosis of the focal wall of the appendix mimicking acute appendicitis in a pregnant woman.

**Medical History:** Pregnant 20 weeks, 34 years old, was ad-

mitted to the emergency department with pain in the right iliac fossa (RIF) along the last 4 weeks, with worse intensity in the last 24 hours. Physical exam: Abdominal pain diffusely at deep palpation mainly in RIF, Bloomberg negative. An abdominal ultrasonography was requested: appendix in RIF with focal thickening of the body wall (0.9 cm diameter) and low densification of the adjacent fat. MRI was requested to additional investigation because she was pregnant and stable without peritonitis signs. The MRI confirmed the thickening of the appendix, but the thickening of the appendix on the in-phase sequence was hyperintense with signal loss at out phase, demonstrating a fat content in the appendix wall. The patient underwent conservative treatment with clinical improvement.

**Diagnosis:** Focal lipomatosis of the appendix wall.

**Discussion and summary of the case:** Intestinal lipomatosis with focal presentation in the appendix is a rare entity with no description in the literature databanks studied. It is characterized by focal fat deposition which can lead to local inflammation simulating appendicitis.

### PD.13.019

#### COMPARTMENT SYNDROME DIAGNOSED BY DOPPLER PRESENTING ARTERIOGRAPHY NORMAL: A SENSITIVITY OF DOPPLER IN EMERGENCY SITUATIONS AND ITS ROLE IN DECISION-MAKING

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**Brief description of the purpose of the report:** Describe a compartment syndrome (CS) case diagnosed by US-Doppler with normal initial arteriography.

**Medical History:** Male, 68 years old, came to the ER with pain and swelling of the right thigh caused by a knife injury. **PHYSICAL EXAM:** Penetrating wound in the anterior region of the right thigh associated with progressive swelling. Distal arterial pulses were symmetrical. The patient underwent an arterial and venous US-Doppler of the limb, was normal, but in the location where the patient referred to the pain, the US showed a heterogeneous mass, suggestive of a hematoma. That continued with lateral anterior deep femoral muscles. Was identified on Doppler, a vessel injury directing through the middle of the hematoma with arterial flux. An arteriography was performed, and was normal. But they still had a high suspicion that an arterial lesion was present due to severe pain and vascular injury identified in US-Doppler. A fasciotomy was performed and a big hematoma was removed. Another arteriography was performed after the fasciotomy and now a contrast extravasation was seen in the deep femoral arterial branch. The embolization was done.

**Diagnosis:** Arterial Injury associated with acute CS of the thigh.

**Discussion and summary of the case:** An unusual thigh CS with arterial lesion identified on US-Doppler with a normal arteriography probably due to compression of vascular injury by hematoma. Attention to the importance of clinical suspicion and US-Doppler properly performed in an emergency.

### PA.14.008

#### GIANT MECKEL'S DIVERTICULUM DIAGNOSED BY NUCLEAR MEDICINE IN A CHILD WITH MASSIVE INTESTINAL BLEEDING. CASE REPORT AND LITERATURE REVIEW.

FERREIRA VC, KOGA KH, MOREIRA R, RESENDE TA, CAVALLARI, HH, MORIGUCHI SM.

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**Author responsible:** Sônia Marta Morigushi

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**Brief description of the purpose of the report:** Report an interesting case of Meckel's Diverticulum in a child with massive bleeding and severe anemia diagnosed by nuclear medicine.

**Medical History:** V.M.B.S is an 11-year-old male who had severe anemia and inconclusive study of blood marrow at two years old. Eight years ago, he had hematemesis and acute abdomen with normal endoscopy. Last year, he had acute lower gastrointestinal bleeding, faintness, prostration and pallor, and needed blood transfusion. A new endoscopy with biopsy identified duodenitis with possibility of celiac disease and specific treatment. A month later, he had recurrent intestinal bleeding, following abdominal pain and anemia. Reinvestigation with intermittent bleeding scintigraphy found large bleeding area on the right flank. Complementation of the radioisotope research with pertechnetate identified the same bleeding site suggesting the possibility of ectopic gastric mucosa in Meckel's Diverticulum, which confirmed by CT showing a large intestinal diverticulum blindly. Surgery indicated. The intestinal segment was resected about 12 cm whose pathology confirmed the presence of Meckel's Diverticulum. After the surgery, he is asymptomatic with decreased anemia.

**Diagnosis:** Meckel's Diverticulum

**Discussion and summary of the case:** This case reported the importance of the approach in accurate diagnosis and proper conduct of a child with long history of intestinal bleeding and severe anemia without adequate prior diagnosis. v

### PA.14.020

#### ENGELMANN-CAMURATI SYNDROME. RARE DISEASE DOCUMENTED ON BONE SCINTIGRAPHY. CASE REPORT AND LITERATURE REVIEW

DONATO ABS, MORITA D, FREDDI HS, GRANJEIRO EA, DOMINGOS VP, ROCHA TSA, GRACIOLI LM, MORIGUCHI SM

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**Author responsible:** Sônia Marta Morigushi

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**Brief description of the purpose of the report:** Report a rare case of Engelmann-Camurati Syndrome documented in bone scintigraphy guiding the diagnosis

**Medical History:** Female, 64 years old, with generalized bone pain and weakness of limbs, with longtime progressive worsening and severe occipital headache for six months, without any further information or additional tests that would reveal etiology. It was requested bone scintigraphy (BS) for tracking possible secondary metastatic bone, although was no report of primary neoplasm. BS showed diffuse and severe uptake throughout the skeleton with apparent cortical

thickening, suggesting Engelmann-Camurati Syndrome, plus identifying the etiology of clinical symptoms and dismissing metastasis.

**Diagnosis:** Engelmann-Camurati Syndrome with typical appearance on bone scintigraphy

**Discussion and summary of the case:** Progressive diaphyseal dysplasia is a rare autosomal dominant inherited disease characterized by progressive cortical thickening of the long bones, it can affect the skull and the pelvis. Usually occurs before adolescence, with variable symptoms, from asymptomatic to patients with bone pain, muscle weakness and neurological symptoms caused by possible spinal cord compression. Diagnosis is confirmed by clinical and radiological changes associated with biopsy, which excludes other pathologies. BS is an important diagnostic method due to the high sensitivity, showing typical changes that may precede clinical manifestations. In our case, BS was critical to the diagnosis of this rare pathology

### PA.14.021

#### IMPORTANCE OF SOMATOSTATIN ANALOGUES SCINTIGRAPHY IN IDENTIFYING TUMOR VIABILITY OF INTRA AND DEFORMING EXTRACRANIAL MENINGIOMA. CASE REPORT AND LITERATURE REVIEW

FREDDI HS, MORITA D, GRANJEIRO EA, DOMINGOS VP, ROCHA TSA, DONATO ABS, GRACIOLI LM, MORIGUCHI SM

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**Brief description of the purpose of the report:** Reporting the importance of somatostatin analogues scintigraphy in tumor viability detection of intra and extracranial meningioma after treatment

**Medical History:** Male, 56 years old, with intracranial meningioma for 26 years, underwent 12 surgical resection, radiotherapy and chemotherapy, with partial and transient disease control. Such repeated therapies triggered severe malformations of the skull, left hemifacial ablepsia and ipsilateral motor deficit, and it is a contraindication to repeat these procedures. It is decided for a functional method to evaluate tumor viability, so scintigraphy was recommended with somatostatin analogue. The whole body scan performed with <sup>99m</sup>Tc-octreotide identified extensive area of pronounced uptake in the skull, left facial and nasal and paranasal right regions, confirming the presence of viable tumor and detecting extracranial disease.

**Diagnosis:** Intra and extracranial meningioma recurrent detected by scintigraphy with somatostatin-receptors

**Discussion and summary of the case:** Meningiomas are usually benign, slow-growing derivatives of cranioespinais meninges and potentially curable with complete surgical resection. Extracranial extension is rare. This tumour has a high numbers of somatostatin receptors, allowing exams in nuclear medicine. Scintigraphy with somatostatin analogues is indicated for detection, localization, staging and restaging of neuroendocrine tumors, besides enabling the selection of patients for performing radionuclide therapy, in particular in those reported, where other types of therapy are contraindicated.



## PD.14.001

### COMPARISON BETWEEN <sup>99m</sup>Tc-OCTREOTIDE SPECT/CT AND <sup>68</sup>Ga-DOTATATE PET/CT FOR THE DETECTION OF NEUROENDOCRINE TUMORS: REPORT OF TWO CASES.

MONTEIRO, P.H.S., MOSCI, C., SOUZA, T.F., AMORIM, B. J., ETCHEBEHERE, E. C. S. C., LIMA, M.C.L., SANTOS, A.O., RAMOS, C. D.

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**Brief description of the purpose of the report:** Neuroendocrine tumors express somatostatin receptors, allowing their detection by radiolabeled somatostatin analogs such as <sup>99m</sup>Tc-octreotide and Gallium-68-octreotate (<sup>68</sup>Ga-DOTATATE), using, respectively, SPECT/CT and PET/CT. There are rare comparative reports between both radiotracers.

**Medical History:** Patients: (1) Female, 43 y.o., diagnosed with moderately differentiated neuroendocrine liver tumor, probably metastatic, and (2) male, 60 y.o., diagnosed with gastric neuroendocrine tumor. For investigation of further lesions, both patients underwent SPECT/CT, four hours after <sup>99m</sup>Tc-octreotide injection, and PET/CT with time-of-flight technology 45 minutes after intravenous injection of <sup>68</sup>Ga-DOTATATE.

**Diagnosis:** Both studies showed only liver lesions on both patients. However, image definition and target-to-background ratio were inferior on SPECT/CT images. PET/CT images with time-of-flight presented better resolution, but did not detect clinically relevant additional lesions when compared to SPECT/CT images.

**Discussion and summary of the case:** <sup>68</sup>Ga-DOTATATE-PET/CT images have better resolution and target-to-background ratio than <sup>99m</sup>Tc-octreotide-SPECT/CT images, and so, the former method is potentially more accurate to stage patients with neuroendocrine tumors. However, since clinically relevant data obtained by both methods was similar in both reported cases, SPECT/CT with <sup>99m</sup>Tc-octreotide should be considered as an acceptable alternative method, especially when considering availability and cost.

## TL.14.004

### MEASUREMENT OF VOLUMES AND EJECTION FRACTION OF THE LEFT VENTRICLE AT REST, COMPARING IMAGING METHODS: ANALYSIS OF CONCORDANCE BETWEEN NUCLEAR MEDICINE, ECHOCARDIOGRAPHY AND CARDIAC MAGNETIC RESONANCE IMAGING.

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**Brief description of the purpose of the study:** Data of systolic left ventricular function are obtained by ejection fraction (LVE) and end-systolic volume (ESV). We compared these data by three methods: radionuclide myocardial perfusion GATED - SPECT (CGS), two-dimensional echocardiography (ECHO) and cardiac MRI (CMRI).

**Methods:** Retrospective study of 51 patients (p) who performed CGS, ECHO and CMRI at rest, less than six months interval between them.

**Main results:** The agreement between the methods reviewed by Lin model.

**Importance of the conclusions:** Excellent correlation be-

tween the analysis of volumes between the three methods ( $R_c [x RMC ECO] = 0.812$ ), ( $R_c [ECO SB x] = 0.868$ ), ( $R_c [x RMC CGS] = 0.849$ ), and good correlation between measurements of ejection fraction ( $R_c [x RMC ECO] = 0.751$ ), ( $R_c [x ECO CGS] = 0.648$ ), ( $R_c [x RMC CGS] = 0.781$ ).

## TL.14.006

### USE OF SPECT/CT WITH <sup>99m</sup>Tc-EDDA-HYNIC-TOC AND <sup>111</sup>In-DTPA-OCTREOTIDE FOR EVALUATION OF SYSTEMIC GRANULOMATOUS INFECTIONS.

MONTEIRO, P.H.S., MOSCI, C., SOUZA, T.F., MORETTI, M.L., STUCCHI, R.S.B., TRABASSO, P., RESENDE, M.R., AMORIM, B. J., ETCHEBEHERE, E. C. S. C., LIMA, M.C.L., SANTOS, A.O., RAMOS, C. D.

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**Brief description of the purpose of the study:** To study the usefulness of SPECT/CT with radiolabeled somatostatin analogs (RSA) for the evaluation of patients with systemic granulomatous infections in comparison with gallium-67 citrate scintigraphy.

**Methods:** Fourteen patients (10 female, 18 to 76 years-old, mean age: 41.4 ± 16.9 years) with active systemic granulomatous infections were studied: tuberculosis (6), paracoccidioidomycosis (4), pneumocystis (2), leishmaniasis (1), infectious vasculites (1). Twelve/14 had started specific treatment 8 ± 4 days before imaging. All were submitted to whole-body and SPECT/CT imaging, seven of them 4h post-injection of 300 MBq of <sup>99m</sup>Tc-EDDA-HYNIC-TOC and, the remaining seven, 24h post-injection of 185 MBq of <sup>111</sup>In-DTPA-octreotide. They were also submitted to whole-body and SPECT/CT imaging 48h post-injection of 185 MBq of gallium-67 citrate. Maximum interval between procedures was one week. Uptake was visually classified as mild, moderate or marked.

**Main results:** Eleven sites of active infectious disease were detected by both tracers (RSA and gallium-67) in nine patients. Both tracers were negative in five patients. <sup>67</sup>Ga uptake was visually higher than RSA uptake in 7 of the 9 patients with positive images.

**Importance of the conclusions:** SPECT/CT with <sup>99m</sup>Tc-EDDA-HYNIC-TOC or <sup>111</sup>In-DTPA-octreotide seems to be a good option for the evaluation of patients with systemic granulomatous infections when compared to <sup>67</sup>Ga scintigraphy.

## 15 - PET-CT

## PD.15.002

### FDG-18F PET/CT AND <sup>99m</sup>Tc-SESTAMIBI SPECT/CT IN MULTIPLE MYELOMA.

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**Brief description of the purpose of the report:** Multiple myeloma (MM) is a haematological malignancy that can present skeletal and extra-skeletal manifestation. A whole body radiographic study is classically used in the staging of MM, however, it may underestimate the extent of med-

ullary lesions and is limited in the evaluation of therapeutic response. Thus, functional imaging methods such as PET/CT 18F-FDG and 99mTc-sestamibi scintigraphy are being proposed to improve the non-invasive management of these patients.

**Medical History:** Three patients with recently diagnosed multiple myeloma without treatment, performed a whole body scan with 99mTc-sestamibi (SPECT/CT) and PET/CT with 18F-FDG. The images of 99mTc-sestamibi scan clearly showed diffuse bone uptake of the radiotracer, while images of PET/CT with 18F-FDG showed more clearly focal areas of increased uptake in lytic lesions of multiple myeloma.

**Diagnosis:** Multiple myeloma.

**Discussion and summary of the case:** The findings of the reports are consistent with the literature, which show the best accuracy of 99mTc-sestamibi to assess the extent and marrow infiltration by plasma cells with high sensitivity (92%) and specificity (96%). The PET/CT with 18F-FDG is able to identify the early marrow involvement by solitary focal lesions (plasmacytoma) and demonstrates extramedullary involvement in other foci with high sensitivity (86%) and specificity (92%).

#### PD.15.004

##### SARCOIDOSIS MIMICKING HODGKIN'S LYMPHOMA IN PET/CT – CASE REPORT.

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**Brief description of the purpose of the report:** Sarcoidosis is a non-infectious multisystem granulomatous disorder that presents various symptoms and it may mimic or co-exist with other diseases, including Hodgkin's lymphoma. 18F-fluorodeoxyglucose positron emission tomography with concomitant computed tomography (18F-FDG PET/CT) is a noninvasive whole-body imaging technique used in patients with inflammatory diseases, as well as lymphomas.

**Medical History:** Case report - 54 year-old female complaining of a left supraclavicular lymph node enlargement, treated as an inflammatory lesion. After two years, she developed the same lymph node enlargement, weight loss, fever and episodes of pneumonia. Chest CT and abdominal ultrasound showed enlargement of multiple lymph nodes. Mediastinal lymph node biopsy initially indicated atypical lymphoma. 18F-FDG PET/CT revealed hypermetabolism in lymph nodes of the thorax and abdomen, spleen and skeletal, with maximum SUV of 13.2. Meanwhile, the biopsy result was reviewed, establishing the diagnosis of sarcoidosis.

**Diagnosis:** Conclusion - Sarcoidosis and some lymphomas share not only clinical manifestations, but also laboratory and even histological findings. Faced with multiple adenopathies, we must rule out lymphoproliferative process. 18F-PET/CT has a well-established utility in lymphomas and may be used to evaluate inflammatory diseases.

**Discussion and summary of the case:** In patients with inconclusive diagnosis 18F-PET/CT may be useful to better characterize those diseases, including the possibility to evaluate response to therapies.

#### PD.15.006

##### PET/CT 18F-FDG revealed an abscess near a vascular stent : case report.

ALMEIDA, LS; Amorim, BJ; Ribeiro, MP; Maia, ML; Farias, AMS; Nascimento, BB; Ferrari, RJR; Souza, TF;

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**Brief description of the purpose of the report:** The positron emission tomography computed tomography associated with 18F-fluorodeoxyglucose (PET/CT 18F-FDG) is indicated in the evaluation of neoplasms. However, it also has excellent accuracy to assess infectious process and it is indicated in fever of unknown origin (FUO).

**Medical History:** Male, 70 years, former smoker, hypertense and diabetic, with aneurysm of the left iliac artery and stent placed in the left iliac and common arteries, evolved with daily fever for 18 days and infectious blood count.

**Diagnosis:** A PET/CT 18F-FDG was performed to assess FUO, which revealed a retroperitoneal hypermetabolic mass involving the aorta and the common iliac arteries suggestive of abscess on CT. This mass was close to the endoprosthesis.

**Discussion and summary of the case:** Infections of vascular prostheses are rare (2-6% of patients) and are among the most serious surgical complications requiring prompt antibiotic therapy and/or surgery. The CT has a sensitivity of 94% and specificity of 85% in the presence of liquid and gaseous collections. However, in other cases the PET/CT 18F-FDG has better accuracy, since it demonstrates the high glucose metabolism in infectious diseases. In this case, the PET/CT 18F-FDG is helpful revealing that the focus was an abscess, close, but was not on the stent, which helped guide the surgical procedure.

#### PD.15.008

##### FEOCROMOCITOMA INCIDENTAL EM PACIENTE COM LINFOMA NÃO HODGKIN DE CÉLULAS T ANAPLÁSICO

ALMEIDA, LS; Mosci, C; Ribeiro, MP; Maia, MLPC; Farias, AMS; Ferrari, RJR; Amorim, BJ; Souza, TF; Etchebehere, ECSC; Santos, AO; Ramos, CD; UNICAMP, Campinas, São Paulo, Brasil

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**Brief description of the purpose of the report:** Objetivo: relatar achado incidental de feocromocitoma em paciente com linfoma não hodgkin de células T anaplásico (LNHcta).

**Medical History:** História: Homem, 63 anos, hipertenso, ex-tabagista, ex-etilista e AVE prévio. Diagnosticado com LNHcta. Encaminhado para avaliação de resposta com PET/CT com FDG-18F 2 meses após 6ª sessão de quimioterapia.

**Diagnosis:** Diagnóstico: PET/CT evidenciou lesões hipermetabólicas em linfonodos cervicais à direita níveis II e III (SUVmax=2,8), nódulo pulmonar na incisura oblíqua (SUVmax=1,2) e na adrenal direita (SUVmax=5,8), não sendo possível excluir infiltração linfomatosa. Devido à clínica de níveis pressóricos de difícil controle, colhidas metanefrinas urinárias, cujo resultado foi elevado, sugerindo feocromocitoma. Realizada complementação com cintilografia com MIBG- 131I que sugeriu lesão de origem neuroectodérmica na adrenal direita, provavelmente feocromocitoma.

**Discussion and summary of the case:** Discussão: Neoplasias podem afetar adrenais e impactar na conduta. Portanto, diferenciar lesões benignas e malignas é essencial. Métodos morfológicos são escolha nessa diferenciação, fornecendo informações como tamanho, preenchimento pelo contraste, washout e calcificação. Contudo, algumas massas permanecem indeterminadas. O PET/CT é a modalidade de escolha na avaliação de lesões adrenais de pacientes com doenças malignas pois: é custo-efetivo (avalia tumor primário, metásta-

ses e 2º primário); possui excelente valor preditivo negativo, evitando cirurgias desnecessárias e; o parâmetro SUV melhora a acurácia da avaliação dessas lesões.

### PD.15.011

#### POTENTIAL USEFULNESS 18F-FDG-PET/CT FOR THE EVALUATION OF BLASTOMYCOSIS

RIBEIRO, M.P., AOKI, F.H., MOSCI, C., SOUZA, T.F., MORETTI, M.L., STUCCHI, R.S.B., TRABASSO, P., RESENDE, M.R., AMORIM, B. J., ETCHEBEHERE, E. C. S. C., LIMA, M.C.L., SANTOS, A.O., RAMOS, C. D. UNIVERSIDADE ESTADUAL DE CAMPINAS (UNICAMP), CAMPINAS, SAO PAULO, BRASIL

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**Brief description of the purpose of the study:** Paracoccidiodomycosis (blastomycosis) is a systemic mycosis caused by Paracoccidioides brasiliensis and can affect multiple organs. The aim of this study was to evaluate the usefulness of 18F-fluorodeoxyglucose positron emission tomography/computed tomography (18F-FDG-PET/CT) to localize sites potentially affected by the disease.

**Methods:** Four male patients, 51-52 years old, diagnosed with blastomycosis were studied. All the patients were submitted to conventional evaluation of the disease, including biopsy and, when necessary, chest radiography, computed tomography, magnetic resonance, ultrasound and bone and gallium-67 scintigraphies. The subjects were also submitted to 18F-FDG-PET/CT 2-3 months after the beginning of treatment with antifungal drugs.

**Main results:** Conventional evaluation of blastomycosis identified lesions in 8 anatomical structures, including lungs (4 patients), tongue (2), eye (1) and adrenals (1). PET/CT showed 18F-FDG uptake in all these structures, except in the tongue of 1 subject. PET/CT also demonstrated the involvement of multiple lymphnode regions: cervical (4 patients), axillary (3), inguinal (3), mediastinal (2) and supraclavicular (1).

**Importance of the conclusions:** 18F-FDG-PET/CT has high sensitivity for detecting blastomycosis involved sites, even after treatment initiation. It also identifies sites undetected by other methods. A larger cohort, including images before and after treatment is necessary to determine the role of 18F-FDG-PET/CT for the evaluation and follow up of these patients.

### PD.15.012

#### 18F-FDG PET / CT WITH HYPOMETABOLISM IN PATIENTS WITH EPILEPSY AND NORMAL MRI AND EXCELLENT POST-SURGICAL RESPONSE: CASE REPORT

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**Brief description of the purpose of the report:** Patients with medically refractory epilepsy are candidates to epileptogenic cortex resection. For this, tests are necessary to demonstrate the location of the focus. The positron emission tomography / computed tomography with 18F - fluorodeoxyglucose (18F-FDG PET/CT) has 70-90% sensitivity to identify temporal epilepsies.

**Medical History:** A 53 year-old female patient with a history

of multiple seizures who didn't respond to pharmacotherapy. She had two normal brain magnetic resonance imaging (MRI). It was performed an 18F-FDG PET/CT that detected right temporal lobe hypometabolism. This finding was consistent with the clinical seizure semiology, electroencephalogram (EEG) and serial video telemetry. A few months after this result, the patient underwent amygdalohippocampectomy. In the postoperative course, the patient experienced a significant reduction in seizures frequency.

**Diagnosis:** The temporal lobe epilepsy reveals an anatomical lesion on MRI, usually as a hippocampal sclerosis. However, a significant minority of patients have nonlesional epilepsy. Many of these patients may show hypometabolism on 18F-FDG PET/CT.

**Discussion and summary of the case:** When the PET finding is consistent with the findings of other studies (serial EEG, video telemetry, ictal single-photon emission tomography), 18F-FDG PET/CT may guide a surgical procedure with excellent results after resection of the epileptogenic zone, as demonstrated in this case.

### PD.15.018

#### 18F-FDG PET/CT IN THE DIAGNOSIS OF MULTIFOCAL BACTERIAL MYOSITIS IN A PATIENT WITH FEBRILE NEUTROPENIA: A CASE REPORT.

ARAUJO, M.L.C.M.; AMORIM, B.J.; MOSCI, C.; NASCIMENTO, B.B; ETCHEBEHERE, E.C.S.C; SANTOS, A.O.; LIMA, M.C.L.; SOUZA, T.F; RAMOS, C.D.

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**Brief description of the purpose of the report:** INTRODUCTION : In cases of febrile neutropenia, the determination of the infection site and the assessment of response to treatment are essential to the clinical management. Positron emission tomography/computed tomography with 18F - fluorodeoxyglucose ( 18F - FDG PET / CT ) has an important role in determining the infectious focus.

**Medical History:** CASE REPORT : Man , 42 years old , with acute myeloid leukemia developed febrile neutropenia during hospitalization for consolidation chemotherapy. Blood cultures were positive for methicillin resistant staphylococcus. PET/CT was requested to determine infection site and showed hypermetabolic lesions in multiple muscle groups in the entire body, as well as pulmonary nodules.

**Diagnosis:** The diagnostic of multifocal bacterial myositis was considered. After antibiotic therapy, the patient underwent a control PET/CT in which the lesions previously described were no longer observed.

**Discussion and summary of the case:** DISCUSSION : The multifocal bacterial myositis is a primary infection of skeletal muscles and occurs most frequently in immunocompromised patients . 18F FDG PET/CT has an important role in the early diagnosis of these patients in order to avoid delays in treatment and progression for suppurative phase, as well as in the evaluation after pharmacological treatment.

### PD.15.020

#### GRANULOMA MIMICKING MALIGNANCY IN PET / CT : A CASE REPORT

ARAUJO, M.L.C.M.; AMORIM, B.J.; MOSCI, C.; SANTOS, A.O.; ETCHEBEHERE, E.C.S.C; LIMA, M.C.L.; SOUZA, T.F; RAMOS, C.D.

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**Brief description of the purpose of the report:** BACKGROUND: Positron emission tomography/computed tomography with 18F-fluorodeoxyglucose (18F-FDG PET/CT) is notable for its high accuracy in the assessment of cancer patients. However, benign lesions may accumulate 18F-FDG, leading to false positive results.

**Medical History:** CASE REPORT: Man, 57 years old, diagnosed with poorly differentiated squamous cell carcinoma of the right lung 6 years ago. Patient underwent pneumonectomy, chemotherapy and radiotherapy and kept asymptomatic after 5 years follow-up. 18F-FDG PET/CT showed a markedly hypermetabolic lesion in the right paravertebral region, near to the area of the right 5th rib segmental resection.

**Diagnosis:** This finding was concerned for recurrence of the tumor and was correlated to a CT scan performed 3 years earlier. It was realized that the lesion was already present and remained unchanged, supporting the hypothesis of benign lesion, probably a granuloma.

**Discussion and summary of the case:** DISCUSSION: 18F-FDG PET/CT is a very accurate test to detect tumor lesions. However, infectious and inflammatory processes can take up FDG intensely, leading to false positive results. The correlation with the clinical scenario and patient follow up can provide information for diagnostic determination. The nuclear medicine physician should be alert to the pitfalls of interpretation, which brings impact on staging, and therefore management of the patients.

#### PD.15.021

##### FDG PET/CT IN THE EVALUATION OF EXTRANODAL INVOLVEMENT IN LYMPHOMAS

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**Introduction:** Introduction: Metabolic imaging with FDG PET/CT has become the modality of choice in the initial staging, follow-up, and treatment response evaluation in patients with lymphoma, a disease that can affect practically any site in the body.

**Methods Involved:** Method: The purpose of this essay is to illustrate the common sites of extranodal lymphomatous involvement, as assessed by FDG PET/CT.

**Discussion:** Discussion: The prevalence and anatomical distribution of extranodal lymphoma varies according disease stage and histological subtypes. The most common sites of extranodal involvement are the stomach, spleen, Waldeyer ring, central nervous system, lung, bone and skin. Some imaging findings are predictive of extranodal disease and help distinguish tumor from physiological FDG uptake, particularly in mucous membranes, bone marrow, and abdominal organs.

**Conclusion of the presentation:** Conclusion: Familiarity with distinct extranodal manifestations of lymphomas is critical to correct interpretation of FDG PET/CT findings.

#### PD.15.022

##### PHOSPHATURIC MESENCHYMAL TUMOR: FDG PET/CT FINDINGS

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**Brief description of the purpose of the report:** Description Tumor-induced osteomalacia, or oncogenic osteomalacia, is a rare syndrome characterized by osteomuscular pain, osteomalacia, hypophosphatemia and hyperphosphaturia. It is caused by a phosphaturic hormone-secreting mesenchymal neoplasm, usually benign and often occult. Since tumor resection is the only curative treatment, lesion localization is essential.

**Medical History:** Clinical History An otherwise healthy 28 years-old female patient presented a history of multiple spontaneous bone fractures. Conventional radiography, computed tomography, and magnetic resonance imaging showed costal, scapular and pelvic fractures, and signs of osteomalacia. Laboratory workup revealed low levels of vitamin D, hypophosphatemia, and hiperphosphaturia.

**Diagnosis:** Diagnosis The patient underwent a FDG PET/CT scan, which revealed the aforementioned fractures and a small intramuscular soft-tissue tumor in the left thigh, with moderate FDG uptake (SUVmax: 1.8). Upon excision, the lesion was shown to be a phosphaturic mesenchymal tumor.

**Discussion and summary of the case:** Discussion Anatomical localization of mesenchymal tumors with conventional imaging remains a diagnostic challenge. Excision of the lesion detected using FDG PET/CT resulted in remission of the clinical syndrome and healing of the fractures. This case shows the potential usefulness of FDG PET/CT in the diagnosis of such occult tumors.

## 16 - IT/MANAGEMENT/EDUCATION

#### PD.16.001

##### THE IMPORTANCE OF MORPHOMETRY STUDIES USING VOXEL-BY-VOXEL OF MAGNETIC RESONANCE IMAGING IN ELDERLY PATIENTS WITH ALZHEIMER'S DISEASE MORPHOMETRY

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**Brief description of the purpose of the Review of Literature:** One of the biggest challenges of contemporary public health is population aging. Brazil is the country with the highest percentage increase of the elderly population worldwide, and as a result many of these were susceptible to the development of neurodegenerative diseases, in which the most important is actually Alzheimer's disease (AD).

**Description (s) condition (s), method (s) or technique (s):** Comparative neuroimaging studies have used morphometric approaches to determine interindividual differences using automated methods of processing voxel-by-voxel, from images acquired by magnetic resonance imaging, and using specific programs, these images are spatially normalized to a specific anatomical template, and then are segmented into gray, white matter and CSF, and finally with Gaussian smoothing filter. After processing the images, they are analyzed statistically, where you can check the brain regions with change.

**Conclusion:** Morphometry voxel-by-voxel, is an important tool for statistically analyze differences between groups of patients with neurological disease of healthy patients. In research with AD, this technique is extremely sensitive for detecting structural differences, thus allowing a better under-

standing of changes causes the disease.

## **17 - PHYSICS, QUALITY CONTROL**

### **TL.17.001**

#### **INFLUENCE OF HALF-SCAN PARAMETER IN EVALUATING THE QUALITY OF SIMULATED IMAGES IN A MAGNETIC RESONANCE EQUIPMENT OF 1.5 T**

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**Brief description of the purpose of the study:** Spatial resolution of high contrast and signal to noise ratio (SNR) are two extremely important factors in acceptance tests and quality control in magnetic resonance imaging equipments. The aim of this study is to analyze the use of Half Scan (HS) in generated images to these tests.

**Methods:** The measurements were collected in a Philips equipment (Gyrosan 1.5 T, gradient 15 mT), using head coil and a phantom model 3DRAS (Fluke ® Biomedical) to obtain the images. For the analysis images were obtained with T1 and T2 weighting varying the HS 60%, 75% and 90%.

**Main results:** The spatial resolution T1 and T2 weighted sequences remained constant, the SNR values changed significantly, about 50% and 47%, respectively.

**Importance of the conclusions:** Therefore, HS techniques will not bring significant changes in the analysis of spatial resolution, though there is a slightly loss of the sharpness edges. In the meantime SNR values demonstrated unexpected performance. Prudence in use this technique is recommended and should be a consensus between the physical and the radiologist to determine the ponderation of edge distortion on structures. Future work should be conducted to study the influence of HS at the acquisition time on T2-weighted images.

## **18 - RADIOLOGICAL TECHNIQUES**

### **PD.18.001**

#### **EVALUATION OF TECHNIQUES FOR THE STUDY OF CAROTID AND VERTEBRAL ARTERIES BY MAGNETIC RESONANCE ANGIOGRAPHY WITHOUT THE USE OF CONTRAST MEDIA**

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**Introduction:** For over 15 years, magnetic resonance angiography (MRA) is the modality of choice for non-invasive imaging tests for the assessment and investigation of vascular diseases. In some cases, such as chronic or acute renal failure, the MRA should be conducted without the use of gadolinium contrast media. Therefore we aim to study the evaluation of three methods of MRA of the carotid and vertebral arteries without the use of contrast media, taking into consideration the time of examination, the resolution and image quality and amount of vessels and branches visualized.

**Methods Involved:** Images of healthy volunteers were per-

formed using GE and Philips equipment, with 1.5 T using 3D-TOF, 3D Fast SPGR with Cardiac Trigger and 3D Phase Contrast techniques.

**Discussion:** Among these techniques, the 3D TOF showed the best visualization of the vessels and their branches from the aortic arch to the intracranial branches, followed by 3D Fast SPGR with cardiac trigger which resulted in good visualization of the origin of the common carotid preventing cardiac pulsation artifact.

**Conclusion of the presentation:** These three techniques comprise important and essential tools to study vascular by MR imaging, especially in cases in which the injection of contrast media is not recommended.

### **PD.18.002**

#### **HOW LOW CAN BE REDUCED CONTRAST MEDIA IN DUAL ENERGY CT?**

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**Brief description of the Purpose of the Report:** To evaluate the feasibility of performing dual energy CT Angiography (CTA) using reduced iodine contrast volume, compared to the standard dose, single-energy CTA as reference.

**Method and Materials:** Eighty patients with indication for a CTA were included. The patients were randomly allocated to one of the four groups: group 1, CTAs carried out using a standard (full) dose of iodine contrast and a single energy CT scan; group 2, 3 and, using a 50, 40 and 30% of the contrast volume and a dual energy CT scan respectively. Dual energy CT images were analyzed at different keV values, 10-to-10, from 40 to 80. Quality of images was evaluated by vascular enhancement and by a subjective four-point grading.

**Results:** Demographic data was similar in all groups. For group 2, the 60 keV level had the best image quality, while for groups 3 and 4, the 50 keV level. There was no significant difference between the four groups comparing the vascular attenuation values ( $p>0.05$ ). There was no significant difference between groups in qualitative assessment, were all studies were diagnostic (good and excellent quality).

**Conclusion Dect:** Compared with single-energy mode, dual energy CT is able to decrease the volume of contrast material up to 70%. The vascular attenuation and qualitative assessment was equal in the four groups.

### **PD.18.003**

#### **COMPARATIVE ANALYSIS OF ASSESSMENT IN RADIOGRAPHY LUMBAR LORDOSIS MEASURED WHILE STANDING AND MAGNETIC RESONANCE IMAGING**

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**Brief description of the purpose of the study:** Brief Desc: The present study aimed to evaluate the difference of lumbar lordosis angles in computed radiography (CR) and magnetic resonance imaging (MRI) studies.

**Methods:** Material: Measurement of lumbar lordosis angles from 100 patients referred to MRI and CR studies, using

Cobb's method (with L1 and L5 plateaus as reference). Measurements were done by three independent observers with different skills, and interobserver agreement was evaluated. The lumbar lordosis angle obtained in CR and MRI were compared using statistical analysis with paired t-test.

**Main results:** Results: The mean lordosis angles measured in CR and MRI were respectively 42.2 ° and 31.5 ° ( $p < 0.001$ ).

**Importance of the conclusions:** Findings: There was good interobserver agreement. There was a statistically significant difference between the angles of lumbar lordosis in CR and MRI. The data suggest that MRI is not reliable in the evaluation of the lumbar lordosis when used alone.

#### PD.18.004

##### **: COMPARATIVE ANALYSIS OF ASSESSMENT IN LUMBAR LORDOSIS MEASURED IN RESONANCE IMAGING WITH AND WITHOUT CUSHION**

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**Brief description of the purpose of the study:** 1. The present study aimed to evaluate the difference of lumbar lordosis angles in magnetic resonance imaging (MRI) studies with and without the use of a cushion under the inferior limbs.

**Methods:** 2. 89 patients were included. Lumbar lordosis angles were obtained by Cobb's method (with L1 and L5 plateaus as reference) in T2 weighted images (T2WI) with a cushion under the inferior limbs and in T1 weighted images (T1WI) without a cushion. Measurements were done by three independent observers with different skills, and interobserver agreement was evaluated. The data were compared using statistical analysis with paired t-test.

**Main results:** 3. The mean lordosis angles measured in MRI with a cushion under the inferior limbs and MRI without a cushion were respectively 31,56 ° and 31,94 ° ( $p > 0.05$ ).

**Importance of the conclusions:** 4. There was good interobserver agreement. There was no statistically significant difference between the angles of lumbar lordosis in T2WI with a cushion and T1WI without the cushion.

#### PD.18.006

##### **EXPERIMENTAL DEMONSTRATION OF MAGNETIC RESONANCE THERMOGRAPHY USING PROTON RESONANCE FREQUENCY**

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**Brief description of the purpose of the study:** To demonstrate the possibility to measure temporal differences in temperature using MRI, aiming future studies of in vivo thermal variations.

**Methods:** A phantom consisting of 400mL of gelatin (250mg/mL) was preheated to 50°C in a cylindrical pot and placed in the Philips Gyroscan 1.5T bore, expecting an exponential temperature decay during acquisition. Serial acquisition of 15 phase images was performed in the same plane, with 1 minute interval between them, using a radiofrequency spoiled

gradient echo sequence (TR: 38ms; TE: 20ms; flip angle: 40°). Each image was subtracted from the first, generating 14 subtractions. The average value of each subtraction was plotted sequentially on a curve.

**Main results:** There was a decrease in phase over 15 minutes, and the curve was best explained by an exponential model.

**Importance of the conclusions:** Literature shows that phase values obtained with the sequence described herein show a linear correlation with temperature. Therefore, the exponential phase decay may correspond to the gelatin temperature decay. A controlled study is in progress to confirm the literature findings.

#### PD.18.007

##### **REDUCTIONS OF METAL ARTIFACTS FROM BONE PROSTHESES ON DUAL ENERGY COMPUTED TOMOGRAPHY WITH MARS TECHNIQUE**

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**Brief description of the purpose of the study:** To evaluate the metal artifact reduction in patients with bone prosthesis by obtaining MARS technique (metal artifact reduction software) in dual energy computed tomography (TCMDE).

**Methods:** This study evaluated ten patients with bone metal stents in different anatomical regions who underwent TCDE (Discovery CT 750HD, GE Healthcare, Milwaukee) using MARS technique. Bone, muscle and adipose tissues adjacent to the prosthesis were evaluated by an objective and subjective analysis. Comparative MARS technique in prosthetic and non prosthetic structures was used for measuring the attenuation of densitometry, and evaluated anatomical recognition and diagnostic reliability.

**Main results:** Periprosthetic muscle tissue showed a significant decrease in average density (85UH,  $p < 0.05$ ) with MARS technique, whereas there were no differences in the density of bone and fat. The image noise was significantly higher in periprosthetic fat and muscle tissue without MARS, compared to structures without prosthesis. Anatomical recognition and diagnostic reliability of bone and fatty tissue was greater with MARS technique ( $p < 0.05$ ).

**Importance of the conclusions:** The use of MARS TCMDE method reduces metal artifacts caused by bone prostheses, and improves reliability of measurements as well as the recognition of the structures involved and the diagnostic reliability.

# TL – Scientific Papers –

## Oral Presentation

### 1 - ABDOMINAL/GASTROINTESTINAL

#### TL.01.005

#### **ACCELERATED WHOLE-BODY DIFFUSION WEIGHTED IMAGING WITH BLIPPED CAIPIRINHA BASED SIMULTANEOUS MULTISLICE ACQUISITION**

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**Brief description of the purpose of the study:** Whole body diffusion weighted MR imaging (DWI) is a promising tool for cancer staging. Unfortunately, the present techniques request high scan times, that makes it unreliable in the daily clinical routine. The purpose of this study was to apply conventional and slice-accelerated techniques, like CAIPIRINHA, and to compare scan times and access image quality related parameters.

**Methods:** 8 healthy volunteers and 6 patients underwent MR imaging at 1.5T. Conventional and slice-accelerated whole body diffusion-weighted images were acquired in the axial plane, 4 stations, with STIR fat suppression. Quantitative comparison between the two techniques was done in the healthy volunteer datasets, by evaluating the ADC and relative signal to noise ratio (relSNR) in a several region-of-interests. Qualitative comparison between the two techniques was done in the patient datasets in a subjective non-blinded fashion.

**Main results:** The scan time of the slice accelerated whole body DWI technique could be reduced by a factor of 1.7. Comparable image quality could be observed. The relSNR in the slice-accelerated technique was 10-20% less than the conventional sequence.

**Importance of the conclusions:** The quantitative and qualitative comparisons demonstrated the feasibility of using the slice-accelerated whole body DWI to reduce the scan time by a factor of almost 2 with only 10-20% signal loss.

#### TL.01.006

#### **EVALUATION OF THE AGREEMENT BETWEEN SPECTROSCOPY WITH T2 CORRECTION (HISTO) AND QUANTITATIVE ADVANCED DIXON AND QUALITATIVE SCREENING DIXON SEQUENCES**

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**Brief description of the purpose of the study:** To evaluate the agreement between the quantitative results obtained from the magnetic resonance spectroscopy (MRS) and 6 echoes advanced dixon (AD) new sequence; evaluate the agreement between the nominal interpretation of the spectroscopy results and the automated report generated by the sequence Screening Dixon (SD)

**Methods:** 69 abdominal MRIs were evaluated retrospectively. The examinations were performed in patients with chronic liver disease, in 1.5 Tesla machine (Magnetom Espree, Sie-

mens). Quantitative analysis: The values of fat fraction were withdrawn from automated report generated by spectroscopy and from regions of interest (ROI) placed in the same location of the voxel in the proton density fat fraction (PDFF) map generated inline by the AD sequence. Qualitative analysis: from the spectroscopy results, subjects were classified as “normal” or “with fat”. The SD sequence data were taken from the report, being normal, fat, combined (with both fat and iron, considered here as “with fat”) and iron. Rstudio was used for statistical analysis.

**Main results:** Quantitative analysis showed an intraclass correlation coefficient of 0.830 (CI95%= 0.737 to 0.89). The qualitative analysis showed concordance of 85,7% between the results of spectroscopy and SD among the “with fat” patients.

**Importance of the conclusions:** AD has good correlation with spectroscopy in steatosis quantification.

#### TL.01.007

#### **QUANTIFICATION IN DIGITAL DEFECOGRAPHY : INTRA AND INTER-OBSERVER ASSESSMENT OF LENGTHS AND ANGLES.**

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**Brief description of the purpose of the study:** To study the intra and inter-observer agreement for quantification of lengths and angles in digital defecography.

**Methods:** Retrospective study of patients referred for digital defecography, from March 2012 to October 2013. The protocol was performed at rest, contraction, Valsalva and evacuation. Measurements of the anorectal angle, length of the puborectalis muscle, perineal descent length, the anal canal opening and emptying after evacuation were performed. Two radiologists, observer 1 and observer 2, independently and blinded, performed the measurements in three weeks intervals.

**Main results:** Observer 1 performed 92 measurements and, in two stages, observer 2 performed 184 measurements. There was an excellent correlation in the anorectal measurement intra and inter-observer with  $r = 0.96$  and  $0.90$ , respectively ( $p < 0.001$ ). The results were not statistically different,  $101.8^{\circ} \pm 23.5^{\circ}$  and  $104.0^{\circ} \pm 19.7^{\circ}$ , respectively ( $p = 0.09$ ). The same happened between the two analyzes made by observer 2 ( $103.9^{\circ} \pm 19.9^{\circ}$  and  $104.0^{\circ} \pm 19.7^{\circ}$ ), which also were not statistically different ( $p = 0.62$ ). All other measurements had excellent correlation ( $r > 0.90$ ,  $p < 0.001$ ).

**Importance of the conclusions:** We demonstrated that the quantitative evaluation has excellent correlation and low variability. Thus, quantitative assessment should be encouraged.

#### TL.01.009

#### **NON ENHANCED MR ANGIOGRAPHY (NEMRA) IN THE EVALUATION OF THE CELIAC TRUNK, CELIAC TRUNK BRANCHES AND SUPERIOR MESENTERY ARTERY: COMPARISON WITH CT ANGIOGRAPHY (CTA)**

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**Brief description of the purpose of the study:** To eval-

uate the quality of the images in NEMRA of the main branches of the aorta with CTA performed as the reference standard.

**Methods:** In a prospective study, forty-one consecutive patients underwent both 1.5 T NEMRA (bSSFP technique) and CT angiography (64 detectors) to evaluate the celiac trunk (CT) and superior mesenteric artery (SMA). Two radiologists reviewed the restored data separately, evaluating the image quality of the renal arteries, grading the images in (A) diagnostic and (B), non-diagnostic, measuring the arteries calibers in both methods and evaluating the presence of CT and SMA stenosis. The agreement between NCMRA and CTA as well as the inter-observer reproducibility were calculated with Kappa testing and intraclass correlation index (ICI).

**Main results:** NEMRA provided diagnostic (A) images and that agreed with CTA in 87,8-90,2 % of the exams, with high inter observer agreement (K: 0,8- 0,9 and ICI: 0,71-0,79). In the evaluation of the CT and SMA stenosis, NEMRA obtained respectively: sensibility of 100% and 100%, specificity of 93% and 94% and accuracy of 94% and 94%.

**Importance of the conclusions:** NEMRA provided accurate and high quality images comparable to CTA in the diagnosis of stenosis of CT and/or SMA.

### TL.01.011

#### MDCT OF THE ABDOMEN IN EMERGENCY: JUDICIOUS EVALUATION OF 300 EXAMINATIONS.

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**Brief description of the purpose of the study:** Objective: To analyze the diagnostic findings and the correlation between indication and diagnostic denouement of patients undergoing MDCT in emergency.

**Methods:** Materials and Methods: Retrospective descriptive study through analysis of data of stored exams in the PACS of the institution including all patients who underwent MDCT of abdome in the period 08/09/13 to 08/11/13.

**Main results:** Results: Of the total, 81% were abnormal exams. Of these, 75% the clinical indication had good correlation with the diagnostic hypothesis of radiological result. In 99% of cases, MDCT was able to correctly guide the surgical or medical management. The most frequent alterations were nephrolithiasis (24%), diverticular disease of the colon (14%), renal cysts (14%), ureterolithiasis (11.6%), hepatic steatosis (10%), hepatic cysts (8.3%), diverticulitis (6.6%), inflammatory/ infectious colitis (6%), appendicitis (2.6%), pyelonephritis (2%), appendagitis (1.6%) and mesenteric panniculitis (1.3%). The other findings such pancreatitis, acute cholecystitis and intestinal perforation were found in less than 1% of cases.

**Importance of the conclusions:** Conclusion: MDCT is currently of fundamental importance in the emergence of a referral hospital. The good correlation between the clinical diagnostic hypothesis and the diagnosis identified by the tomography features the existence of a good screening pre-exam. Some diagnoses are exclusively performed by MDCT as appendagitis and mesenteric panniculitis.

### TL.01.013

#### ARFI ELASTOGRAPHY IN EVALUATION THE DIFFERENT LEVELS OF FIBROSIS ON LONG TERM TRANSPLANTED LIVERS

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**Brief description of the purpose of the study:** Introduction: This prospective clinical study aims to study the elasticity degree of the liver of patients at least 3 years after their liver transplantation occurred, by using ARFI, correlating the histological analysis.

**Methods:** Material and Method Prospectively, 34 patients undergoing liver transplantation were evaluated for at least three years. The 34 patients had conducted clinical and laboratory parameters for evaluation of the liver. The ARFI elastometry was performed with 20 measurements in segment V. All patients underwent percutaneous liver biopsy, in the same day of ARFI elastometry, or with a maximum interval of 15 days.

**Main results:** The correlation between the velocities obtained in ARFI elastometry and the fibrosis degree of histological examination, with Metavir classification, showed statistically significant values with  $P = 0.003$  with a correlation coefficient ( $r$ ) of 0.505.

**Importance of the conclusions:** Conclusion The ARFI elastography showed significant accuracy in relation to liver biopsy, in quantifying the degree of fibrosis.

### TL.01.015

#### ULTRASONOGRAPHY IN ACUTE APPENDICITIS: DIAGNOSTIC ACCURACY CORRELATED WITH BODY MASS INDEX

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**Brief description of the purpose of the study:** To evaluate the accuracy of ultrasonography (US) for the diagnosis of acute appendicitis (AA) based on body mass index (BMI) of patients treated at a tertiary referral hospital.

**Methods:** Retrospective study including patients submitted to appendectomy from January to December 2009 who underwent preoperative ultrasonography at our institution. Patients were categorized as obese ( $BMI > 30$ ) or not, and their sonographic reports were divided into positive or negative for AA. The results were correlated with histopathologic slides reviewed by the same pathologist (gold standard). Patients whose appendix was not visualized at US ( $n = 29$ ) were excluded from analysis.

**Main results:** Considering the total study population ( $n = 88$ ), the prevalence of AA was 96.5%, and overall accuracy of US was 90.9%. Regarding the subgroups, US accuracy was 91.3% in non-obese patients and 87.5% in obese patients ( $p < 0.05$ ).

**Importance of the conclusions:** Our results show that accuracy of US for the diagnosis of AA is influenced by the BMI of the patients and can be incorporated into clinical algorithms using BMI to help choosing the best imaging method for the diagnosis of AA.



## 2 - GENITOURINARY

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### TL.02.003

#### IMAGE QUALITY OF THE IMAGES IN NON ENHANCED MR ANGIOGRAPHY (NEMRA) OF RENAL ARTERY: COMPARISON WITH CT ANGIOGRAPHY (CTA)

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**Brief description of the purpose of the study:** To evaluate the quality of the images in NEMRA of renal artery with CTA performed as the reference standard.

**Methods:** In a prospective study, forty-one consecutive patients underwent both 1.5 T NEMRA (bSSFP technique) and CT angiography (64 detectors) of the renal arteries. Two radiologists reviewed the restored data separately, evaluating the image quality of the renal arteries, grading the images in (A) diagnostic and (B) non diagnostic and measuring the arteries calibers in both methods. The agreement between NCMRA and CTA as well as the inter-observer reproducibility were calculated with Kappa testing and intraclass correlation index (ICI).

**Main results:** NEMRA provided diagnostic (A) images and that agreed with CTA in 77,5 to 87,8% of the proximal renal arteries and in 70 to 90% of the medium portions of these vessels with high inter observer agreement (Kappa: 0,7- 0,9 and ICI: 0,46-0,64). There was high agreement in the measures of the calibers of the renal arteries in both methods.

**Importance of the conclusions:** : NEMRA provided high quality images and measures of the calibers of the renal arteries comparable to CTA.

### TL.02.004

#### INITIAL EXPERIENCE IN PROSTATE BIOPSY WITH ULTRASSONOGRAPHIC IMAGING FUSION AND RESONANCE MAGNETIC IMAGING

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**Brief description of the purpose of the study:** To describe the initial experience of prostate biopsy with imaging fusion of ultrasonography and resonance magnetic imaging that were done before the procedure in our service, in diagnosis of patients with clinical suspicion of prostate tumor. Will be given emphasis in the differentiation between tumors clinically significant and non-significant detected thought the method.

**Methods:** During August and November of 2013 were done 45 prostate biopsies by ultrasonography with imaging fusion in our service. Patients had medium PSA of 5.1 ng/mL.

**Main results:** 28 cases (62%) of patients that submitted to prostate biopsy with imaging fusion were diagnosed with prostate tumor. The number of patients with clinically significant tumors (using histological criterias) were 24 (86%), versus 4 cases (14%) of clinically non-significant tumors. These results of biopsy positivity are superior from the described of randomic biopsy (28 to 46%).

**Importance of the conclusions:** Prostate biopsy with magnetic resonance imaging fusion has higher detection of clinically significant disease, when comparing the randomic biopsy of literature.

### TL.02.007

#### TARGETED MR/TRUS FUSION-GUIDED PROSTATE BIOPSY EVALUATED BY MULTIPARAMETRIC MRI USING LIKERT SCORING SYSTEM: INITIAL EXPERIENCE.

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**Brief description of the purpose of the study:** To evaluate the performance and interobserver variability of Likert scoring system to detect clinically significant prostate cancer (PCa) in patients submitted to magnetic resonance/transrectal ultrasound (MR/TRUS) fusion-guided biopsy.

**Methods:** Pre-biopsy 3T multiparametric MRI (mpMRI) without endorectal coil was performed in a cohort of patients with elevated PSA. Suspicious lesions were retrospectively scored by three radiologists independently using a modified PI-RADS system (Likert) and were correlated to histopathology results obtained from MR/TRUS fusion-guided biopsy.

**Main results:** A total of 38 patients were enrolled, and clinically significant PCa was found in 55% of them. Positivity varied according to the mpMRI score for each reader. Sensitivity and specificity considering score 3 or more as positive were 90% and 70%, 95% and 76%, 71% and 59 %; negative predictive values were 71%, 80% and 53% respectively.

**Importance of the conclusions:** Our preliminary data shows that pre-biopsy MRI may be used to increase detection of clinically significant PCa and avoid biopsy in selected cases. We observed significant interobserver variability using a subjective Likert Scale, and perhaps more standardized systems, such as the new PI-RADS, may help improving the results.

## 3 - HEAD & NECK

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### PA.03.002

#### EVALUATION OF DOUBLE INVERSION RECOVERY PULSE SEQUENCES ON BRAIN MAGNETIC RESONANCE IMAGING EXAMINATION

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**Brief description of the purpose of the study:** The goal of this study is to evaluate the image quality obtained from the double inversion recovery pulse sequences used as a diagnostic tool for evaluation of the brain, with white matter and cerebrospinal fluid suppression.

**Methods:** The study was performed with 30 patients (41 ± 24 years) submitted to a MRI brain examination, using a 1,5T equipment (SIEMENS Magnetom ESPREE) and a dedicated brain 6 channel coil. The DIR sequences were analyzed drawing regions of interest for quantification of the background signal, white and gray matter signal, and obtaining the contrast index of those regions. Areas with generative suspicion were analyzed as well.

**Main results:** The contrast index within the white and gray matter of those sequences were 85,13 ± 15,15, being the background signal intensity, white and gray matter of 2,07 ± 1,17, 95,21 ± 16,83 e 10,08 ± 5,14, respectively.

**Importance of the conclusions:** The DIR pulse sequences are a good option on the detection of degenerative brain disease, showing an elevated contrast index within normal and degenerative areas.

### PA.03.006

#### EVALUATION OF INFLUENCE OF DICOM AND JPEG FORMATS IN THE REPRODUCIBILITY OF CEPHAOMETRIC LANDMARKS IN DIGITAL POSTERO-ANTERIOR RADIOGRAPHIES

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**Brief description of the purpose of the study:** The aim of this study was to evaluate the influence of DICOM and JPEG file formats on quality factors 100,80 and 60, in the reproducibility intra and interexaminator at cephalometrics landmarks identification at postero-anterior radiographies

**Methods:** The 30 original images in DICOM format was converted into a JPEG format on quality factors 100,80,60. After blind and random the samples, three calibrated orthodontist marked the 18 cephalometric points on each image using an X and Y coordinates system.

**Main results:** The results shown that the cephalometric points on digital postero-anterior radiographies presents a reproducibility agreement on intra such as interexaminator, except for points ZL, ZR, AZ, JR, NC, CN on coordinate Y and A6 on coordinate X.

**Importance of the conclusions:** The file formats DICOM and JPEG on quality formats 100,80,60 do not affected the reproducibility intra and interexaminators on a postero-anterior radiographies

### PA.03.010

#### PRELIMINARY STUDY WITH CT "CONE BEAM" HIGH RESOLUTION SUBMILLIMETER 2D AND 3D OF MASTOID LABYRINTH BONE IN DRY SKULLS

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**Brief description of the purpose of the study:** Objective: To evaluate the bony labyrinth structures of the temporal bone of dry skulls, on the images of high spatial and submillimeter resolutions, obtained with CT "cone beam" (CBCT)

**Methods:** Material and Methods: We studied 19 pieces of dry skulls (38 temporal bones), 8 female, 11 male, between 3-50 years, with acquisitions of the temporal bone, FOV 17x11, 835x835 matrix, 80 kV, 15 MAS and spatial resolution of 180 nm (0.18 mm). The visual and subjective evaluations were performed by two experienced radiologists, qualifying is well defined or not, the cochlea, the saccule, semicircular canals, the vestibular and cochlear aqueducts and translabyrinthine paths of the facial nerves.

**Main results:** Results: All the structures in the images of 38 reviews bony labyrinths were identified and well defined, demonstrating high accuracy and sensibility of the method.

**Importance of the conclusions:** Conclusion: CBCT allows to identify the structures of the temporal bone labyrinth in dry skulls with high spatial resolution. This preliminary study allows us to infer the use of the same in the clinical evaluation of the temporal bone, without intravenous iodinated contrast, according to clinical and technical limitations of the method.

### TL.03.001

#### ATYPICAL OPTIC NEURITIS: WHAT ARE AND HOW THEY PRESENT IN MRI?

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**Brief description of the purpose of the study:** Atypical optic neuritis (AON) usually present more severe visual loss and are associated to other inflammatory diseases than multiple sclerosis. The aim of this study is to describe presentations of AON in MRI.

**Methods:** The study included 8 patients with AON, characterizing: degree of visual loss (Wingerchuk 1999 modified criteria) ipsi and contralateral to the crisis. In MRI were described the extension of the T2WI hyperintensity in the optic nerve and in the optic chiasm.

**Main results:** Two patients had neuromyelitis optica (NMO), positive for AQP-4, 3 patients presented the NMO spectrum, 2 had perineuritis and 1 had granulomatous neuritis. In the eye of the crisis, 25% of the patients had visual loss grade 8, 25% grade 7, 12.5% grade 5 and 12.5% grade 4. In the contralateral eye, 12.5% had grade 6, 12.5% grade 1 and 75% grade 0. The optic nerve showed 3 segments with hyperintense signal in 25%, 2 segments in 38% and 1 segment in 38%, being the posterior 1/3 affected in 100% and the chiasm in 75%.

**Importance of the conclusions:** The MRI in the AON showed predominant abnormalities in the posterior segments of the optic nerve, frequently affecting the optic chiasm, being different from typical demyelinating neuritis, that show predominant anterior damage.

### TL.03.004

#### MRI EVALUATION OF ANTERO-INFERIOR CEREBELLAR ARTERY LOOPS AND ITS RELATIONS WITH OTOLOGICAL SYMPTOMS

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**Brief description of the purpose of the study:** Otological symptoms are relatively common, however, sometimes their exact causes remain unknown. In some cases, it is believed that the presence of vascular loops in the internal auditory canal (IAC) formed by the anterior inferior cerebellar artery (AICA) is the etiology. We aimed to analyze by MRI the presence of AICA loop and its association with otological symptoms.

**Methods:** We selected 33 adults with otologic complaints who underwent MRI between June and November 2013. We evaluated the trajectory of AICA in relation to IAC and graded the vascular loops according to the Chavda classification. Chi-square test was performed. We also measured the concordance in the evaluation made by the three radiologists.

**Main results:** The mean age of patients is 51,7 years. Among the 66 ears analyzed, 60,6% did not present any vascular loop, 31,8% had type I, 6,1% had type II and 1,5% had type III. Comparing ears that presented any vascular loop to those that did not present, we did not find association with tinnitus (p=0,537), hypoacusis (p=0,769) or vertigo (p=0,225). Also, comparing differences in Chavda grade there was no association.

**Importance of the conclusions:** In conclusion, there is no association between the presence or type of vascular loops and otoneurological manifestations.

### TL.03.005

#### LACK OF ASSOCIATION BETWEEN MUCOSAL CONTACT OF NASAL SEPTUM AND HEADACHE

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**Brief description of the purpose of the study:** Contact point headache (CH) was described about 35 years ago as caused by the presence of mucosal contact (MC) related to the deviated septum (DS). With increasing realization of imaging exams, the presence of DS and MC has been frequently observed, in many cases, in patients without complaints attributable to the MC. Our hypothesis is that there is no correlation between DS, presence of MC and headache.

**Methods:** Prospective study, approved by the institutional review board. Patients greater than 18 years who underwent prescribed face CT between 11/11/2012 and 12/01/2013, with a total of 650 exams. All signed an informed consent and answered a standardized questionnaire. Radiologists evaluated the images without knowing patient responses. Statistical analysis was performed using logistic regression models.

**Main results:** Preliminary data analysis showed no statistical association between headache and the presence of MC. Patients with clinical features compatible with CC showed MC frequency similar to the other patients. The same results were observed in the sample that partially fulfilled the criteria of the International Headache Society.

**Importance of the conclusions:** Our results suggest the absence of correlation between nasal septum mucosal contact and headache.

## 4 - NEURORADIOLOGY

### PD.04.025

#### IN VIVO ASSESSMENT OF WHITE MATTER DAMAGE IN NEUROMYELITIS OPTICA PATIENTS: A DIFFUSION TENSOR AND DIFFUSION KURTOSIS MR IMAGING STUDY

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**Brief description of the purpose of the study:** To investigate the possibility that microstructural alterations are present in NAWM tracts, DTI and diffusion kurtosis imaging (DKI) techniques were applied and compared.

**Methods:** Thirteen patients with NMO and 13 controls underwent MRI, with both DTI and DKI sequences acquired. Parametric FA maps were derived from diffusion tensor (FADTI) and from diffusion kurtosis tensor (FADKI) values using b values of 0 and 1000 s/mm<sup>2</sup> and 0, 1000, and 2000 s/mm<sup>2</sup>, respectively. Mean FADTI and FADKI values were also calculated. A ROI analysis of the genu and splenium of

the corpus callosum, cerebral peduncle, and optic radiation were also performed.

**Main results:** Both the splenium of the corpus callosum and the left optic radiation of NMO patients were found to have significantly reduced FADTI values compared to controls (p < 0.05). The FADKI ROI values of NMO patients only demonstrated a positive trend. The other WM tracts analyzed did not display significant decrease in the FA values obtained for NMO patients versus controls for both the DTI and DKI techniques.

**Importance of the conclusions:** These data indicate that DKI could not be used to evaluate WM integrity in NMO patients. Furthermore, the results obtained with FADTI are consistent with the hypothesis that diffuse brain involvement characterizes NMO.

### PD.04.027

#### AREA POSTREMA LESIONS IN NEUROMYELITIS OPTICA PATIENTS

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**Brief description of the purpose of the study:** Objective: cerebral areas with high aquaporin-4 expression may be a target for neuromyelitis optica (NMO) lesions. Our objective is to describe the radiological aspect of area postrema (AP) lesions in NMO patients.

**Methods:** Materials and Methods: we included NMO patients that had brain magnetic resonance imaging (MRI) in our radiology department. Exclusion criteria were pediatric patients (<18 years) and exams considered inappropriate for analysis. Data were reviewed by two neuroradiologists for the presence or absence of lesion, aspect, topography and post-gadolinium enhancement. Clinical data were obtained by a review of medical records.

**Main results:** Results: 40 brain MR were obtained, in which 12 had medulla oblongata abnormalities. Of these, 10 had AP involvement (25%). Lesions had a linear configuration, predominantly involving central canal or pericanalicular regions, with or without extension to the cervical spinal cord. Post-gadolinium enhancement was observed in only 30% of lesions. Regarding clinical manifestation, 4 of these patients (40%) had, at the presentation or during clinical evolution, episodes of severe nausea/vomiting or hiccups, while the others presented with the classical relapsing NMO clinical picture.

**Importance of the conclusions:** Conclusion: knowledge of the radiological aspect of lesions in the AP and their clinical profile can contribute to the differential diagnosis in imaging.

### PD.04.057

#### ALZHEIMER'S DISEASE AND DIFFUSION TENSOR IMAGING: THE THEORY OF DISCONNECTION SYNDROME AND ABNORMALITIES IN ASSOCIATION BUNDLES.

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**Brief description of the purpose of the study:** Our study aims to use the technique of diffusion tensor imaging to as-

sess the integrity of association fibers in patients with mild Alzheimer's disease (AD).

**Methods:** 20 patients with mild AD and 25 healthy controls were recruited. The patients fulfilled NINCDS-ADRDA diagnostic criteria. Brain MRI was performed using a 1.5T scanner and diffusion sequences were made in 12 directions. The post-processing of the images was performed using the FSL platform and a novel registration approach to diffusion tensor imaging data, the TBSS.

**Main results:** The maps show a significant reduction (TCFC  $p < 0.05$  and VBT  $p < 0.01$ ) of the FA in the regions: the pillars of fornix, right corpus callosum, right major forceps, right fronto-occipital fasciculus, right inferior longitudinal fasciculus, right superior longitudinal fasciculus, major forceps and minor forceps.

**Importance of the conclusions:** The association fibers were injured. The extra-limbic projection fibers were spared. A disconnection syndrome may play a role in functional decline of these patients.

#### TL.04.001

##### IMAGING RELIABILITY FOR THE DIAGNOSIS OF PARKINSON'S DISEASE: ULTRASOUND AND DIFFUSION MRI

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**Brief description of the purpose of the study:** The diagnosis of Parkinson's disease (PD) relies on clinical signs and up to 10% of the times not confirmed at autopsy of substantia nigra may be a reliable marker of PD evaluate the reliability of fractional anisotropy and extend this finding to an important differential diagnosis - essential tremor. Besides compare its performance with transcranial ultrasound.

**Methods:** Our sample had 67 subjects consisting of 33 patients with idiopathic parkinson's disease, 12 patients with essential tremor and 22 healthy volunteers. The key data acquisition parameters and analysis were similar to Vaillancourt et al. The analysis was performed using region of interest (ROI) tool of DTI Studio. Mean FA was measured in the lateral portion of caudal and lateral SN by two senior radiologists.

**Main results:** Fractional anisotropy had a poor diagnostic performance for the diagnosis of PD by both raters. In addition no mean difference between groups were found. Substantia nigra echogenicity had a much better performance for the diagnosis of PD (sensitivity: 100 % and specificity 76 %).

**Importance of the conclusions:** We were not able to reproduce Vaillancourt findings in our sample. FA anisotropy measurements might be influenced by a series of factor such as motion, iron concentration, imaging processing, ROI drawing.

#### TL.04.003

##### DIFFUSION AND VOLUMETRIC ABNORMALITIES IN CORPUS CALLOSUM OF PATIENTS WITH REFRACTORY EPILEPSY ASSOCIATED WITH HIPPOCAMPAL SCLEROSIS.

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**Brief description of the purpose of the study:** Introduction : The corpus callosum ( CC ) connects homologous cortical areas of both hemispheres and has been implicated in the spread of seizure activity . The aim of this study is to detect abnormalities and volumetric diffusion in specific areas of the CC in patients with hippocampal sclerosis ( HS ) through the technique of diffusion tensor imaging and automatic segmentation , respectively.

**Methods:** Methods : 42 patients with refractory epilepsy by EH and 30 controls were studied . The MRI scans were acquired at 3T machine. The CC was segmented automatically co - registered to the maps derived from diffusion tensor and the results were then extracted.

**Main results:** Results: Compared to controls , the fractional anisotropy was lower in patients in the anterior , mid-posterior and posterior regions of the CC . The mean and radial diffusivity were increased in all segments , except in the central . No changes were observed in axial diffusivity . No differences between subgroups of patients were demonstrated . The CC of the patients had diffuse volume reduction .

**Importance of the conclusions:** Conclusions : The pattern of changes evidenced diffusion and volume appears to be the result of a structural abnormality .

#### TL.04.004

##### DISRUPTED INTER-HEMISPHERIC CONNECTIVITY IN EPILEPSY SECONDARY TO MALFORMATIONS CORTICAL DEVELOPMENT

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**Brief description of the purpose of the study:** Diffusion tensor imaging (DTI) is a magnetic resonance imaging technique that can provide insight into white matter (WM) architecture and microstructure. Our aim was to investigate DTI properties of the corpus callosum (CC) in epilepsy patients with malformations of cortical development (MCD).

**Methods:** Thirty-two MCD patients and 32 matched controls were evaluated with DTI at 3.0 Tesla. We analyzed the genu, body, and splenium of the CC with deterministic tractography and region of interest (ROI)-based analyses with ExploreDTI. Diffusion parameters included fractional anisotropy (FA), mean diffusivity (MD), parallel diffusivity ( $\lambda_{||}$ ) and perpendicular diffusivity ( $\lambda_{\perp}$ ). Partial correlations between diffusion changes and clinical parameters (epilepsy duration and age at disease onset) were also queried.

**Main results:** Multiple analyses of variance (MANOVA) demonstrated significant reductions of FA, accompanied by increases in MD and  $\lambda_{\perp}$  in all segments of the CC in the patients group with both analytical methods (Bonferroni adjusted p-values  $< 0.017$ ). There were no correlations between clinical parameters of epilepsy and FA values.

**Importance of the conclusions:** Our study indicates DTI abnormalities of all subdivisions of the CC, which suggests structural abnormalities of major WM tracts at a distance from the lesion in MCD patients.

#### TL.04.005

##### IS STRUCTURAL MAGNETIC RESONANCE IMAGING ABLE TO DEMONSTRATE MOTOR AND EXTRA-MOTOR IMPAIRMENT IN AMYOTROPHIC LATERAL SCLEROSIS?

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**Brief description of the purpose of the study:** The amyotrophic lateral sclerosis (ALS) is not always an isolated disease of the motor system, but often a multisystem disorder with many phenotypes. The extra-motor involvement may lead to the clinical and imaging features identical to fronto-temporal degeneration (FTD). We describe the clinical and structural magnetic resonance imaging (MRI) in a series of patients with ALS, emphasizing the ALS-FTD findings.

**Methods:** In order to study patients from a single institution, strict inclusion and exclusion criteria were established from January-2000 until December-2013 to analyze the prevalence of imaging findings related to ALS and ALS-FTD, in T2, PD, FLAIR and magnetization transfer T1 (T1-MTC) imaging. These findings were compared with the predominant clinical features.

**Main results:** 110 ALS patients were included, all of them with changes in MRI related to corticospinal tract (CST) degeneration. The diagnosis of ALS-FTD was confirmed in 11 patients (10.0%), which the presence of atrophy and subcortical gliosis in the temporal lobe were specific discriminatory findings.

**Importance of the conclusions:** Our results demonstrate that the association of ALS-FTD can be demonstrated through structural MRI by the involvement of the temporal lobe, which is thought to be a specific finding in this setting.

#### TL.04.008

##### CT AT STROKE PRESENTATION HAS A SIGNIFICANT CORRELATION WITH EARLY CLINICAL OUTCOME: A STROKE CENTER SERIES

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**Brief description of the purpose of the study:** We investigated the correlation of the initial Computed Tomography scans (CT) report of patients with acute ischemic stroke (AIS) and early clinical outcome.

**Methods:** Retrospective analysis of a 5-year Joint Commission International accredited stroke center. Inclusion criteria: confirmed diagnosis of AIS; carotid territory. The 50% percentile was used to divide the sample according to age. Multivariate analysis (multiple regression and MANCOVA) of the ASPECTS (Albert Stroke Program Early CT Score), modified Rankin Scale (mRS) at discharge and age were performed.

**Main results:** Included were 125 patients aged  $70.8 \pm 17.4$  years, 50% percentile corresponded to 74. Results: ASPECTS =  $8.5 \pm 2.3$ ; mRS =  $2.7 \pm 2.2$ . The ASPECTS scale was the highest impact factor in mRS at discharge ( $\beta = 0.44$ ,  $p < 0.01$ ), taking into account other variables. The correlation between ASPECTS and mRS was no different for those with 75 years or more ( $p = 0.2$ ).

**Importance of the conclusions:** This result shows the value

of structured analysis of admission CT in ischemic stroke: was the major independent factor - even more than age - to contribute to clinical outcome in a stroke center.

#### TL.04.010

##### INTRALUMINAL CLOT ANALYSIS TO PREDICT ETIOLOGICAL DIAGNOSIS OF ISCHAEMIC STROKE ?

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**Brief description of the purpose of the study:** The etiology of ischemic stroke predicts prognosis, recurrence risk and define strategies for secondary prevention. The sign of "hiperdense artery" to computed tomography (CT) denotes the presence of intraluminal thrombus. Studied the correlation between the attenuation coefficient and the size of the thrombus to the etiology of ischemic stroke.

**Methods:** Defined inclusion and exclusion criteria for the employment of specific study protocol for suspected hyperacute ischemic stroke (<6 hours) after approval from the Institutional Ethics Committee in Research (00581012.6.0000.5479). We analyze the attenuation and size of intraluminal thrombus in 55 patients with ischemic stroke and the presence of "hiperdense middle cerebral artery", correlating to the final etiologic classification (TOAST).

**Main results:** We studied 32 men (32 / 55-58%) with a mean age of 64.1 years and demonstrated a positive statistical correlation ( $p < 0.05$ ) among the greatest attenuation coefficients of thrombi and their cardioembolic origin or cervical arterial dissection. Thrombi originating from dissections showed larger, while smaller stem from large vessels.

**Importance of the conclusions:** The analysis of intraluminal thrombus may be useful in predicting the etiology of ischemic stroke, contributing to a better understanding of the pathogenesis of cerebral ischemia.

#### TL.04.011

##### PROGNOSTIC EVALUATION OF HYPERACUTE ISCHEMIC INFARCTS BY MULTIPARAMETRIC MDCT.

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**Brief description of the purpose of the study:** We evaluated the multiparametric multidetector computed tomography (MDCT) contribution to predict a middle cerebral artery (MCA) stroke progression to a malignant infarction.

**Methods:** Defined inclusion and exclusion criteria to submit a specific protocol for suspected hyperacute ischemic stroke (<6 hours) in the MCA territory, after approval from the Institutional Ethics Committee in Research (00581012.6.0000.5479). We analyzed multiparametric MDCT studies aiming the microcirculation and "proeminent anterior temporal artery (ATA) sign" prognostic correlations.

**Main results:** We included 45 patients (mean age 65.9 years (23-87 years)), and associated a lower incidence of malignant infarction in the presence of "proeminent ATA sign" (OR: 0.11, CI:0.03 - 0.4), and absence of malignant infarction in 88% of patients with this sign ( $p = 0.01$ ). 85.7% of patients with "proeminent ATA sign" presented ASPECTS  $\geq 7$ , while

in its absence only 14.3% of patients had ASPECTS > 7, through analysis of cerebral blood volume (CBV).

**Importance of the conclusions:** The analysis of the “prominent ATA sign” and microcirculation by MDCT allowed us to estimate the prognosis by predicting greater infarct size and the occurrence of malignant infarction in this series of patients with ischemic stroke.

#### TL.04.012

##### THE ROLE OF DYNAMIC SUSCEPTIBILITY CONTRAST-ENHANCED PERFUSION MR IMAGING IN DIFFERENTIATING BETWEEN INFECTIOUS AND NEOPLASTIC FOCAL BRAIN LESIONS

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**Brief description of the purpose of the study:** Differentiating between infectious and neoplastic focal brain lesions by conventional structural magnetic resonance imaging (MRI) is a challenge in routine practice. Brain perfusion-weighted MRI (PWI) may be employed providing data as the degree of angiogenesis of lesions. We aimed to employ dynamic susceptibility contrast-enhanced perfusion MR imaging (DSC-MRI) to differentiate between infectious and neoplastic brain lesions.

**Methods:** DSC-MRI perfusion studies of 100 consecutive patients with non-cortical neoplastic (n = 54) and infectious (n = 46) lesions were retrospectively assessed, using a 1.5-T scanner. The relative cerebral blood volume (rCBV) values were determined in the solid areas of lesions. Analyses were performed to determine the cutoff point of rCBV values.

**Main results:** Neoplastic lesions had higher rCBV values ( $4.28 \pm 2.11$ ) than infectious lesions ( $0.63 \pm 0.49$ ) ( $p < 0.001$ ). The rCBV value (1,3) was the parameter to define infectious lesions, sensitivity = 97.8%, specificity = 92.6%, positive predictive value = 91.8%, negative predictive value = 98.0%, and accuracy = 95.0%.

**Importance of the conclusions:** PWI is a useful complementary tool in distinguishing between infectious and neoplastic brain lesions.

## 5 - MUSCULOSKELETAL

#### PA.05.014

##### MR IMAGING FINDINGS OF PARACOCIDIOIDOMYCOSIS IN MUSCULOSKELETAL SYSTEM

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**Brief description of the purpose of the study:** To investigate Magnetic Resonance Imaging (MRI) findings in musculoskeletal (MSK) Paracoccidiodomycosis (PCM).

**Methods:** Medical records and MRI findings of patients with microbiologically and/or pathologically proven osteoarticular PCM were retrospectively reviewed. MRI abnormalities were evaluated in consensus by two experienced musculoskeletal radiologists.

**Main results:** We found 10 patients with a mean age of 29 years (10 – 55 years). MSK involvement was the only or the primary presentation of the disease in 7/10 patients. Osteomyelitis was the most common presentation (n=6). Our cases showed high signal intensity compared to muscle signal intensity in T1-weighted images. Primary arthritis was found in one patient. Isolated extra-articular soft tissue PCM was found in 3 patients, 2 cases of myositis and 1 case of subcutaneous involvement. The penumbra sign was present in 3 of 10 cases. T2-weighted images showed reactive soft tissue edema in 8/10 cases. Images obtained after Gd-DTPA showed peripheral (n =7) or heterogeneous (n=1) enhancement. Synovial enhancement was present in joint involvement (n= 6). **Importance of the conclusions:** MSK involvement may be the unique or primary presentation of PCM. Osteomyelitis was the most common presentation, often with secondary involvement of joint and or soft tissue.

#### PA.05.021

##### MUSCLE CHANGES QUANTIFIED BY T2 MAPPING AND INDICATORS OF MUSCLE DAMAGE AFTER EXERCISE.

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**Brief description of the purpose of the study:** Physical activity have been recommended for sedentary individuals and athletes to improve physical capabilities and health, but few studies which effectively analyze performance improvements, inflammatory profile related to physical exercise.

**Methods:** Investigate the inflammatory profile, performance parameters of acute and chronic effect session after training with the Pilates Method. Plasma and inflammatory status was assessed through analysis of blood plasma and muscle activation using magnetic resonance imaging of the quadriceps muscle for quantification of signal intensity T2 T2 mapping).

**Main results:** Blood plasma and applied multiecho, T2 weighted and STIR sequences were used before and after physical activity. Images generated in MRI 1.5T Excite HDXT 8 channels, GE Healthcare, HD coil BodyFull.

**Importance of the conclusions:** The analysis of the quantification of T2 mapping compared to serum analyzes of plasma applied to the muscle compartments were significant to evaluate performance muscle groups: proximal, medial and distal portions of the rectus femoris and vastus lateralis muscle and the proximal portion of the gluteus maximus the preconditions and immediately after physical intervention.

#### PD.05.007

##### T1P AND T2 MAPPING ON THE LUMBAR INTER-VERTEBRAL DISCS: COMPARISON OF DIFFERENT METHODS OF SEGMENTATION

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**Brief description of the purpose of the study:** To compare different segmentation methods used to extract T1 $\rho$  and T2 relaxation times of intervertebral discs from MRI. Seven

different methods of partial disc segmentations (PDS) were compared using the whole disc manual segmentation (WDS) as the reference standard.

**Methods:** Sagittal T1 $\rho$  and T2 maps generated using a multi-echo sequence on 1.5T MR in 57 asymptomatic volunteers with mean age 26.54 $\pm$ 5.0 years. In WDS the disc was segmented in its whole extent and in all slices. In PDS methods segmentation of the disc was performed in 6, 5, 4, 3 and 1 sagittal slices (respectively PDS-6, PDS-5A, PDS-5B, PDS-4, PDS-3, and PDS-1). Circular ROIs (CROI) positioned in the nucleus pulposus (NP) and annulus fibrosus (AF) were also used to extract T1 $\rho$  and T2 and data was compared to WDS.

**Main results:** Results from PDS-6 and PDS-5B were statistically similar to WDS. All the remaining PDS methods and CROI showed different results from WDS ( $p < 0.001$ ). All partial segmentation methods including CROI showed excellent linear correlation with WDS. CROI relaxation times from NP and AF showed linear correlation with WDS.

**Importance of the conclusions:** Our results suggest that PDS methods have excellent correlation with WDS, with no statistical difference with WDS in the case of methods PDS-6 and PDS-5B.

### TL.05.009

#### CAN WE DIAGNOSE DEVELOPMENTAL DYSPLASIA OF THE HIP BY MEASURING PUBOFEMORAL DISTANCE?

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**Brief description of the purpose of the study:** Objective: To evaluate the performance of pubofemoral distance (PFD) by ultrasonography (US) for diagnosing developmental dysplasia of the hip (DDH) using the classification of Graf as gold-standard.

**Methods:** Materials and Methods: This retrospective study included consecutive patients in a population at risk for DDH. The DPF was measured on coronal images (US) on neutral and with hip flexion. The DPF was measured blindly by two radiologists, with 1 and 7 years of experience in hip US. The hips were classified by GRAF modified by the senior radiologist and divided into dysplastic (DH) and non-dysplastic (ND). The intra and interobserver correlation was calculated using intraclass correlation coefficient (ICC).

**Main results:** Results: 213 hips were ND and 17 DH. PFD was not statistically different between groups ( $p < 0.01$ ). The mean PFD in flexion for ND was 3.31mm and for DH was 7.27mm. Using a cut-off of 4.6mm, the measurements performed in flexion, shown sensitivity and specificity for the diagnosis of DDH of respectively 94.4 (CI95% 92.1-96.6) and 89.0 (CI95% 86.8- 91.1). The ICC was almost perfect (0.88). There was no significant difference between the measurements in neutral and flexion.

**Importance of the conclusions:** Conclusion: DPF showed good accuracy for diagnosis of DDH regardless of the experience of the radiologist.

## 6 - PEDIATRICS

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### TL.06.001

#### PEDIATRIC BRAIN: APPARENT KURTOSIS COEFFICIENT (AKC).

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**Brief description of the purpose of the study:** Purpose Our aim was to evaluate the potential clinical role of Diffusion Kurtosis Imaging (DKI) in pediatric brain pathologies.

**Methods:** Methods DKI is an extension of conventional DWI that requires higher b-values. We acquire at 5 b-values ranging from 0 to 2500 s/mm<sup>2</sup>, with 500 steps. Fitting all b-values we discriminate Diffusion and Kurtosis parameters. The post-processing relies on DWI, ADC, AKC (Apparent Kurtosis Coefficient) maps. We examined 65 children (2 mths - 14yrs) with tumours (21), vascular (7), metabolic (9), cognitive defects (10) and controls (18).

**Main results:** Results DKI provides quantitative information about the deviation from Gaussian distribution in water diffusion processes, reflecting the heterogeneity of biologic tissue. It is more sensible to cellular compartments and membranes. Structural variations in normal and pathologic are analysed with AKC maps revealing additional information for tissue characterization and details about pathologic tissue changes and prognostic evaluation.

**Importance of the conclusions:** Conclusions DKI is a measure of the non-Gaussian nature of the diffusion displacement probability distribution, is closely associated with diffusional heterogeneity. Our results suggest that these maps provide a more detailed characterization of neural tissue in clinical context..

## 7 - BREST IMAGING

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### PA.07.001

#### MULTIPARAMETRIC EVALUATION OF BREAST LESIONS WITH PET-MRI: INITIAL RESULTS AND FUTURE PERSPECTIVES.

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**Brief description of the purpose of the study:** To evaluate the diagnostic accuracy of multiparametric evaluation of breast lesions combining information of Magnetic Resonance Imaging (MRI) and 18F-fluoro-deoxy-glucose (18F-FDG) PET-CT.

**Methods:** 31 patients with suspicion breast lesions on MRI performed 18F-FDG PET-CT in prone position, and MRI and PET images were fused (PET-MRI). A lesion was considered positive on multiparametric evaluation if at least one of the following was present: washout / type 3 curve on dynamic contrast evaluation (DCE); restricted diffusion with ADC value  $< 1.00 \times 10^{-3}$  mm<sup>2</sup>/s; or abnormal metabolism on 18F-FDG PET-CT.

**Main results:** 38 lesions were evaluated, with mean diameter of 31.1 mm (range 8-94 mm). On DCE, washout / type 3 curve was present in 15 mass lesions (46.9%). 26 lesions

showed restricted diffusion (68.4%). PET-CT showed increased metabolically activity on 30 lesions (78.9%), with a mean maximum SUV of  $4.8 \pm 4.1$  (range 1.1-15.0). Histological evaluation showed 29 (76.3%) malignant lesions and 9 (23.7%) benign lesions. Multiparametric evaluation provided 100% sensitivity and 89.5% accuracy, with 29 true-positives results, 5 true-negatives, 4 false-positives and no false-negative results.

**Importance of the conclusions:** Multiparametric evaluation with PET-MRI showed good diagnostic accuracy to differentiate benign from malignant breast lesions, reducing the number of unnecessary biopsies, without missing any diagnosis of cancer.

### TL.07.002

#### SENSITIVITY, SPECIFICITY AND RECALL RATES FOR AN ABRIDGED BREAST MRI PROTOCOL IN A PURE HIGH-RISK SCREENING POPULATION

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**Brief description of the purpose of the study:** To evaluate the sensitivity, specificity and recall rates for an abridged MRI protocol.

**Methods:** A retrospective review of 128 asymptomatic women. Initially were evaluated the precontrast T1, first post-contrast T1 and first subtraction T1 post-contrast images blinded to the history and prior films. Then they assessed the images given the above information and once more with the addition of the pre-contrast T2 images. The time to interpret the study and the confidence score was assessed for each study. Comparison was made to the original diagnostic interpretation.

**Main results:** Of 128 women, mean age was 48 years. Mean time for interpretation for readers was 50 secs (range 0.33 – 4.5 minutes). Both readers showed a significant increase in confidence ( $p < 0.001$ ) with the addition of prior films or T2 images. Increased background parenchymal enhancement ( $p = 0.03$ ) small lesion size ( $< 0.7$ cm) ( $p = 0.019$ ) and absence of high signal T2 correlate ( $p = 0.015$ ) were significantly correlated with increased evaluation time and decreased reader confidence.

**Importance of the conclusions:** An abridged breast MRI in a pure screening population had a high sensitivity but low specificity and high recall rates. The addition of T2 images and prior films helped decrease the recall rate.

### TL.07.003

#### UTILITY OF A QUANTITATIVE ANALYSIS OF CONTRAST ENHANCEMENT TO DISCRIMINATE BETWEEN BENIGN AND MALIGNANT ENTITIES USING A LINEAR PRINCIPAL COMPONENT ANALYSIS (PCA) METHOD

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**Brief description of the purpose of the study:** To determine if a quantitative analysis of the contrast enhancement from an indeterminate lesion and its background parenchyma (BP) improves the differentiation between benign and malignant lesions.

**Methods:** This IRB approved retrospective review was performed on 45 women who underwent an MRI guided biopsy between November 2011 and January 2013. The quantitative analysis of dynamic signal enhancement in the BP was per-

formed using a linear principal component analysis (PCA) method. The quantitative analysis for the lesion was calculated using the initial enhancement ratio (IER), and the delayed enhancement ratio (DER). IER and DER were measured for the lesion and BP. Correlation was made to the kinetic curve, mammographic breast density (BD) and background parenchymal enhancement (BPE).

**Main results:** Our cohort consisted of 45 women: 13 with invasive ductal carcinoma (IDC), 12 with ductal carcinoma in situ (DCIS) and 20 with benign lesions. The IER and DER for the lesion was able to discriminate between benign lesions and IDC ( $p$  value 0.017 and 0.039).

**Importance of the conclusions:** IDC had higher IER and DER values consistent with the rapid initial rise seen in malignant lesions. Higher BD but not BPE was seen in the patients with cancers compared to those with benign lesions.

## 8 - CHEST

### PA.08.012

#### DIAGNOSTIC VALUE OF THE CT HALO SIGN: COMPARISON BETWEEN IMMUNOCOMPROMISED AND IMMUNOCOMPETENT PATIENTS

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**Brief description of the purpose of the study:** The study aims to investigate whether there are differences in the incidence of diseases with halo sign (SH) between immunocompromised and immunocompetent patients.

**Methods:** An observational, retrospective cohort study was conducted. The study population consisted of 84 patients who underwent computed tomography of the chest, from January 2010 to October 2013, in which the HS has been observed. The final patient diagnosis was confirmed by serology, microbiology, histology or autopsy.

**Main results:** Among immunocompetent patients, 45.2 % were diagnosed with adenocarcinoma (24/53) and none had diagnosis of aspergillosis, while 77.4 % of immunocompromised patients had aspergillosis (24/31) and none had diagnosis of adenocarcinoma. Statistically significant difference was found in the incidence of diseases which manifest with HS between these two groups ( $p < 0.001$ ). Other diagnoses in immunocompetent patients were metastasis (24.5%), carcinoma of unspecified non-small cell (9.4%), squamous cell carcinoma (7.5%), tuberculosis (3.7%), staphylococcal pneumonia (1.8%), actinomycosis (1.8%), cryptococcosis (1.8%), neuroendocrine carcinoma (1.8%), and histiocytosis (1.8%). Other diagnoses found in immunocompromised patients were lymphoproliferative diseases (9.6%), metastasis (6.4%) and plasmacytoma (6.4%).

**Importance of the conclusions:** The HS can aid in the differential diagnosis of lung diseases if the immune status of patients is taken into account.

### PA.08.023

#### USE OF ANGIOGRAPHY TOMOGRAPHY IN THE DIAGNOSIS OF PULMONARY EMBOLISM THROMBUS

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**Brief description of the purpose of the study:** The thrombus pulmonary embolism (PE) is the obstruction of the pulmonary arterial circulation with reduction or cessation of blood flow being a direct cause of death. Correlate the side lobe and damaged with age and sex of patients.

**Methods:** We analyzed CT angiography examinations in 40 (H: 20, M: 20) positive patients undergoing TEP protocol, from May to December 2013 in two hospitals in the city of São Paulo.

**Main results:** In female patients (24-80 years, mean  $50.23 \pm 18.08$ ). TEP presented in 49% of cases on the right, 16% left and 35% bilateral. The most affected lobe was lower (49%). In males (72-31 years, mean  $46.80 \pm 11.79$ ) presented in 11% of cases on the right, 8.5% left and 80.5% bilateral. The most affected was the lower lobe (57%). In relation to age, with over 40 years (M: 55%) with 25.5% of the cases right, 10.5% left and 64% bilateral. The most affected was the lower lobe (51%) and those less than 40 (M: 61.5%). Had a thrombus in 38.5% right, 15.5% left and 46% bilateral. The most affected was the lower lobe (54%).

**Importance of the conclusions:** The most affected was the lower lobe regardless of age and sex. Have bilateralism was statistically significant ( $p < 0.05$ ) for male patients over 40 years.

#### TL.08.001

##### CT QUANTITATIVE EVALUATION OF PULMONARY EMPHYSEMA ON COPD PATIENTS: EFFECT OF DENSITY CORRECTION BASED ON TRACHEAL AIR.

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**Brief description of the purpose of the study:** Objectives: To determine if density correction based on tracheal air improves emphysema quantification by computed tomography (CT) in patients with chronic obstructive pulmonary disease (COPD).

**Methods:** Materials and methods: CT scans of 22 COPD patients (Tiffeneau index  $< 0.7$ , 17 women, mean age 64 years) and 25 non-COPD individuals (20 women, mean age 52 years) were retrospectively evaluated. Emphysema quantification was done using a fully automatic software (Yacta v2.0) with a default threshold of -950HU and after density correction for tracheal air. Measurements were compared between groups and correlated with pulmonary function test (PFTs) results.

**Main results:** Results: Emphysema volume and index were higher in the COPD group (285ml and 5.1%) when compared to non-COPD (21ml and 0.5%;  $p < 0.05$ ) and correlated with PFTs, especially with the predicted forced expiratory volume in first second (FEV1%) ( $r = -0.668$  and  $-0.695$ ). After density correction, emphysema measurements changed (mean 5.3% increase in index), were also higher in the COPD group (COPD: 658ml and 12.1%; non-COPD: 209ml and 4.3%;  $p < 0.05$ ) but showed similar correlation with PFTs.

**Importance of the conclusions:** Conclusions: Density correction based on tracheal air increased emphysema detection in the studied population, but correlation with PFTs was similar to obtained using default threshold (-950HU).

#### TL.08.003

##### QUANTITATIVE CT EVALUATION OF THE AIRWAYS IN PATIENTS WITH CYSTIC FIBROSIS.

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**Brief description of the purpose of the study:** Objectives: To correlate airway measurements obtained in computed tomography (CT) images analyzed with a fully automatic software, with airflow parameters in Cystic Fibrosis (CF) patients.

**Methods:** Materials and methods: CT scans of 25 patients (14 male, 12 patients  $> 18$  years) with CF were retrospectively analyzed and results correlated with pulmonary function tests. Patients were divided in two groups: mild/moderate (predicted forced expiratory volume in first second-FEV1%  $> 50\%$ ) and severe airflow impairment (FEV1%  $< 50\%$ ).

**Main results:** Results: Tracheobronchial tree was automatically segmented in all patients. A mean of 45 bronchi were analyzed per patient, with mean values: maximum wall attenuation (MA) = -335HU, total diameter (TD) = 7.25mm, wall thickness (WT) = 1.21mm and wall percentage (WP) = 55%. Airway CT measurements between groups were not statistically different, but correlation with function (especially MA and WP with FEV1) was more significant ( $p < 0.05$ ) in patients with mild/moderate disease.

**Importance of the conclusions:** Conclusions: The automatic method succeeded to evaluate a significant number of bronchi in all CF patients, obtaining airway diameters and wall thickness. CT measurements correlated better with airflow impairment in patients with mild/moderate disease, which may indicate that in patients with severe disease, other parameters, like parenchymal changes (atelectasis, emphysema), can also be clinically important.

#### TL.08.004

##### MULTIDETECTOR COMPUTED TOMOGRAPHY ASSESSMENT VS. CLINICAL ASSESSMENT IN THE DIAGNOSIS OF PULMONARY THROMBOEMBOLISM

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**Brief description of the purpose of the study:** Purpose. Determine whether there is correlation between pre-test probability evaluated by three clinical Scores (Wells, Geneva and Revised Geneva) and the findings of Multidetector Computed Tomography (MDCT) in patients with clinically suspected pulmonary thromboembolism (PTE).

**Methods:** Method and Materials. We included retrospectively 43 patients with clinical suspicion of PTE who underwent MDCT. We calculated the pre-test probability of PTE in each patient using the Scores of Wells, Geneva and Revised Geneva. ROC curves were constructed to evaluate the discriminative ability of PTE scores.

**Main results:** Results. 69.8% of patients were women. The mean age was  $61.4 \pm 17.3$  years. Patients at high risk according to Wells Score: 19 - positive PTE at MDCT: 9. Patients

with low risk or moderate: 24 - positive PTE at MDCT: 15. Patients at high risk according to the Geneva Score: 10 - positive PTE at MDCT: 7. Patients with low risk or moderate: 33 - positive PTE at MDCT: 17. Patients at high risk as Revised Geneva Score: 11 - positive PTE at MDCT: 6. Patients with low risk or moderate: 32 - positive PTE at MDCT: 18. Area under the ROC curve: Wells: 56% (95% CI: 40-71%), Geneva: 54% (95% CI: 38-69%), Revised Geneva: 56% (95% CI: 40-71%).

**Importance of the conclusions:** Conclusion. The pre-test probability of PTE evaluated by clinical variables included in risk scores did not correlate with MDCT findings of PTE. In our study, the low sensitivity of risk scores led us to consider the need to confirm the suspicion by the MDCT.

## 9 - CARDIOVASCULAR

### TL.09.001

#### STRATIFICATION OF ACUTE CHEST PAIN IN THE EMERGENCY ROOM BY CORONARY COMPUTED TOMOGRAPHY ANGIOGRAPHY : EXPERIENCE OF REAL LIFE

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**Brief description of the purpose of the study:** The objective was evaluate the diagnostic accuracy and safe of Coronary Computed Tomography Angiography (CCTA) in stratification of acute chest pain.

**Methods:** A cohort study, involving patients in the emergency room with acute chest pain, during April to October 2013, underwent CCTA 64 slices.

**Main results:** A total of 55 patients with a mean age of 55±11.4 years old were enrolled in the study. 45.6% presented with typical chest pain. The TIMI score ranged from 0 to 4. Calcium scoring average was 86.23±219.42. 29 patients had normal CCTA, 20 with stenosis <50% and 6 with stenosis >50%. Patients with stenosis >50% , 5 underwent coronary revascularization. Considering significant coronary disease (stenosis >50%), the CCTA showed sensitivity 100%, specificity 98%, positive likelihood ratio 50, and negative likelihood ratio of zero. The positive predictive value was 83.3% and negative predictive value of 100%. Of the patients who were discharged with normal CCTA, there was no hard cardiac events or the need for further exams during 30 days.

**Importance of the conclusions:** The Coronary Computed Tomography Angiography in the setting of acute chest pain in the emergency room was a safe method with good diagnostic accuracy.

### TL.09.004

#### TO EVALUATE THE DIAGNOSTIC ABILITY OF COMPUTED TOMOGRAPHY (CT) IN DETECTING SIGNIFICANT PERFUSION DEFECTS IDENTIFIED BY MYOCARDIAL SCINTIGRAPHY (SPECT).

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**Brief description of the purpose of the study:** To evaluate the diagnostic ability of computed tomography (CT) in detecting significant perfusion defects identified by myocardial scintigraphy (SPECT).

**Methods:** This prospective study was approved by the ethics committee including all patients who complied with the inclusion and exclusion criteria and signed the informed consent term above this protocol. The injection of 99mTc-sestamibi during dipyridamole stress was performed in the CT room 40 ± 25 seconds before the acquisition of myocardial perfusion by CT. Multivariate logistic regression analysis was performed and the criterion for significance was P <0.05.

**Main results:** Mean age was 57 ± 10.4 years, 64% were women. CT identified 92% of territories with perfusion defects detected by SPECT in segmental analysis (p <0.001) and 100% of patients with perfusion defect analysis per patient (p <0.001). Anatomical assessment of CT angiography added in differentiating perfusion defects by significant stenosis (> 70%) of those related to the myocardial bridge. Segmental perfusion defects (8%) not detect by CT may be related to microcirculation or SPECT false positive results.

**Importance of the conclusions:** CT has good ability in detecting perfusion defects identified by SPECT, and can also provide important information about coronary anatomy.

### TL.09.010

#### COMPARAÇÃO DA DOSE DE RADIAÇÃO EFETIVA ESTIMADA NAS ANGIOTOMOGRAFIAS DE CORONÁRIAS DE PACIENTES REVASCULARIZADOS REALIZADAS EM TOMÓGRAFOS DE 64 E 320 FILEIRAS DE DETECTORES, COM E SEM A UTILIZAÇÃO DA TÉCNICA DE RECONSTRUÇÃO ITERATIVA (AIDR-3D).

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**Brief description of the purpose of the study:** Comparação da dose de radiação efetiva estimada (DREE) nas angiogramas computadorizadas de coronárias de pacientes pós-revascularização miocárdica (AngioTC) realizadas em tomógrafos de 64 (64-CT) e 320 fileiras de detectores (320-CT), com destaque para o papel da reconstrução iterativa (AIDR-3D) no 320-CT.

**Methods:** Foram selecionadas através de RIS/PACS as AngioTC de pacientes pós-revascularização miocárdica realizadas entre Janeiro e Dezembro de 2012. Obtivemos 180 pacientes, sendo 164 homens, com idade média de 69 anos. Foram divididos em: Grupo 1 (64-CT); Grupo 2 (320-CT sem AIDR-3D); Grupo 3 (320-CT com AIDR-3D). A qualidade da imagem dos 3 grupos foi avaliada quantitativamente, através da relação sinal/ruído, e subjetivamente, pela classificação visual por escala de 4 níveis.

**Main results:** A DREE foi mais baixa no grupo 3 (mediana da DREE (mSv): Grupo 1 – 27,6; Grupo 2 – 11,2; Grupo 3 – 9,9), com redução de 63% da DREE entre os grupos 1 e 3 (p < 0,001), e de 12% entre os grupos 2 e 3 (p < 0,05). Não houve diferença significativa da qualidade da imagem entre os grupos 2 e 3.

**Importance of the conclusions:** A técnica de reconstrução iterativa de AngioTC no 320-CT permite redução significativa da DREE nos exames realizados em pacientes pós-revascularização miocárdica, sem prejuízo da qualidade da imagem.

### TL.09.011

#### DIPYRIDAMOLE STRESS CARDIAC COMPUTED TOMOGRAPHY: FUNCTIONAL AND VOLUMETRIC CHANGES ON THE LEFT CHAMBERS OF PATIENTS WITH ELEVATED RISK OF CORONARY DISEASE.

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**Brief description of the purpose of the study:** To evaluate functional and volumetric dipyridamole-induced changes on the left heart chambers of patients with moderate to high risk of coronary disease using cardiac computed tomography (CT)

**Methods:** Cross-sectional study, which included every patient that was scanned using a 64 channel CT with dipyridamole stress between July and December of 2013. We correlated the diameters, volumes and ejection fractions (EF) of the left atrium (LA) and left ventricle (LV) in ischemic and non-ischemic patients. Statistical analysis was performed using t-test. P-values < 0.05 were considered significant.

**Main results:** On the ischemic group, the average LVEF at rest and under stress were  $56\% \pm 12\%$  and  $62\% \pm 12\%$ , respectively ( $p=0.05$ ). On the non-ischemic group, the mean LVEF (rest and stress) were, respectively,  $53\% \pm 18\%$  and  $61\% \pm 8\%$  ( $p=0.16$ ). The mean LAEF (rest and stress) on the ischemic group was  $39\% \pm 13\%$  at rest and  $43\% \pm 15\%$  under stress ( $p=0.04$ ). On the ischemic group the mean LAEF were respectively  $47\% \pm 5\%$  and  $53\% \pm 7\%$  at rest and under stress.

**Importance of the conclusions:** Functional and volumetric dipyridamole-induced changes of the heart evaluated by cardiac CT could be an important risk predictor. Specially when the LA is included in the analysis.

### TL.09.013

#### CARDIO TOXICITY EFFECTS OF MODERATE DOSE OF DOXORUBICIN ACCESSED BY CARDIAC MAGNETIC RESONANCE

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**Brief description of the purpose of the study:** Evaluate the effects of moderate dosage of doxorubicin (DOX) by Cardiac Magnetic Resonance (CMR), including left ventricular function (LVEF) and fibrosis assessment.

**Methods:** Twenty-seven women with stage I-II breast cancer, no heart disease, scheduled to receive DOX (60mg/m<sup>2</sup>), were prospectively enrolled in the study. The study-protocol included: CMR, echocardiogram and biomarkers (baseline and 40-days after DOX).

**Main results:** LVEF by CMR was significantly lower at 40 days ( $68.9 \pm 3.7\%$  vs.  $60.5 \pm 5.6\%$ ,  $p < 0.001$ ). LV mass by CMR showed a significant reduction in following study ( $89.3 \pm 9.7$ g vs.  $75.6 \pm 9.6$ g,  $p < 0.001$ ) None of the patients had delayed enhancement by CMR. LVEF assessed by echocardiography (Simpson) did not differ between baseline and 40-days after DOX ( $68.3 \pm 4.8\%$  vs.  $67.9 \pm 8.3\%$ ,  $p = NS$ ). The US-troponin was significantly higher after DOX ( $4.2 \pm 1.2$ ng/L vs.  $19.6 \pm 9$ ng/L,  $p < 0.001$ ).

**Importance of the conclusions:** CMR can detect morphological and functional effects associated with moderate doses of DOX in the heart. Despite the biomarkers confirmed myocardial injury, delayed enhancement by CMR did not detect fibrosis in the myocardium. Monitoring of LVEF and left ventricle mass may be useful in patients treated with DOX.

### TL.09.016

#### NON-ECG-GATED CHEST COMPUTED TOMOGRAPHY CORRELATES WITH ECG-GATED CALCIUM SCORE TECHNIQUE: CHEST RADIOLOGISTS SHOULD START REPORT CALCIUM CORONARY BURDEN

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**Brief description of the purpose of the study:** To evaluate the calcium score (CS) by non-ECG-gated chest computed tomography (CT), using ECG-gated CS technique as the reference standard.

**Methods:** Calcium score were determined in both, ECG and non-ECG gated computed tomography. Mean, standard deviation and standard error was reported. Paired Student's t-test and linear regression analysis were used to determine significant differences between ECG and non-ECG gated values, and also the relationship between two methods. In a subanalyses coronary calcium level was treated as the log of calcium score plus 1 to better show the differences in the very small quantified data.

**Main results:** A total of 133 coronary segments were analyzed from 35 participants (60±10 years). Mean CS from non-ECG gated CT was  $117.80 \pm 312$  ( $SE=34.9$ ) and  $118.4 \pm 314$  ( $SE=35.1$ ) from ECG-gated CT with no significant differences ( $p=0.88$ ). There was excellent correlation between both methods ( $R^2=0.983$ ,  $p < 0.0001$ ). Just in one segment (1,2%), at the right coronary artery the ECG-gated technique quantified as 1 a little small calcium nodule that non-ECG-gated technique was negative.

**Importance of the conclusions:** Calcium score using ECG and non-ECG gated CT have excellent correlation and do not show statistically different results. The use of routinely Chest CT to report calcium score should be encouraged.

### TL.09.017

#### ASSOCIATION BETWEEN PERICARDIAL FAT AND MYOCARDIAL FIBROSIS IN HEART MRI IN PATIENTS WITH MYOCARDIAL INFARCTION - A PILOT STUDY

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**Brief description of the purpose of the study:** BACKGROUND: The pericardial fat (EAT) has been related to atherosclerosis and major anthropometric and metabolic predictors of cardiovascular risk.

**Methods:** OBJECTIVE: To quantitatively evaluate the association between pericardial fat and myocardial fibrosis (MF) in patients with myocardial infarction. METHODS: Cross-sectional study. Patients who underwent cardiac MRI

for assessment of myocardial viability. Pericardial fat and late gadolinium enhancement areas were manually traced, multiplied by slice thickness and tissues density. Patients were divided into with <3 viable segments (G1) and with  $\geq 3$  (G2);  $p < 0.05$ .

**Main results:** RESULTS: Selected 56 patients, 83.9 % (n = 47) male; mean age was  $57.7 \pm 9.7$  years old; EAT mass was  $79.83 \pm 41.87$  g; diastolic diameter, systolic diameter and ejection fraction  $66.3 \pm 10.6$ mm;  $54.9 \pm 14.0$ mm;  $28.7 \pm 11.5$ %; MF mass  $39.28 \pm 4.68$  g. There was no correlation between pericardial fat mass and MF mass ( $r = 0.013$ ,  $p = 0.925$ ). The amount of fat was higher in G2, but there was no statistically significant difference between those groups ( $p = 0.145$ ).

**Importance of the conclusions:** CONCLUSION: There was no association of EAT with infarction burden. A larger sample might bring statistical power to point out a suitable response.

## 10 - INTERVENTIONAL

### PA.10.032

#### COMPUTED TOMOGRAPHY (CT) GUIDED CORE BIOPSIES OF SUSPICIOUS LESIONS IN THE DEEP SPACES OF THE HEAD AND NECK: NEW PERSPECTIVES AND ADVANCES.

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**Brief description of the purpose of the study:** Evaluate the safety and efficacy of CT guided core biopsies in the diagnosis of suspected lesions in the deep spaces of the head and neck.

**Methods:** We retrospectively analyzed data from 26 patients who underwent 29 CT-guided core biopsies of suspicious lesions in the deep spaces of the head and neck, from march 2012 to August 2013, in a reference cancer center.

**Main results:** We reviewed data from 18 men and 8 women, between 14 and 79 years old. The majority (85 %) had received prior cancer treatment. The biopsies were performed under conscious sedation, with technical success in 100 % of cases. The gauge needle 18 was the most used in 27 of the 29 procedures. There were two complications related to the procedure, a temporary paralysis of the facial nerve and other persistent pain at the puncture site, responsive only to opioids. Both were considered minor complications.

**Importance of the conclusions:** Our recent series of CT-guided core biopsies of suspicious lesions in the deep spaces of the head and neck is consistent with data reported in the literature in terms of safety and efficacy, representing a great alternative to traditional surgical techniques.

### PD.10.010

#### CT-GUIDED NEEDLE BIOPSY OF PULMONARY NODULES SMALLER THAN 13 MM

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**Brief description of the purpose of the study:** The in-

creased number of incidental and very small pulmonary nodules (PN) detected by CT has created a new scenario for its transthoracic approach by interventional radiology. Our purpose is to emphasize educational points regarding CT-guided needle biopsy of pulmonary nodules <13mm based on our institutional experience and review of literature.

**Methods:** All CT-guided biopsies of PN <13mm performed in our interventional radiology department from 2010 to 2013 were reviewed in order to identify factors that could have influenced its feasibility and diagnostic accuracy. We assessed direct and indirectly issues related to the procedures, including clinical status of the patient, use of general anesthesia, size and localization of the nodule, type and caliber of the needle, number of tissue samples obtained and presence of "in loco" pathologists to perform their prompt evaluation. The complication rates of the procedures and all the pathology analysis results were obtained from medical records.

**Main results:** CT-guided needle biopsies provided conclusive diagnosis for 12/15 cases (80%). Pneumothorax drainage was performed in only one case.

**Importance of the conclusions:** Transthoracic CT-guided needle biopsy has become widely accepted as a safe and accurate method for establishing the diagnosis of pulmonary lesions. Although small lesions may offer higher technical difficulty, the procedure is feasible and yields very good results rates.

### TL.10.001

#### THE ROLE OF PERCUTANEOUS BIOPSY GUIDED BY ULTRASOUND AND / OR CT -FLUOR ON THE DIAGNOSIS OF PANCREATIC TUMOUR

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**Brief description of the purpose of the study:** We believe in the benefit of percutaneous histological biopsy technique, with core needle biopsy (CNB), guided by ultrasound (US) and / or computed tomography with fluoroscopy (CTF), compared to the technical fine needle guided by endoscopic ultrasonography (EUS-FNA).

**Methods:** After approval of the ethics committee, we conducted a multi-institutional retrospective analysis of electronic medical records of 43 patients who underwent CNB percutaneous biopsy guided by US and/or CTF performed over the past 4 years.

**Main results:** We obtained conclusive results in 38 cases (88%), using the percutaneous CNB guided by US/CTF. Of these, 8 patients had previous inconclusive diagnosis using the EUS-FNA.

**Importance of the conclusions:** In 88% of cases we were able to make the diagnosis using percutaneous technique. Of these, six patients had previously inconclusive diagnosis using EUS-FNA technique. Was only reported one case of minor complication and no major complications. Inconclusive diagnosis was found in only 8 patients, and in 6 of those (75%), had equally inconclusive results with the EUS-FNA technique, at least twice. Therefore, in cases of pancreatic masses, the percutaneous CNB technique guided by US e/or CTF should be considered as a major tool for the diagnosis, or even an alternative to inconclusive diagnosis using EUS-FNA, to be a safe and effective method.

## TL.10.003

### IMAGE-GUIDED RADIOFREQUENCY ABLATION OF BOSNIAK CATEGORY III OR IV CYSTIC RENAL LESIONS: MID-TERM FOLLOW-UP

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**Brief description of the purpose of the study:** With the increasing use of imaging studies, the incidental detection of renal lesions has become common, and among them, some cystic lesions may have malignant potential (Bosniak III and IV). The image-guided percutaneous procedures, such as radiofrequency ablation, are an option for minimally invasive treatment of renal cell tumors. However, the oncologic control of cystic tumors has not yet been well defined. Purpose: To evaluate the oncologic control of Bosniak III and IV renal cysts treated with computed tomography-guided radiofrequency ablation (RFA-CT).

**Methods:** Methodology: Retrospective study of renal cysts treated with RFA-CT. We analyzed the characteristics of the patients and lesions, acute and late complications, and the rate of recurrence in follow-up CT or MRI.

**Main results:** Results: Between 2007 and 2013, 10 renal lesions were treated in 9 patients. There was no acute or late complications. The mean follow-up period was 18 months, and there was no radiology recurrence.

**Importance of the conclusions:** Conclusions: RFA-CT appears to be an effective treatment for Bosniak category III or IV cystic renal tumors, with preliminary results and mid-term follow-up suggesting a local tumor control, associated with a low rate of complications and favorable outcomes.

## TL.10.006

### INTERVENTIONAL RADIOLOGY AND PERSONALIZED ONCOLOGY

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**Brief description of the purpose of the study:** Describe how interventional radiology contributes personalized oncology in a private hospital.

**Methods:** Retrospective study of 37 patients who underwent biopsy of the tumor, by the interventional radiology XX hospital staff, with request of tumor genomic analysis. The samples, after analysis of the pathology department, were sent to Foundation Medicine to the test Foundation One (research test that oncogenic genomic abnormalities in 248 genes involved in oncogenesis and / or diagnostic or prognostic role in cancer).

**Main results:** Until January 15th 2013, 23 reports were released. Only 1/23 showed no genomic alteration. 17/23 (74%) cases showed molecular abnormalities for which there is an FDA-approved targeted therapies.

**Importance of the conclusions:** The image-guided biopsy by interventional radiology plays an important role in enabling personalized medicine. The rapid development of new targeted therapies is dependent on the availability of tumor samples for diagnosis and identification of genes that play a diagnostic, prognostic or therapeutic role definition.

## 11 - ULTRASOUND

### TL.11.001

#### BLUE RUBBER BLEB NEVUS SYNDROME (BRBNS) SONOGRAPHIC FINDINGS AND TREATMENT WITH ETHANOL ESCLEROTHERAPY (EE) WITH ULTRASOUND GUIDANCE

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**Brief description of the purpose of the study:** To show the venous malformations diagnosis in two cases of BRBNS utilizing Ultrasound (US) Doppler and the treatment with Ethanol Percutaneous Sclerotherapy (EPS)

**Methods:** A 2-year-old male and a 4-year-old female, clinically diagnosed with BRBNS, were studied. Both presented large soft-tissue masses in the posterior chest wall and multiple blue nipples on the skin since birth. US-Doppler techniques and high-frequency linear transducers (5-12Mhz) were used . The treatment was EPS US-Doppler guidance - total volume 1ml/kg per session. Multiple sessions were necessary. Case 1: (2013) 4 sessions with 2 months gap between sessions. Case 2: (2009-2013) 22 sessions with 2 months gap between sessions.

**Main results:** In the first case, a 2-year-old male, US-Doppler sonogram showed a well-defined hypoechoic septate mass with low-flow, thrombi and phleboliths within the cystic regions, representing subcutaneous venous malformation. In the other case, a 4-year-old female the lesion was similar but located in the paravertebral muscles. In both cases, the sessions of EPS US-Doppler guidance gradually reduced the volume of the lesion, improved the cosmetic aspect and controlled the symptoms.

**Importance of the conclusions:** EPS US-Doppler guidance was a successful technique for the treatment of the venous malformations present in BRBNS because it led to the gradual cure of the lesions.

### TL.11.002

#### ADVANCES IN THE DIAGNOSIS AND TREATMENT OF INTRAMUSCULAR VENOUS MALFORMATIONS

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**Brief description of the purpose of the study:** The Intramuscular Venous Malformations (IMVM) are often treated with Percutaneous Sclerotherapy (PS) using Ethanol or Polidocanol foam 1-3% which not always have effective results in some patients. Our objective is to report the efficiency of the arteriovenous fistula (AVFs) diagnosis utilizing Ultrasound (US) Doppler and evaluate the results of AVFs embolization to relieve the pain.

**Methods:** From June 2010 to September 2013, 68 patients (50 female and 18 male from ages 4 to 60) with IMVM diagnosis. A detailed US-Doppler approach identified anomalous arterial branches and AVFs, characterized by color mosaic, turbulence and high flow velocity on the spot where the patient reported pain. These patients were underwent an Angiography with 96 Selective Embolization (SE) of AVFs with glue combined to Lipiodol ®.

**Main results:** Lesions localizations : lower limbs (52), upper limbs (14), abdomen and flank (3) and thorax (1). AVFs were detected by US-Doppler in all cases in the exact spot of the referred pain and confirmed by angiography. Pain after treatment: decreased (69%), disappeared (23%), persisted (8%).

**Importance of the conclusions:** US-Doppler was effective in the AVFs identification. The SE of AVFs with glue had good results in the control of pain contributing to a significant improvement in the life quality of the patients.

### TL.11.003

#### KLIPPEL-TRENAUNAY-WEBER SYNDROME: STUDY OF 113 CASES

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**Brief description of the purpose of the study:** Klippel-Trenaunay-Weber Syndrome (KTWS) is characterized by the presence of vascular malformations, including arteriovenous fistulas (AVFs), which although described in the literature, are not habitually identified. Our objective is to report the efficiency of the AVFs diagnosis utilizing an Ultrasound (US) Doppler exam protocol.

**Methods:** Between June 2009 and November 2013, 113 patients (ages ranging from 5 months to 48 years, 62% women) were examined. Anomalous arterial branches (AAB) and AVFs were identified in the region in which the patients reported pain. The AAB are tortuous and form angles of approximately 90 degrees with the trunk branch, extending from the muscle to the fat and presenting low resistance flow (spectral biphasic pattern). AVFs can be found along the path of the AAB.

**Main results:** Main sonographic findings: AAB were identified in 95% of the patients and AVFs were found in 82%, confirmed by angiography in 100% of the treated patients (19). Deep venous malformations (50%); embryonic lateral marginal vein (35%); lymphatic cysts (19%);thrombosis (15%) and venous aneurysms (14%).

**Importance of the conclusions:** AVFs are frequent findings in KTWS, and US-Doppler contributed significantly to their localization. The systematization employed optimized the duration of the exam and facilitated morphologic and hemodynamic diagnosis of vascular malformations, essential for therapeutic planning.

### TL.11.004

#### APPLIED RESEARCH OF THE ULTRASOUND / FLUORESCENT DUAL-MODALITY CONTRAST AGENT FOR SENTINEL LYMPH NODE IMAGING

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**Brief description of the purpose of the report:**To evaluate the sentinel lymph node (SLN) positioning and qualitative capabilities of the lymph node targeted ultrasound / fluorescence dual-modality imaging contrast agents by animal tumor model.

**Method and Materials:**Rabbit with VX2 tumor were subcutaneous injected with dual-function contrast agent around the tumor, and tested by CEUS and NIR imaging. Ultrasound contrast agents were injected through rabbit ear vein to detect lymph nodes sonovue blood pool. After then, all the sentinel

lymph node was removed for pathological examination by blue dye anatomy.

**Results:**The experimental anatomy received a total of 41 lymphoid tissues, 38 tissues confirmed to be lymph nodes by pathology. 36 lymph nodes were detected by reactive blue dye. 30 lymph nodes were detected positively by the lymphoscintigraphy imaging ultrasound, and 36 lymph nodes were detected positively by NIR imaging. The detection rates were 94.7%, 78.9% and 94.7%, respectively. Compared to the pathological examination, which was recognized as the gold standard, the sensitivity of the three methods mentioned above were: 86.8%, 73.7% and 92.1%, respectively. The results of two-dimensional ultrasound in detecting benign/malignant SLN were: sensitivity was 60%, specificity was 74.2%, false negative rate was 40%, false positive rate was 25.8%, and the receiver operating characteristic area under the curve was 0.671. However, the results of CEUS in detecting benign/malignant SLN were: sensitivity was 80%, specificity was 87.1%, false negative rate was 20%, false positive rate was 12.9%, and the receiver operating characteristic area under the curve was 0.835.

**Conclusion:**Due to the complementarity of the two imaging methods, bifunctional contrast agents significantly improves the sensitivity in detecting the SLN. The veins and blood pool double contrast examination, using the lymph node targeted ultrasound contrast agent, also shows a potential to distinguish benign or malignant lymph node.

### TL.11.005

#### TIRADS - CLASSIFICATION AND STRATIFICATION OF RISK IN THYROID NODULES. 944 NODULES EXPERIENCE

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**Brief description of the purpose of the study:** Thyroid nodules are common sonographic findings . In order to standardize the sonographic features of the nodules that could predict the risk of malignancy TIRADS was developed, similar to BIRADS classification for breast lesions , it has the audacious goal of assisting in the conduct of the case and in the decision of which nodes could be monitored and which should be biopsied.

**Methods:** From November 2011 to November 2013, TIRADS of thyroid nodules were assessed and related to the results of fine needle biopsies.

**Main results:** We evaluated 814 patients and 944 nodules. We excluded 84 nodules due to biopsies with insufficient or indeterminate material. Among 860 nodules selected , there was 1 case of malignancy among 120 TIRADS 2 ( 0.8 % ) , 08 ( 1.9 % ) among 424 TIRADS 3, 34 ( 16.3%) among 209 TIRADS 4A, 32 ( 48.5 % ) among 66 TIRADS 4B, 15 ( 83.3 % ) among 18 TIRADS 4C and 22 ( 95.7 % ) among 23 TIRADS 5. The results were evaluated according to Chi-square test, considering a significance level of 5 % tests .

**Importance of the conclusions:** The sample evaluated is large enough and the results of cytologic evaluation show that the model is suitable for the evaluation of thyroid nodule .

## 14 - NUCLEAR MEDICINE

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### TL.14.003

#### ANALYSIS OF THE ASSOCIATION BETWEEN CLINICAL FACTORS AND RESULTS OF A FUNCTIONAL TEST WITH TRANSIENT ISCHEMIC DILATION IN PATIENTS WITH NORMAL MYOCARDIAL PERFUSION

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**Brief description of the purpose of the study:** Transient ischemic dilation (TID > 1.22) in patients with normal myocardial perfusion scintigraphy (MPS) is a common finding. We look for clinical and stress test variables associated with this image data that may indicate the presence of multiarterial coronary disease (CAD).

**Methods:** Retrospectively analysis of TID's association with risk clinical factors (hypertension, diabetes, hyperlipidemia, smoking, obesity, typical chest pain and known CAD) and functional test data (treadmill test or pharmacological test with dipyridamole) of 12555 patients with normal perfusion on MPS. A logistic regression and the Fisher's exact test were used to assess the contribution of each variable with TID.

**Main results:** Hypertension, DM and pre-test typical chest pain were statistically associated with the presence of TID ( $p < 0.05$ ). EKG changes in functional test and the presence of pain in stress phase (only with treadmill stress test) were associated with TID.

**Importance of the conclusions:** Hypertension, diabetes, pre-test typical chest pain EKG changes in stress test (treadmill test or dipyridamole), and chest pain in stress phase (only with treadmill test) were associated with TID in patients with normal perfusion on MPS.

### TL.14.007

#### 7 YEAR FOLLOW-UP STUDY AFTER A "STRESS ONLY" PROTOCOL - A NEW REALITY ?

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**Brief description of the purpose of the study:** The "stress only protocol" is described as dispensing the rest phase if a normal perfusion is detected at stress.

**Methods:** We want to establish this protocol in a tertiary cardiologic center, with 7 years of follow-up, identifying the prevalence of major cardiovascular events ( MACE). 153 p did the stress only protocol (exercise treadmill or pharmacologic test with dipyridamole). 29 lost the follow-up . 124p remaining were followed for 12-90 months. Mean age : 69 years , 21.8 % men , 45.2 % diabetic , 79 % hypertensive , 70.2 % dyslipidemic , 26.6 % smokers , 22.6 % obese , 25 % had a family history of coronary heart disease and 46 % of high CV risk by Framingham score ( EF ) .

**Main results:** None of these characteristics was related to MACE . Exercise test was performed in 53.2 % and 65.2 % of these, had a moderate Duke score risk . 8p ( 6.5% ) had and 4p were revascularized . Typical chest pain during follow-up was associated with a higher incidence of events (  $p < 0.001$  ) .

**Importance of the conclusions:** The performance of "stress only MPS" should be considered even in patients classified as high CV risk.

### TL.14.009

#### RIGIDITY IS A MARKER OF MORE INTENSE DOPAMINERGIC DEFICIT IN PATIENTS WITH SUSPECTED PARKINSONIAN SYNDROME

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**Brief description of the purpose of the study:** SPECT radiotracers demonstrated correlation between the striatum and the degree of parkinsonian symptoms. Objective: To identify the association of clinical markers of Parkinsonian Syndromes with the intensity of scintigraphic findings with 99mTc - TRODAT.

**Methods:** A retrospective, observational, single-center study had been performed in 116 patients who underwent SPECT - CT with 99mTc - TRODAT. The extent of the binding potential (PL) was mean counts striatum - mean counts in the occipital region / mean counts in the occipital region. The reference value of above 0.59. Resting tremor, rigidity and bradykinesia were the symptoms related.

**Main results:** Mean age 72 years , 53% men . 85 tests (74 %) showed less than 0.59 PL . 54 % of patients had a single symptom , the most common being tremor ( 40 % ) . 12 patients (10 %) had rigidity. Rigidity was the only symptom that distinguished patients with lower PL (medium with stiffness = 0.39 vs medium without stiffness = 0.49 : .  $P = 0.03$ ).

**Importance of the conclusions:** The findings suggest that rigidity is a marker of degeneration of the nigrostriatal system and subsequent reduction of dopamine in the striatum. The pathophysiology of resting tremor and gait abnormalities may be due to other mechanisms.

## 15 - PET-CT

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### TL.15.001

#### PET/MRI AND PET/CT IN ADVANCED GYNAECOLOGICAL TUMOURS: INITIAL EXPERIENCE AND DEMONSTRATION OF SUPERIORITY OF PET/MRI FOR LOCAL TUMOUR DELINEATION

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**Brief description of the purpose of the study:** Compare the diagnostic accuracy of PET/MRI and PET/CT for staging and re-staging advanced gynaecological cancer patients as well as identify the potential benefits of each method in such population.

**Methods:** Twenty-six patients with suspicious or proven advanced gynaecological cancer underwent sequential PET/CT and MRI using a tri-modality PET/CT-MRI setup. Images were analysed regarding primary tumour detection and delineation, loco-regional lymph node staging and abdominal/extra-abdominal distant metastasis detection (last only by PET/

CT). **Main results:** Eighteen (69.2%) patients underwent PET/MRI for primary staging and eight patients (30.8%) for re-staging their gynaecological malignancies. For primary tumour delineation, PET/MRI accuracy was statistically superior to PET/CT ( $p < 0.001$ ). PET/MRI for local evaluation as well as PET/CT for extra-abdominal metastases had therapeutic consequences in 3 and 1 patients, respectively. Both PET/CT and PET/MRI showed no statistical difference in accuracy for primary tumour, loco-regional lymph nodes and abdominal metastasis detection. PET/CT detected twelve extra-abdominal distant metastasis in 26 patients. **Importance of the conclusions:** PET/MRI is superior to PET/CT for primary tumour delineation. No differences were found in detection of regional lymph node involvement and abdominal metastases detection. As PET/CT is useful in identification of extra-abdominal distant metastases a tri-modality setup in advanced gynaecological tumours might be promising.

### TL.15.002

#### PET/MRI AND PET/CT IN FOLLOW-UP OF HEAD AND NECK CANCER PATIENTS

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**Brief description of the purpose of the study:** Assess cePET/MRI compared to cePET/CT in patients with suspected recurrence of head and neck cancer (HNC).

**Methods:** Eighty-seven patients underwent sequential cePET/CT and cePET/MRI using a tri-modality PET/CT-MRI setup. Diagnostic accuracy for the detection of recurrent HNC was evaluated using cePET/CT and cePET/MRI. Image quality, presence of FDG –findings of uncertain significance and the diagnostic advantages of use of gadolinium was analysed.

**Main results:** CePET/MRI showed no statistically significant difference in diagnostic accuracy compared to cePET/CT (91.5% vs. 90.6%). Artefacts grade was similar in both methods, but their location was different. CePET/CT artefacts were primarily located in the supra-hyoid area, while on cePET/MRI, artefacts were more equally distributed among the supra and infra-hyoid neck regions. CePET/MRI and cePET/CT showed 34 unclear FDG-findings; of those eleven could be solved by cePET/MRI and five by cePET-CT. The use of gadolinium in PET/MRI did not yield higher diagnostic accuracy, but helped to better define tumour margins in 6.9% of patients.

#### **Importance of the conclusions:**

CePET/MRI may be superior compared to cePET/CT to specify unclear FDG uptake related to possible tumour recurrence of HNC. It seems to be the modality of choice for the evaluation of the oropharynx and the oral cavity because of a higher incidence of artefacts in cePET/CT.

### TL.15.003

#### USE OF DIFFUSION WEIGHTED IMAGING (DWI) IN PET/MRI FOR HEAD AND NECK CANCER EVALUATION

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**Brief description of the purpose of the study:** Analyse whether Diffusion-Weighted Imaging (DWI) adds significant information to PET/MRI on lesion detection and characterization in head and neck cancers.

**Methods:** Seventy patients with different head and neck were enrolled in this prospective study. All patients underwent sequential contrast enhanced (ce)PET/CT and cePET/MRI using a tri-modality PET/CT-MR setup either for staging or re-staging. First, the DWI alone was evaluated, then the PET/MRI with conventional sequences and in a third step, the PET/MRI with DWI was evaluated. McNemar's test was used to evaluate differences in the accuracy of PET/MRI with and without DWI compared to the standard of reference.

**Main results:** One hundred and eighty-eight (188) lesions were found, of those 118 were malignant and 70 were benign. PET/MRI as well as DWI detected 120 concurrent lesions, PET/MRI alone identified 48 additional lesions, DWI detected 20 different lesions. However, lesions detected on DWI did not change overall staging. SUV maximum and mean were significantly higher in malignant lesions than in benign lesions. DWI parameters between malignant and benign lesions were not statistically different.

**Importance of the conclusions:** DWI is not needed in clinical PET/MRI protocols for head and neck cancer imaging, as the information provided is redundant to the FDG-PET information.

### TL.15.004

#### SARCOIDOSIS: FALSE-POSITIVE CASES OF PET/CT IN LYMPHOME

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**Brief description of the purpose of the study:** The association between sarcoidosis and lymphoma is long time documented but yet not well understood, being rarely mentioned in our daily practice. The literature describes three possible associations: the lymphome-sarcoidosis syndrome, the sarcoid-like reaction and the post-chemotherapy sarcoidosis, the latter also described to other tumors.

**Methods:** Three patients with non-Hodgkin Lymphoma treated with chemotherapy underwent PET/CT with 18FDG, two for assessment of end-treatment response, and one to evaluate recurrence. The three studies were interpreted as high probability of activity of the lymphoproliferative neoplasm, but the tissue biopsy results described granulomas.

**Main results:** The patterns of increased 18FDG uptake in mediastinal lymph nodes in both diseases are indistinguishable, hence a pitfall to false-positive results of malignancy. Familiarity with the association between lymphome and sarcoidosis is crucial. There have been some suggestions so as to differentiate both (uptake patterns, dual-time acquisition, post-corticosteroid imaging), but none was successful. In the end, patient's clinical and laboratory information revealed to be more reliable parameters. Other PET/CT tracers are still under study.

**Importance of the conclusions:** These cases emphasizes the importance of always taking into account the clinical context of each patient and corroborates the mandatory need of tissue biopsy so as to confirm diagnosis and ensure adequate therapy.



## TL.15.005

### RUBIDIUM-82 PET-CT IN FLOW AND CORONARY RESERVE QUANTIFICATION IN PATIENTS WITH NORMAL MYOCARDIAL PERFUSION SCINTIGRAPHY

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**Brief description of the purpose of the study:** Objectives: Establishing values for regional blood flow in the rest(R), in the pharmacologic stress(S) and in the myocardial coronary flow reserve (Rv), in vascular regions with Rubidium-82(Rb) in PET-CT, in patients without disease and normal myocardial perfusion image in <sup>99m</sup>Tc-Sestamibi and then checking if the values are different between men(H) and women(M).

**Methods:** Methods: 29 patients(G) evaluated for myocardial perfusion imaging in PET-CT Rb(S;R), 15 H e 14 M, with normal exam in <sup>99m</sup>Tc-Sestamibi and without disease. FlowQuant(software of processing) considered the artery territories - left anterior descending(DA), right coronary(CD) and left circumflex(CX) - with flow(mL/min/g) and Rv. Continuous variables are presented as means and standard deviations. T-student was applied in H e M values(P-value<0.05).

**Main results:** Results: Means(DP) of flow in R, S e Rv in DA, CX and CD in studied population (p: T-student) Rest Stress Reserve DA CX CD DA CX CD DA CX CD G 0,97(0,60) 0,92(0,60) 1,13(0,75) 2,67(0,96) 2,35(0,94) 3,10(1,27) 3,19(1,19) 2,94(1,11) 3,20(1,26) H 0,88(0,43) 0,78(0,34) 0,97(0,46) 2,65(0,88) 2,13(0,75) 2,93(1,01) 3,33(1,18) 2,96(1,05) 3,36(1,30) M 1,06(0,75) 1,07(0,78) 1,30(0,96) 2,70(1,06) 2,58(1,09) 3,28(1,51) 3,04(1,23) 2,92(1,22) 3,04(1,24) p 0,22 0,10 0,13 0,45 0,09 0,23 0,26 0,46 0,24

**Importance of the conclusions:** Conclusions: Regional blood flow and coronary reserve are similar in medical literature and between men and women.

## TL.15.006

### RUBIDIUM-82 AND <sup>99m</sup>Tc-SESTAMIBI IN EVALUATION OF LEFT VENTRICLE FUNCTION IN PATIENTS WITHOUT CORONARY ARTERY DISEASE ESTABLISHED

PADILHA, B.G.; GIORGI, M.C.; SOARES JR., J.; IZAKI, M.; OLIVEIRA, M.A.; MENEGHETTI, J.C.

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**Brief description of the purpose of the study:** Introduction: <sup>99m</sup>Tc-Sestamibi(MIBI) scintigraphy evaluates the relative perfusion and left ventricle (VE) function. Although, there are limitations like interference of image artifacts, Rubidium-82(Rb), PET-CT acquisition, allows attenuation correction, decreasing artifacts. This study compared VE function (stress) using the 2 methods in patients with normal myocardial perfusion and ventricle function through stress MIBI (dipyridamole) and rest.

**Methods:** Methods and statistical analyses: 137 patients was evaluated in AutoQuant®(AQ) for MIBI and Cedars Sinai Import (CSI) for Rb. Variables: ejection fraction(FEVE), end-diastolic volume (VDF), end-systolic volume(VSF) in full group (G) and gender (H-men and M-women). For FEVE considered limit inferior 45%(H) and 50%(M). Means, standard deviations and Pearson(r) correlation was applied.(p<0,0001).

**Main results:** results: 65 men and 72 women, 63(±12) aged, 81 hypertensions, 43 diabetics and 56 dislipemics patients. Means in AQ were: 65±12(G), 58±9(H) e 71±10(M); in CSI: 69±11(G), 65±11(H) e 71±10(M); VDF AQ: 76±26(G), 93±24(H) e 64±19(M); in CSI: 81±24(G), 93±22(H) e 72±21(M); VSF AQ: 29±19(G), 41±18(H) e 20±13(M); in CSI: 28±18(G), 33±16(H) e 24±20(M). There was positive Pearson correlation for FEVE (r=0,65; p<0,0001), VDF(r=0,86; p<0,0001) and VSF (r=0,74; p<0,0001).

**Importance of the conclusions:** Conclusions: The Rubidium functional assessment was similar to MIBI method.

## 16 - IT/MANAGEMENT/EDUCATION

### TL.16.002

#### BUSINESS INTELLIGENCE IN RADIOLOGY

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**Brief description of the purpose of the study:** Tools of data analysis for business gain space in healthcare. In radiology, where the processes are intrinsically measurable and available at RIS/PACS databases, its implementation can be accurate. We will demonstrate its benefits in the optimization of resources, comparing to data from examination scheduling.

**Methods:** Time of start and end of examinations in four ultrasound agendas during six months were evaluated with Qlikview BI 11.0 and Oracle database of Carestream RIS. Other variables such as sex, age, day of week and month were included. Ultrasound equipment and headcount were the resources.

**Main results:** A total of 10,340 exams were evaluated and correlated to five ultrasound rooms, 40 radiologists, eight assistants and four queue manager. The comparison of the distribution of the difference between the data from the agenda and time of exam execution was statistically significant and this discrepancy was characterized as cyclic and seasonal. Variables such as patient gender and age were related to this difference. Graphics of temporal distribution of these exams proved crucial for critical periods and cyclical/seasonal patterns detection.

**Importance of the conclusions:** BI proved superior for the optimization of resources than standard schedule data. It represents a valuable management tool, with potential for improvement of the operating margin of the radiology service.

## 17 - PHYSICS, QUALITY CONTROL

### TL.17.004

#### INDICATOR OF THE KERMA BASED ON EXPOSURE INDICATOR FOR DIGITAL RADIOGRAPHY IN AGFA SYSTEM: PRELIMINARY RESULTS

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**Brief description of the purpose of the study:** The Report No. 116 of the American Association of Physicists in Medicine (AAPM) recommends that all digital radiology system,

provide a standard indicator that reflects the radiation exposure incident on the detector. In the systems Agfa this indicator is the IgM. The objective of this work is obtain the index kerma in the detector from the IgM values.

**Methods:** Was collected IgM values of three types of exams: chest, abdomen and lumbar spine.

**Main results:** The percentile 75 of the IgM and the indice of the kerma for the exams of the chest, abdomen and lumbar spine was: 2.08 bels and 3.29 mGy, 2.51bels and 8.86 mGy and 2.51 bels and 8.86 mGy respectively.

**Importance of the conclusions:** A variation of 20% in the IgM concentrates 2.7 % more radiation in the detector, thereby increasing the patient's exposure to radiation and increasing the likelihood of detriment. The association between IgM and kerma detector is of paramount importance in view of the radiological protection of patients.

## Invited Papers

### MUSCULOSKELETAL

#### 1. MR IMAGING OF THE SACROILIAC JOINTS IN SPONDYLOARTHROPATHY WITH CORRELATION TO CLINICAL AND LABORATORIAL FEATURES

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**Objective.** Evaluation of MR imaging features of the sacroiliac joint in spondyloarthritis concerning topography and correlation with clinical and laboratorial data, since these relations are hardly addressed in literature.

**Materials and methods.** Cross-sectional study of 17 patients diagnosed with spondyloarthritis evaluating MRI (1,5T) of the sacroiliac joints for inflammatory changes, both acute (subchondral bone marrow edema, enthesitis, synovitis and capsulitis) and chronic (erosions, subchondral sclerosis, bony bridges and periarticular fat deposition) held by two radiologists. Clinical and laboratorial data included age, duration of disease, BASDAI, Schober test, ESR and CRP.

**Results.** Bone marrow edema and erosions were mostly seen in the upper third of the sacroiliac joints, respectively in 35,3% and 76,5% of our patients, a new finding in literature. There was correlation between the frequency of chronic changes in the middle third of the sacroiliac joints and duration of the disease ( $p=0,023$ ). The mean duration of disease was 8,2 years. There was no correlation between acute or chronic changes and clinical or laboratorial data.

**Conclusion.** The bone marrow edema pattern and chronic inflammatory changes predominated in the upper third of the sacroiliac joints in the patients with spondyloarthritis we evaluated.

#### 2. ANTEROLATERAL LIGAMENT OF THE KNEE: ANATOMIC AND MR CORRELATION

Helito, Paulo VP; Helito, Camilo P; Costa, Hugo P; Demange, Marco K; Bordalo-Rodrigues, Marcelo; Pecora, Jose R; Camanho, Gilberro L; Cerri, Giovanni G

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**Purpose:** Describe anterolateral ligament of the knee MRI appearance, studying cadavers and patients

**Materials and Methods:** The anterolateral ligament was studied in three cadavers who underwent MRI scans and were subsequently dissected, evaluating its relations to well known anatomic structures.

The anterolateral ligament was studied in 39 patient who underwent knee MRI scans for reasons not related to ligament injury. Those scans were analyzed by two radiologists with musculoskeletal experience and who accompanied dissections. It was evaluated the ability to visualize the ligament portions and it as a whole.

**Results:** There was good correlation of the anterolateral ligament relations with anatomic structures in MRI studies and dissections.

The anterolateral ligament was best visualized in the coronal plane and in sequences weighted in T2 with fat saturation and DP. The ligament was completely characterized in only 71.7% of cases, but at least one portion was visualized in 97.4%. There was good interobserver correlation.

**Conclusions:** The anterolateral ligament may play an important role in knee rotational stability and, therefore, has been subject of anatomical studies in the past years. This resulted in a need to evaluate it on imaging. The present study confirms the ability to visualize the anterolateral ligament on MRI scans and shows that it can be evaluated in routine examinations.

#### 3. RETROSPECTIVE EVALUATION OF MENISCOID TYPE SUPERIOR LABRUM: A NORMAL VARIANT OR A SUPERIOR LABRAL TEAR

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**OBJECTIVE:** "Meniscoid" type superior labra are defined as: A prominent superior labrum with a partially mobile inferior free edge which covers a portion of the glenoid articular surface. Intra-articular fluid when present generally insinuates between the labrum and glenoid. The objective of this study is to 1.) determine the incidence of a "meniscoid-type" superior labrum and 2.) assess whether the findings of meniscoid labra are specific by determining how frequently superior labral tears are confused for meniscoid labra.

**METHODS:** A retrospective analysis of 582 shoulder MRI examinations was performed. 110 cases were excluded, leaving 472 cases for analysis. Consensus readings from 3 MSK radiologists were performed to diagnose meniscoid labra.

**RESULTS:** A meniscoid type of superior labrum was identified in 10.1%. Arthroscopic proof was available in 43.75%. In 47.6%, there was no mention of a superior labral tear, suggesting the presence of a meniscoid labrum. However, in only one case were there specific comments about a mobile superior labrum. In the remaining 52.4%, surgical correlation demonstrated superior labral tears.

#### 4. DOES MRI ALLOW TO DIFFERENTIATE A MYXOID LIPOSARCOMA FROM AN INTRAMUSCULAR MYXOMA?

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**Purposes:** To study MRI semiotics of myxoid liposarcoma (MLS) and intramuscular myxomas (IMM) of the extremities. To highlight any distinctive criteria.

**Materials and methods:** A retrospective MRI evaluation of 40 patients with 42 histologically proven myxoid tumors, composed of 20 MLS and 22 IMM of the extremities was performed. One case was a Mazabraud Syndrome with three lesions. These patients were identified using the pathology department database of the Cochin Hospital and all had an initial MRI study. Thirty six of these studies also included acquisitions after contrast media administration (gadolinium). The semiotic analysis included topography, size, limits, signal, contrast after intravenous contrast media injection (homogeneous, heterogeneous), pseudo-capsule, partitions, intra-tumoral fat and surrounding edema. Static analysis was performed using the Fisher's exact test and the Pearson chi-square.

**Results:** The statistically significant criteria to differentiate between a myxoid liposarcoma and an intramuscular myxoma in MRI are: heterogeneous signal in T2 (85% of MLS,  $p < 0.0001$ ), hyposignal in T1, the presence of partitions (100% of LPS), the pseudo-capsule (90% of LPS), the quota fat (0% of myxomas).

**Conclusion:** The myxoma and myxoid liposarcoma have both an overall high signal on T2, characteristic of a myxoid component. The myxoid liposarcoma must be considered in the presence of a heterogeneous signal, partition, a pseudo-capsule, and a fat quota.

## 5. CAN ULTRASONOGRAPHY PROVIDE DIAGNOSTIC CONFIRMATION OF TOPHACEOUS GOUT SUGGESTED BY MRI FINDINGS? TATIANE C. RODRIGUES, SAMUEL B. BERGAMASCHI, LUCAS ROSTON, SORAYA S. MONTEIRO, ELOY A. FERNANDES

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**Objective:** To obtain diagnostic confirmation of MRI findings suggestive of tophaceous gout by means of US.

**Methods:** In this prospective observational study, 14 joints from five patients with chronic arthralgia and MRI suspicious signs of gout were examined by US for diagnostic confirmation.

**Results:** The most important findings for US confirmation of a tentative diagnosis of gout US were presence of tophi, hyperechoic dotted foci, and the combination of these two signs.

**Conclusion:** US examination proved useful for diagnostic confirmation of gout, thus avoiding the use of high-cost, invasive, or ionizing radiation-based methods.

## 6. ELASTOGRAPHY OF MEDIAN NERVE: COMPARISON BETWEEN LEPROSY PATIENTS AND HEALTHY VOLUNTEERS

Everaldo Grégio-Junior, Theo Z. Pavan, Helena B. Lugão, Mariana T. Kobayashi, Antônio A. O. Carneiro, Marcello H. Nogueira-Barbosa

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**Objective:** To compare real-time freehand ultrasound elastography (RFUE) of the median nerve between leprosy patients and healthy volunteers.

**Methods:** After Institutional Review Board approval, we evaluated one hundred median nerves from 50 asymptomatic volunteers and 36 median nerves from 18 leprosy patients were evaluated with RFUE. Two radiologists, separately and independently, measured the strain ratio of median nerve/flexor digitorum superficialis muscle (MN/FDSM) on the transverse plane using a linear transducer. Inter- and intra-

server reproducibility was assessed using intraclass correlation coefficients (ICC). Groups were compared by Wilcoxon-Mann-Whitney test ( $p < 0.01$ ).

**Results:** The MN/FDSM strain ratio was significantly higher in healthy volunteers ( $3.57 \pm 1.15$ , 99% CI 3.27-3.87) than in leprosy patients ( $2.19 \pm 1.30$ , 99% CI 1.51-2.87),  $p < 0.0001$ . Intra-observer ICC was 0.50 (95% CI 0.11 to 0.72) and inter-observer ICC was 0.34 (95% CI 0.28 to 0.52).

**Conclusion:** The MN/FDSM strain ratio of leprosy patients was significantly lower than that for healthy volunteers. Our results suggest a possible role of elastography in the diagnosis of leprosy neuropathy.

## 7. ACUTE HAMSTRING INJURY IN SOCCER PLAYERS: DISTRIBUTION OF LOCATIONS AND ASSOCIATION BETWEEN LOCATION AND EXTENT OF INJURY – A LARGE SINGLE-CENTER MRI REPORT

Michel D. Crema, Ali Guermazi, Johannes Tol, Jingbo Niu, Bruce Hamilton, Frank W. Roemer

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**Purpose:** To describe in detail the anatomic locations of acute hamstring injuries in soccer players and to assess the relationship between location and extent of edema and tears based on findings from MRI.

**Methods:** We included 275 consecutive male soccer players who had sustained acute hamstring injuries. Lesions were recorded in specific locations of the muscles and the largest cross-sectional area of edema and/or tears was assessed in addition. The average value of edema and tears for each muscle was used as the reference standard. The relationships between locations and extent of edema and tears were assessed using one-sample t-test, with significance set at  $p < 0.05$ .

**Results:** The long head of biceps femoris (LHBF) was the most commonly affected muscle (56.5%). Injuries were most common in the myotendinous junction (MTJ) and in proximal locations. The proximal MTJ was associated with a greater extent of edema in the LHBF and semitendinosus muscles ( $p < 0.05$ ). Proximal locations in the LHBF had larger edema ( $p < 0.05$ ). Distal locations in the semitendinosus muscle had larger tears ( $p < 0.05$ ).

**Conclusion:** The proximal MTJ and proximal locations were more commonly affected and were associated with a greater extent of edema. Distal locations, however, seem to be associated with larger tears.

## 8. ANTEROLATERAL LIGAMENT OF THE KNEE: EVALUATION WITH MAGNETIC RESONANCE IMAGING

Atul K. Taneja, Frederico C. Miranda, Cesar A. P. Braga, Luiz G. Hartmann, Fabio P. Ferreira, Laercio A. Rosemberg, Durval C. B. Santos

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**Purpose:** To evaluate the visibility and describe anatomic features of the anterolateral ligament of the knee using Magnetic Resonance Imaging (MRI).

**Materials and Methods:** Seventy consecutive MR scans of the knee were independently reviewed by two musculoskeletal radiologists and assessed for the visibility of the anterolateral ligament (completely, partially or non-visible), distal insertion site (tibial, meniscal) and distance to the tibial plateau,

measurements (length, width, thickness), and associated imaging findings. Clinical and surgical records of the subjects were also reviewed.

**RESULTS:** A total of 70 knee MR scans from 60 consecutive subjects were included in the study. The mean age of subjects was 40 years (11 – 75 years), with mean body mass of 74.9 kg (48 – 125 kg) and height of 1.72 cm (1.54 – 1.94 cm). The majority of subjects were males (53%, 32/60); most of the knees images were the left side (51%, 36/70), with chronic pain as the main symptom (40%, 24/60). Previous surgery was performed in nine knees (13%, 9/70), being an anterior cruciate ligament reconstruction the main purpose (55%, 5/9). The anterolateral ligament was identified in 51% (36/70) of the knees examined, being completely visible in 11% (8/70) and partially in 40% (28/70). In 100% (36/36) of cases, distal insertion site was identified on the tibia, with a mean distance of 5.7 mm (2.4 – 10.5 mm) to the cartilage surface of lateral plateau. Completely visible ligaments had a mean length of 33.2 mm (24.1 – 39.9 mm), thickness of 5.6 mm (4.4 – 7.1 mm) and width of 1.9 mm (1.2 – 2.5 mm). The most common associate finding was a lateral meniscus degeneration and/or tear (12 cases). Inter-observer agreement for the presence of the ligament was good ( $\kappa = 0.7$ ). Statistical analyses were performed for qualitative and quantitative parameters.

**CONCLUSIONS:** MRI identifies the anterolateral ligament of the knee in slightly more than half of cases, being partially visible in most of them. In all visible cases, the tibial insertion is characterized.

## ULTRASOUND

### 1. CERVICAL THYMIC ANOMALIES: A PICTORIAL REVIEW

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**Purpose:** To review the imaging findings of the ectopic cervical thymic tissue, anomalies related to thymoparyngeal remnants and the superior cervical extension of the thymus. To help differentiate these entities from other cervical mass.

**Content Organization:** To review the embryological development of the thymus (the origin in the third pharyngeal pouch, the thymoparyngeal duct and its descend path from the angle of mandible to the superior mediastinum). To review the appearance and report our experience with ectopic cervical thymus at US, CT and MR imaging. To show examples of ectopic cervical thymic tissue, anomalies related to thymoparyngeal remnants and the superior cervical extension of the thymus. To discuss the differential diagnosis and the management of cervical masses.

**Summary:** Ectopic cervical thymus is an uncommon cause of neck mass, often identify during childhood. Ultrasound is the initial imaging modality of choice, CT and MR can be used to complement US. This entity should be considered in the differential diagnosis of infantile neck masses to prevent inadvertent total thymectomy. If ectopic thymus causes symptoms, due to compression or pressure in the neighboring structures, surgery might be recommended. In this situation, it is important to confirm the presence of thymic tissue in the upper mediastinum.

### 2. THE ROLE OF DOPPLER ULTRASOUND IN THE INTERNAL CAROTID ARTERY DISSECTION

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**Introduction:** Cervical artery dissections (CAD) are more common in the internal carotid arteries (ICA), 70% in the cervical and petrous segments, mainly 2-3 cm distal to the carotid bulb. These segments are easily accessible by ultrasound. The Doppler ultrasound (Doppler US) can make initial screening, diagnosis and monitoring of dissection in the proximal segments of the ICA. Computed tomography (CT) and magnetic resonance imaging (MRI) are the best methods in the evaluation of CAD.

**Methods Involved:** The present study aims to describe by practical cases the role and major abnormalities in the Doppler US of ICA dissections.

**Discussion:** Doppler US is a low cost exam that can assist in the diagnosis and monitoring of CAD. That can demonstrate the tapering column flow with abnormal pulsed wave Doppler up to 90% of cases of dissection. Moreover, it is able to determine the flow dynamics of the dissection. CT and MRI do not allow determining the flow dynamics

**Conclusion of the presentation:** It is important for all radiologist know the majors abnormalities in carotid artery dissection on the Doppler US.

### 3. ULTRASONOGRAPHY IN SHOCK AND CARDIO-PULMONARY ARREST: A COMPLEMENT METHOD TO PHYSICAL EXAMINATION.

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**Introduction:** In critically ill patients, ultrasonography (U.S.) is often the initial imaging test, having an important role both in the context of emergency response as in intensive care units and semi-intensive. Some characteristics, as portability and absence of invasiveness make the U.S. the method of choice in most several conditions, like a cardiorespiratory arrest, shock and trauma.

**Methods Involved:** Comprehensive literature review and retrospective study of clinical cases of HIAE about the applicability of the U.S. in em critical patients.

**Discussion:** The scope of ultrasound in medicine is virtually unlimited. Several protocols being developed for auxiliary the use this examination in the emergency room, between them, it's possible cite the inclusion of U.S. in resuscitation's protocols (RUS) and in the shock (RUSH). This protocol seeks the aid of this noninvasive method in the institution of ACLS maneuvers.

**Conclusion of the presentation:** With the evolution of equipment and greater availability of the method, the U.S. has played an important role in the initial care of critically ill patients, often being considered extension of the clinical examination. For the establishment of a proper treatment protocol and reduction of mortality in these patients, radiologists should be increasingly familiar with the use and indications of this diagnostic modality.

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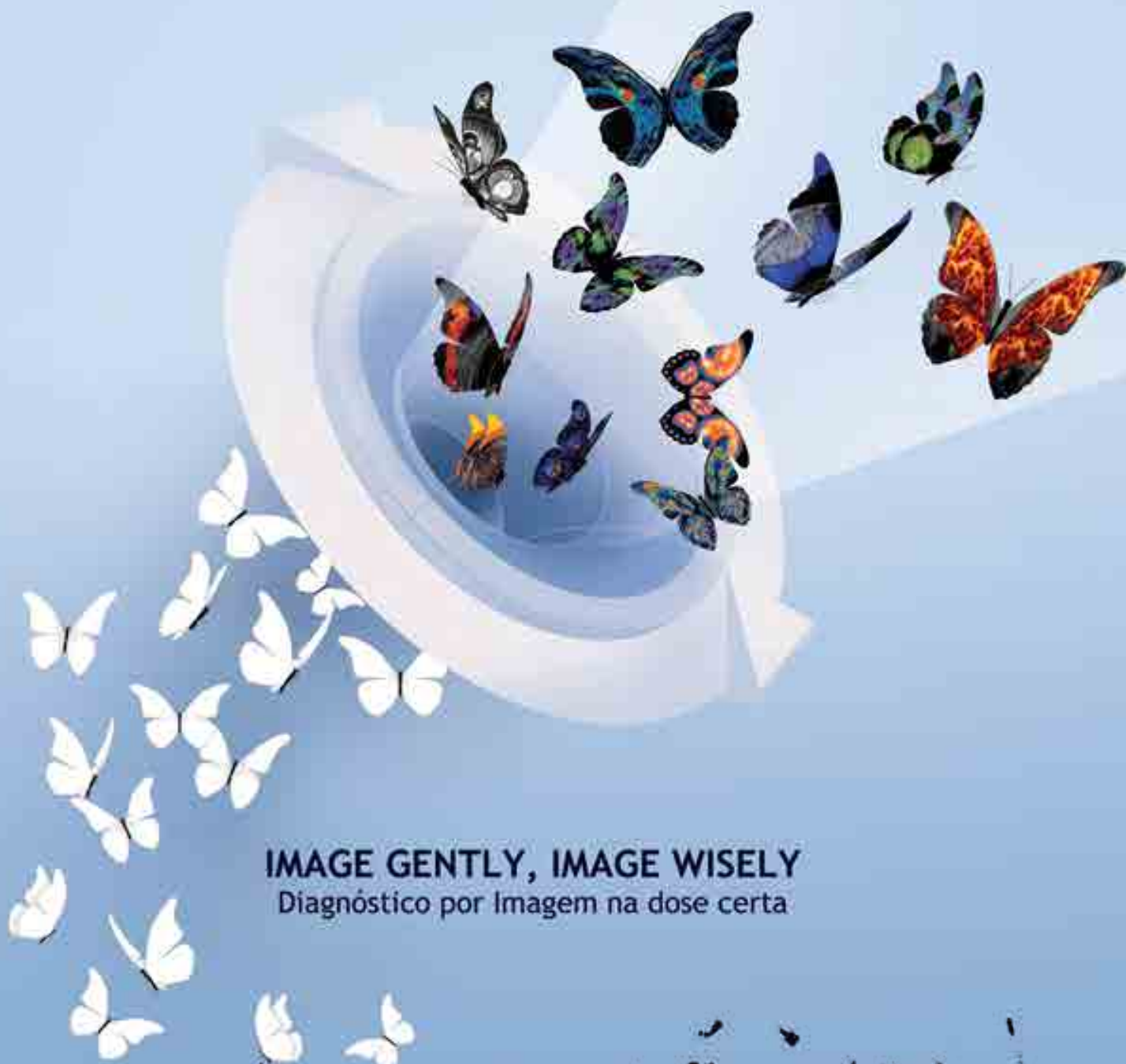
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