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ABDOMINAL RADIOLOGY

(433) - OP-001

CAN KI-67 EXPRESSION IN PANNEN PATIENTS WITH LIVER METASTASES BE PREDICTED BY THE NECROSIS/MASS RATIO ON CT FINDINGS?

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Introduction

Pancreatic neuroendocrine neoplasms (panNENs) account for approximately 2% of all pancreatic tumors, though autopsy studies suggest this number may reach up to 10%. Most of panNENs are sporadic; however, around 10% are associated with inherited syndromes. The 2010 WHO classification used mitotic index and Ki-67 proliferation index to grade panNENs. In the 2017 update, tumors were categorized into three grades based on refined Ki-67 and mitotic criteria. While high Ki-67 index has been shown to correlate with necrosis in breast cancer and gastrointestinal stromal tumors, data on this association in panNENs remain limited.

Purpose

Due to the limited number of studies exploring correlations among necrosis/tumor ratio, Ki-67 index, and number of metastatic liver lesions in panNENs, we aimed to investigate these relationships .

Materials and Methods

We retrospectively reviewed patients who presented to our institution between 2015 and 2025, had histopathologically confirmed panNENs, had available CT imaging, had liver metastases. 12 patients had at least one liver lesion that was radiologically visible and histopathologically confirmed as metastatic panNEN. Necrosis and tumor were independently evaluated by both two radiologists with at least 10 years of experience. Volume was calculated for each metastatic lesion and necrotic component independently.

Results

The mean age of the patients was 64,25. The average number of liver metastases was calculated as 6,8. A statistically significant positive correlation was found between Ki-67 index and necrosis/tumor ratio ($p < 0.01$). Correlation between Ki-67 index and the number of metastatic lesions ($p = 0.09$) and, between necrosis ratio and lesion count ($p=0.16$) were not statistically significant.

Conclusion

Our findings demonstrate a strong positive association between the Ki-67 index and necrosis-to-tumor ratio. Larger, prospective, multicenter studies are needed to validate these preliminary findings.

(347) - OP-002

DETECTION OF EXTRAPANCREATIC PERINEURAL INVASION IN PANCREATIC HEAD DUCTAL ADENOCARCINOMA: UTILITY OF FOUR MDCT PATTERNS OF SPREAD

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Introduction

In this research, we analyze MDCT patterns of perineural invasion, describe its association with a poor prognosis, and highlight the role of imaging in its detection. Pancreatic ductal adenocarcinoma continues to be a highly lethal and devastating disease. Curative surgical options continue to carry significant morbidity and offer little improvement in overall 5-year survival. Imaging plays an essential role in the pre-operative evaluation of patients who are undergoing evaluation for resection. However, some pancreatic cancers have particularly aggressive biology, despite appearing resectable by conventional imaging criteria. Imaging biomarkers have been recently described, namely extrapancreatic perineural invasion.

Purpose

To determine sensitivity and specificity of four MDCT patterns of perineural spread in pancreatic ductal adenocarcinoma: linear, reticular, mass-like and nodular

Materials and Methods

This study included 75 adults (48 men, mean age 66 years; range, 44–88 years) with pancreatic head mass who underwent MDCT. Three blinded radiologists independently reviewed each MDCT exam and four patterns of perineural spread were assessed: (1) linear (2) reticular (3) mass-like and (4) nodular. Sensitivity, specificity, and positive and negative predictive values of the patterns were calculated, as well as interobserver agreement.

Results

Sensitivity, specificity, and positive and negative predictive values of the “linear” pattern of perineural spread for the three readers were 25–51%, 77–85%, 54–78% and 71–81%, respectively (κ = 0.5); for the “reticular” pattern, they were 48–63%, 82–90%, 56–88%, and 75–78%, respectively (κ = 0.7); for the “mass-like” pattern, they were 52–71%, 85–92%, 64–87%, and 62–68%, respectively (κ = 0.8) and for the “nodular” pattern, they were 21–24%, 66–72%, 52–75%, and 32–35%, respectively (κ = 0.4).

Conclusion

The “reticular” and “mass-like” MDCT patterns have high specificity for detecting extrapancreatic perineural invasion in PDAC.

(335) - OP-003

DIAGNOSTIC VALUE OF TAILORED MDCT IN DIFFERENTIATING AMPULLARY CARCINOMA FROM PRIMARY DUODENAL CARCINOMA

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Introduction

Duodenal and ampullary adenocarcinomas are uncommon cancers but are associated with significant morbidity and mortality. While endoscopic sonography is used to locally stage duodenal malignancies, MDCT can accurately locate and characterize massforming duodenal lesions, making them invaluable for the differential diagnosis and to decide management strategies.

Purpose

To evaluate the diagnostic value of four imaging criteria obtained with a tailored MDCT and to differentiate primary duodenal carcinoma (PDC) and intestinal-type ampullary carcinoma (IAC).

Materials and Methods

In this retrospective study, patients with resected IAC and PDC who underwent preoperative contrast-enhanced MDCT using a tailored protocol were included. Two radiologists independently reviewed each MDCT, using four imaging criteria to differentiate the two cancer types: lesion shape, ductal cutoff, duodenopancreatic groove fixation and pancreatico-duodenal artery infiltration. Sensitivity,specificity, positive and negative predictive values of the imaging criteria were calculated using histopathologic analysis as the reference standard. Interobserver agreements were assessed using kappa statistics.

Results

65 patients (mean age 55 years ± 18.2 (standard deviation); 25 women) were included in the study. IAC was significantly different in terms of lesion shape ($p < 0.0001$) and duodenopancreatic groove fixation ($p < 0.0007$).Sensitivity and specificity of the lesion shape for the three readers were 47–66%, 83–92% ($\kappa = 0.72$); of the ductal cutoff were 24–52%, 61–71% ($\kappa = 0.52$); of the duodenopancreatic groove fixation were 54–73%, 86–93% ($\kappa = 0.81$); of the pancreatico-duodenal artery infiltration were 19–28%, 48–52% ($\kappa = 0.44$). When all features were taken into account, sensitivity and specificity in differentiating between IAC vs PDC were 85.7% and 83.3%.

Conclusion

The duodenopancreatic groove fixation and lesion shape have high specificity and moderate/strong interreader agreement for preoperative differentiation of IAC and PDC on tailored duodenal MDCT.

(418) - OP-004

PERITONEAL CARCINOMATOSIS AND THE SMALL BOWEL: WHAT THE RADIOLOGIST SEES – WHAT THE SURGEON FINDS

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Introduction

Peritoneal carcinomatosis (PC) is a complex and often underestimated condition characterized by the dissemination of malignant cells within the peritoneal cavity.

Purpose

This study aims to evaluate the discrepancies between preoperative radiologic imaging and intraoperative findings in patients with PC, focusing specifically on small bowel involvement. The objective is to understand the limitations of current imaging techniques and to explore how radiologic interpretations align—or fail to align—with what surgeons actually encounter during CRS procedures.

Materials and Methods

A retrospective and comparative analysis was conducted on patients diagnosed with PC who underwent preoperative CT imaging, followed by surgical exploration and CRS. Radiologic reports were reviewed to assess reported involvement of the small bowel serosa, mesentery, and adjacent peritoneal surfaces. These findings were then compared to detailed surgical notes and intraoperative findings, including the Peritoneal Cancer Index (PCI) scores and respectability status. Emphasis was placed on lesion visibility, pattern of spread, and the radiologist's ability to predict unresectable disease due to small bowel involvement.

Results

Learning objectives: To compare the imaging findings of the small bowel (SB) on CT-Enteroclysis (CTE) with findings at surgery in patients with peritoneal carcinomatosis(PC). To review the CTE findings that could be used as critreria for inoperabilicty, in candidates for cytoreductive surgery (CRS). CT is the of choice in evaluating Peritoneal Carcinomatosis but is non – sensitive and non specific in evaluating SB pathology. Results: Preliminary results demonstrate that radiologic imaging, while effective in detecting gross peritoneal implants, often misses subtle or diffuse disease affecting the small bowel and its mesentery.

Conclusion

In a significant number of cases, the surgical team encountered more extensive disease than anticipated, resulting in a change in the surgical strategy or even termination of the procedure due to non-resectability.

(477) - OP-005

DIAGNOSTIC ACCURACY AND CLINICAL IMPACT OF CT IMAGING IN GASTROINTESTINAL TRACT PERFORATION: A SYSTEMATIC REVIEW WITH FOCUS ON RETROPERITONEAL VS INTRAPERITONEAL PERFORATION SITES

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Introduction

Gastrointestinal (GI) tract perforation is a life-threatening condition requiring rapid diagnosis and intervention. Computed tomography (CT) has been recognized as the most valuable imaging modality for detecting both direct signs, such as discontinuity of the bowel wall and the presence of extraluminal air, and indirect signs, such as bowel wall thickening, abnormal bowel wall enhancement, abscess, and an inflammatory mass adjacent to the bowel. However, identifying the site of perforation can be challenging, especially when differentiating between retroperitoneal and intraperitoneal locations, each with distinct imaging presentations.

Purpose

To evaluate the distinctive CT findings of GI tract perforation, with a specific focus on distinguishing retroperitoneal from intraperitoneal perforation sites by comparing the locations of free air in the abdomen and other imaging findings.

Materials and Methods

A systematic review of the literature was conducted, analyzing available scientific papers and articles from databases such as PubMed, Springer, Elsevier and ResearchGate.

Results

CT imaging provides high accuracy not only for detecting free intraabdominal air, but also for precisely determining the site of GI tract perforation without the use of oral or rectal contrast material. The presence of concentrated extraluminal air adjacent to the bowel wall, a focal wall defect, and localized bowel wall thickening on CT are highly indicative of the perforation site. Intraperitoneal perforations showed typical features, whereas retroperitoneal perforations presented more subtle findings, which were more likely to be overlooked and often led to delayed diagnosis and intervention.

Conclusion

Differentiating between retroperitoneal and intraperitoneal sites of GI tract perforation is essential for selecting the optimal treatment strategy and determining the appropriate surgical approach, thereby improving patient outcomes.

(376) - OP-006

WHAT IS THE AFFECT OF BARIATRIC SURGERY ON PANCREATIC STEATOSIS?

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Introduction

Obesity and its metabolic consequences are among the most significant health issues of the century. Obesity and pancreatic steatosis(PS) relation is inconclusive and there are limited data exist on fatty pancreas after bariatric surgery.

Purpose

This study aimed to evaluate pancreatic fat content by computed tomography following metabolic bariatric procedures.

Materials and Methods

In this retrospective study, patients aged 18–65 years old who underwent Roux-en-Y gastric bypass(RYGB) or sleeve gastrectomy(SG) and had unenhanced abdominal CT between 6–12 months postoperatively/preoperative were included. Exclusion criteria were major comorbidities, pancreatic disease, splenectomy or postoperative nutritional supplementation. A blinded radiologist measured attenuation in nine pancreatic and three splenic regions. PS was defined as a pancreas-to-spleen(P/S) attenuation ratio <0.70. BMI were recorded. Statistical analysis was performed SPSS-26 version with significance set at $p<0.05$.

Results

Thirty-six morbid obese patients(mean BMI 45.6 ±4.6 kg/m2) were included into this study. Mean age of patients were 42.05±9.1 years old and 80.6% of them were female(n=29). Twenty-two of them(61.1%) had Roux-Y by pass surgery. .Postoperative BMI in 6 month and 12th month were 33.5±6.4 and 28.8±4.9 kg/m2 , respectively . Mean weight loss was 32.5±11.2 kg in 6 months and 44.9±11.05 kg in one year . PS was evaluated after surgery in all patients. Five patients had(13.9%) PS and mean P/S value was 0.8±011[7.1% (n=1) had sleeve gastrectomy ,18.2%(n=4) had by-pass surgery; p=0.00]. PS were evalutated before and after bariatric surgery in 11 patients(10 female, 63.6% Roux-Y by-pass surgery). No one had PS before surgery. PS was detected in one of the patient after by-pass surgery. Mean P/S measure was 0.95± 2.7 and 0.83± 0.09 before and after surgery, respectively. We didn't find any correlation between P/S and BMI.

Conclusion

Pancreatic steatosis is not frequent in morbid obesity and is not correlated with BMI. However Pancreatic steatosis rate is slightly increasing after Roux-Y by-pass surgery.

(425) - OP-007
PORTAL BILIOPATHY: CT EVALUATION

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Introduction
Portal biliopathy refers to a spectrum of biliary tract abnormalities that occur in the setting of portal hypertension, especially in patients with extrahepatic portal vein obstruction and cavernous transformation of the portal vein. These changes include bile duct irregularities, strictures, and dilatation, which may be asymptomatic or lead to obstructive jaundice and cholangitis. Portal biliopathy can often mimic malignancy, posing diagnostic challenges. CT imaging plays an important role in identifying the vascular and biliary alterations associated with this condition.

Purpose
The purpose of this study is to evaluate the CT findings in patients with portal biliopathy and to highlight the role of CT in differentiating portal biliopathy from other causes of biliary obstruction, especially malignant conditions.

Materials and Methods
We analyzed CT images of 18 patients diagnosed with portal biliopathy. Of these, 3 patients had liver cirrhosis, 2 had isolated portal vein thrombosis, and 13 had combined thrombosis of the portal vein and superior mesenteric vein. All patients underwent contrast-enhanced abdominal CT scanning. The images were reviewed to assess the presence of cavernous transformation, biliary tree abnormalities (such as bile duct dilatation or strictures), and the presence of collateral circulation.

Results
We examined with CT 18 patients with portal biliopathy. 3 patients had liver chirrosis 2 patients had portal vein thrombosis 13 patients had portal vein and superior mesenteric vein thrombosis

Conclusion
Portal biliopathy can mimic malignant strictures of the distal bile duct from pancreatic or biliary causes. CT imaging is essential in identifying vascular causes of biliary obstruction and distinguishing them from neoplastic processes. Awareness of this entity can prevent unnecessary surgical intervention and guide appropriate management strategies.

(405) - OP-008

SPONTANEUS INTRAHEPATIC BILOMAS DUE TO GALLBLADDER PERFORATION: TWO CASES AS RARE COMPLICATION OF PERFORATED ACUTE CHOLECYSTITIS.

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Introduction

Biloma is the outcome of encapsulated collections intra-extra hepatic of bile. There is a strongly relation to acute cholecystitis.Mainly it's the result of iatrogenic injuries, such as laparoscopic procedures, ERCP, or trauma in the abdominal area. Although spontaneus billomas take place due to choledocholithiasis. They are very rare and demand early and correct diagnosis.

Purpose

The purpose of this announcement is to highlight the significance of two cases of spontaneus intrahepatic billomas due to gallbladder perforation. A very rare complication of perforated acute cholecystitis.

Materials and Methods

Hereby, we present two spontaneus cases with intrahepatic biloma: The first one, a 70-year-old male, diabetic patient, presented with fever without a focus, and the second a 75-year- old male with fever, severe abdomen pain and with positive Murphy sign. Visualization tools for diagnosis are considered ultrasound and Ct.

Results

At the first patient, Ultrasound was no helpful because of the meteorism, but Ct revealed acute cholecystitis and fluid collections in caudate lobe of liver (biloma),and gallblader with stones. At the second patient, Ultrasound revealed a gallbladder with wall thickening, stones and sludge. Also subcapsular fluid collection as an intrahepatic inflammation. Ct additionaly revealed a big encapsulated collection below the liver, dimensions 7x2,5 cm, and obliteration and disintegration of the gallbladder wall. The first case was fatal.

Conclusion

We have describded two spontaneous cases, something extremely rare in nowadays. Ultrasound and Ct are the keys for accurate diagnosis, leading to effective management of bilomas, because of their high risk of mortality.

ARTIFICIAL INTELLIGENCE IN RADIOLOGY

(503) - OP-012
CAN AI TRAIN RADIOLOGISTS TO BETTER ASSESS CHEST RADIOGRAPH?

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Introduction
AI-augmented radiology education may create personalized experience for trainees.

Purpose
To investigate the educational effect of artificial intelligence on junior radiologists who report chest radiographs.

Materials and Methods
Two sets of 75 patients who presented in the emergency department underwent a) PA or AP chest radiography and lateral chest radiography on the same day b) Chest CT within 0-10 days (mean 1 day). The first set of 75 radiographs were assessed by one junior resident radiologist (reader) for lung, mediastinal and pleural/rib abnormalities separately without and with AI assistance. The second set was subsequently assessed by the same reader, blinded to CT-findings, which were recorded by two additional radiologists in consensus. Lesions were marked as 0=absent, 1=potentially/definitely present. Statistical analysis was performed using R programming language (v4.2.2 in RStudio for MacOS). Agreement between CT and each reading was assessed with weighted kappa statistics. Confusion matrices were used to calculate sensitivity, specificity, balanced accuracy, positive and negative predictive value, which were compared between two sets. $P<0.05$ was statistically significant.

Results
Assessment of 1st set of radiographs without AI yielded a low to moderate agreement with CT, with a weighted kappa ranging between 0.108 (detection of mediastinal masses) and 0.529 (detection of pleural effusion). This agreement did not change with the assistance of AI, except for pleural effusion detection where agreement increased from 0.529 to 0.689. Assessment of the 2nd set without AI exhibited increased agreement withCT for nodules (0.131 before vs 0.478 after), lung (0.251 before vs 0.681 after) and mediastinal masses (0.108 before vs 0.520 after). Regarding sensitivity of radiographs for nodules, lung and mediastinal masses,it increased by 24-33% between sets. Specificity was similar before and after the use of AI.

Conclusion
The addition of AI in chest radiography may increase sensitivity and may accelerate education of junior radiologists.

(480) - OP-013

DOES ARTIFICIAL INTELLIGENCE (AI) INCREASE PERFORMANCE IN THE IDENTIFICATION OF RADIOGRAPHIC ABNORMALITIES IN EMERGENCY CHEST RADIOGRAPHS?

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Introduction

Chest radiography is commonly requested in emergency departments. Missing lesions are frequent. Artificial intelligence (AI) has emerged as a potentially helpful tool.

Purpose

To assess performance of chest radiography without and with AI assistance compared to CT for abnormalities in the emergency setting.

Materials and Methods

150 patients (males 63,33%), aged 17-92 years (mean 72,5) underwent frontal PA or AP and lateral radiographs and CT within 10 days (mean 1 day). A junior radiologist assessed radiographs for lung, mediastinal and pleural/rib abnormalities, initially without AI assistance (reading 1), and following a three-week weaning interval with AI assistance (reading 2). CT findings were subsequently recorded by another junior and a senior radiologist, formulating ground truth. Lesions were marked as 0=not present, 1=present. Statistical analysis was performed using R programming language (v4.2.2 in RStudio for MacOS). Agreement between CT and each reading was assessed with weighted kappa statistics. Confusion matrices were used to calculate sensitivity, specificity, balanced accuracy, positive and negative predictive value. $P<0.05$ was statistically significant.

Results

Agreement between radiography and CT for presence of abnormalities ranged from slight to moderate (weighted k-values 0.18-0.67). The addition of AI did not increase the diagnostic capacity of radiographs for any of the assessed abnormalities. The weighted kappa ranged from slight for mediastinal masses (k=0.17 without vs 0.17 with AI) to substantial for pleural effusion (k=0.67 without vs 0.69 with AI) ($P<0.001$). Both readings showed excellent specificity (range 87.2%-100%). Both readings had similar sensitivity which was low for lung and mediastinal masses, nodules and rib fractures (13.3%-33.9%), moderate for consolidation (46.7% without AI vs 54.8% with AI) and high for pleural effusion (80% for both readings).

Conclusion

In our small cohort, the addition of AI did not result in a statistically significant improvement of agreement between radiographic findings and CT.

BREAST IMAGING

(273) - OP-019
DETECTION OF INVASIVE LOBULAR BREAST CANCER USING 2D VERSUS 2D+3D MAMMOGRAPHY

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Introduction
Invasive lobular carcinoma (ILC) is the second most common type of breast cancer, representing a certain challenge for diagnostics, with each modality (mammography, ultrasonography (US), and magnetic resonance (MR) imaging) having both advantages and limitations. Combination of these three methods increases sensitivity in the detection of ILC and provides useful information for further management and pretherapeutic planning. Detection of ILC in dense breasts, tomosynthesis (3D) added to digital mammography (2D) shows a promising role for increasing sensitivity.

Purpose
The aim of this study was to compare 2D mammography with tomosynthesis added to 2D mammography (2D+3D) in detection of histologically confirmed ILC.

Materials and Methods
We retrospectively evaluated 120 histologically confirmed ILC in 102 ladies (this type of cancer in our group was detected bilateral and synchronously in 18 patients). All patients referred to our Oncology Institute from primary care system or from oncologist, during the period of 3 years (2022.-2024). Imaging was performed at Dimensions , Hologic mammography unit. All data were obtained from hospital data archiving system and from PACS.

Results
ILC was presented as spiculated mass on 40% of mammograms, as architectural distortions in 22%, with microcalcifications in 9% while in 9% of patients ILC was occult. On 2D+3D modality spiculated masses, asymmetrical densities and architectural distortions were the most common presentations of ILC. However, the presence of a tumor in more than half of false negative 2D mammograms was revealed with only 2.2% cases classified as normal on 2D+3D modality. The value of 3D mammography (added to 2D) was proven in this group of patients. Tomosynthesis has a significant role in increasing sensitivity of mammographic detection of cancers, especially in dense breasts

Conclusion
We strongly recommend the use of 2D+3D mammography in all clinically positive findings as well as in all screening studies, in order to increase ILC detection rate and reduce the need for additional mammographic views or other diagnostic imaging.

(518) - OP-020

TWO DIFFERENT FACES OF GRANULOMATOUS MASTITIS: COMPARISON OF RADIOLOGICAL, PATHOLOGICAL AND CLINICAL FINDINGS OF CYSTIC NEUTROPHILIC GRANULOMATOUS MASTITIS AND IDIOPATHIC GRANULOMATOUS MASTITIS

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Introduction

Granulomatous mastitis (GM) is a benign inflammatory breast disease characterized by non-caseating granulomas. Its etiology includes infectious agents, autoimmune diseases, and foreign body reactions. Cases with unknown causes are classified as idiopathic granulomatous mastitis (IGM). Cystic neutrophilic granulomatous mastitis (CNGM) is a subtype of GM characterized by suppurative lipogranulomas.

Purpose

The distinction of CNGM from IGM is important, since its suspected relationship with infectious agents may change treatment strategies for this disease. The aim of this study is to compare the radiological, pathological, and clinical findings of CNGM and IGM .

Materials and Methods

This retrospective study included 27 IGM and 54 CNGM patients who were admitted to our hospital and diagnosed with radiological imaging and biopsy. Pathology slides and radiological imaging of the patients were re- evaluated. Data were analyzed using SPSS version 23.0 , and the basic characteristics of the CNGM and IGM patient groups were summarized with descriptive statistics .

Results

A total of 81 female patients were included in this study. The most common symptom in both groups was mass. Pain, erythema, nipple discharge and retraction were other symptoms. The most common findings in both groups were collections and tubular extension on ultrasonography, asymmetric density on mammography, and mass enhancement on MRI. Skin thickening and edema were found significantly more frequently in CNGM ($p=0.018$) . The presence of microorganisms in Gram and Hematoxylin-Eosin (HE) stained slides was detected only in the CNGM group ($p=0.001$).

Conclusion

The presence of microorganisms in pathology slides, skin thickening and edema on imaging in CNGM, shows a significant difference compared to IGM. The presence of microorganisms in HE stained preparations of patients diagnosed with CNGM, without Gram staining reveals the importance of routine morphology in visualization of the microorganism in addition to Gram staining, in cases where granulomatous mastitis is detected.

(375) - OP-021

PREOPERATIVE PREDICTION OF LYMPHOVASCULAR INVASION IN INVASIVE BREAST CANCER USING MULTIPARAMETRIC MRI-BASED RADIOMICS AND MACHINE LEARNING ALGORITHMS

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Introduction

Lymphovascular invasion (LVI) in invasive breast cancer is associated with increased risk of axillary lymph node and distant metastases and is definitively diagnosed through postoperative histopathology. Multiparametric MRI enables detailed tumor assessment, while radiomics and machine learning (ML) offer potential for non-invasive preoperative LVI prediction.

Purpose

We aimed to evaluate the predictive performance of radiomics features extracted from ADC, early contrast-enhanced T1A, and TIRM sequences in 255 patients with invasive breast cancer, using various ML algorithms, both across the whole cohort and by molecular subtype.

Materials and Methods

A total of 255 patients with histologically confirmed LVI status (105 LVI^+, 150 LVI^-) were included. Patients were grouped as Luminal (n=140; LumA=72, LumB=68) and Non-Luminal (n=115; HER2=54, TN=61). Tumors were manually segmented using 3D Slicer by two experienced radiologists. Radiomics features were extracted via PyRadiomics, selected by t-test ($p<0.05$), and reduced using Linear Discriminant Analysis. Data were split (80% train, 20% test) and classified using SVM, Naive Bayes, Random Forest, and k-NN. Performance was assessed via AUC, accuracy, and F1-score.

Results

In the full cohort, the ADC-based SVM model achieved AUC=0.84, ACC=0.76, F1=0.62. For Luminal subtypes, ADC-based RF model reached AUC=0.88, ACC=0.69, F1=0.68. In Non-Luminal subtypes, ADC-based SVM model yielded AUC=0.93, ACC=0.96, F1=0.93.

Conclusion

Radiomics combined with ML provides strong potential for preoperative LVI prediction in breast cancer, with high performance, especially in Non-Luminal subtypes. Subtype-specific modeling enhances accuracy and may support personalized treatment planning in clinical settings.

(482) - OP-022

BREAST CANCER SCREENING AWARENESS IN BALKAN COUNTRIES: A FOCUS ON BULGARIA

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Introduction

Breast cancer screening rates in Balkan countries remain suboptimal, often leading to diagnosis at advanced stages.

Purpose

This study aims to evaluate the level of awareness regarding breast cancer among women in Bulgaria, highlighting the importance of early detection and the potential consequences of delayed diagnosis.

Materials and Methods

Data were obtained through an online survey administered to a representative sample of the Bulgarian female population. The questionnaire comprised 30 items focused on breast cancer awareness, screening practices—including imaging modalities—and genetic testing. Additional questions addressed menstrual health and experiences of women diagnosed with breast cancer.

Results

A total of 430 women, aged 18 to 99 years, participated in the survey. Nearly all respondents (99.8%) had heard of breast cancer, and 89% identified it as a prevalent disease. About 80% reported knowing how to perform breast self-examinations to detect lumps. Awareness of screening imaging techniques was high: 96.7% recognized mammography, 94.2% were familiar with breast ultrasound, and 52.3% knew about magnetic resonance imaging (MRI) of the breast. Half of the participants (50.2%) were aware of the availability of genetic testing for breast cancer susceptibility. Additionally, 84% of respondents had undergone a breast imaging study at the time of the survey. Further questions explored awareness of specific diagnostic methods, genetic testing, menstrual cycle considerations, and addressed issues relevant to women with a breast cancer diagnosis.

Conclusion

Overall, Bulgarian women demonstrate a high level of awareness regarding breast cancer screening. However, there is a notable gap in knowledge concerning advanced imaging techniques, such as MRI and contrast-enhanced methods, as well as guidelines on the timing and frequency of screening procedures. Increased education and targeted awareness campaigns are needed to promote early detection and improve outcomes.

CARDIOVASCULAR RADIOLOGY

(354) - OP-016
THE IMPACT OF EPICARDIAL FAT TISSUE VOLUME ON CAD-RADS SCORE

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Introduction
Epicardial fat tissue is a metabolically active visceral fat surrounding the heart and coronary arteries, implicated in the pathogenesis of coronary atherosclerosis through its secretion of hormones and inflammatory adipokines.

Purpose
To investigate the association between epicardial fat tissue volume and CAD-RADS scores.

Materials and Methods
A total of 102 CTA scans were retrospectively evaluated and 5 patients with inadequate images were excluded. Epicardial fat tissue volume was measured using a 64-slice CT scanner. The pericardium was delineated on every axial slice using calcium scoring images, with fat voxels identified at −30 to −190 HU through segmentation performed in 3D Slicer and manually validated. Patients were categorized into three groups according to their CAD-RADS scores: low-risk(0–1), intermediate-risk(2–3), and high-risk(4). Age, epicardial fat volumes, and calcium scores were compared among the three groups using the Kruskal-Wallis test, while hypertension, diabetes mellitus, and hyperlipidemia frequencies were compared using the Chi-square test.

Results
There were 43 patients in the low-risk group, 46 in the intermediate-risk group, and 8 in the high-risk group. The median epicardial volumes were 128 cm^3(IQR: 102–158.5) for low risk group, 141.5 cm^3(IQR: 112.5–177) for intermediate risk group, and 143.5 cm^3(IQR: 100.5–154.5) for high risk group. The epicardial fat tissue volume was similar across the groups. Kruskal-Wallis test indicated a significant difference in calcium scores among the three groups(χ^2 = 51.20, df = 2, $p<0.001$). Post-hoc test revealed significant differences between low and intermediate risk groups($p<0.001$), and between low and high risk groups($p=0.0007$), while no significant difference was found between intermediate and high risk groups($p=1$). There was a positive correlation between age and calcium score(rho = 0.34, $p = 0.0011$).

Conclusion
Although the results were not statistically significant, a trend toward higher median epicardial fat volume with increasing CAD-RADS scores was observed, indicating the need for validation in a larger dataset.

(431) - OP-017

TRACKING ENDOLEAKS: THE CRUCIAL ROLE OF CT ANGIOGRAPHY IN POST-EVAR FOLLOW-UP

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Introduction

The advent of Endovascular Aortic Aneurysm Repair (EVAR) has revolutionized the management of aortic aneurysms, offering a less invasive alternative to open surgery. However, the success of EVAR is critically dependent on diligent post-operative surveillance, primarily due to the persistent risk of complications, most notably endoleaks. These complications, if undetected or improperly managed, can compromise the integrity of the repair and lead to potentially life-threatening aneurysm rupture.

Purpose

This abstract underscores the pivotal role of Computed Tomography Angiography (CTA) as the cornerstone imaging modality in the long-term monitoring of EVAR patients, elucidating its capacity to precisely identify and characterize complications such as endoleaks, thereby guiding timely and appropriate clinical interventions.

Materials and Methods

A retrospective study, conducted at our institution, meticulously analyzed CTA images from a cohort of patients who underwent EVAR, focusing on the identification and classification of endoleaks, alongside other associated complications such as aneurysm sac expansion. Our analysis encompassed patient demographics, procedural specifics, and subsequent clinical outcomes.

Results

While five principal types of endoleaks are recognized, our patient group predominantly exhibited Type I and Type II endoleaks, and few with type III. The detailed CTA findings proved instrumental in clinical decision-making, directly informing the necessity and nature of re-interventions to mitigate the risk of aortic wall rupture.

Conclusion

Ultimately, CTA emerges as an indispensable tool for both pre-procedural planning and post-EVAR assessment, offering critical diagnostic insights that facilitate early detection and accurate classification of complications. This precise characterization of endoleaks is paramount for tailoring optimal patient management strategies, ranging from continued surveillance to targeted endovascular or surgical interventions, thereby enhancing long-term patency and significantly reducing the morbidity and mortality associated with aneurysm rupture.

(432) - OP-018

DISSECTING THE DISSECTION: CT AND CONVENTIONAL ANGIOGRAPHIC EVALUATION OF INNOVATIVE TREATMENT OF AORTIC DISSECTION TYPE A WITH STENT-GRAFT IN SITU FENESTRATION

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Introduction

Acute Stanford Type A aortic dissection is a critical cardiovascular emergency traditionally managed by open surgical repair. However, the treatment landscape is evolving with advanced endovascular interventions, particularly retrograde in situ fenestration of the stent-graft using an electrified wire. Understanding the synergistic contribution of Computed Tomography Angiography (CTA) and conventional angiography is paramount for guiding and evaluating these pioneering endovascular strategy for Type A dissections.

Purpose

This study aims to delineate the pivotal CTA and conventional angiographic features essential for both pre-procedural and post-procedural evaluation of Type A aortic dissection treated with interventional in situ fenestration. We emphasize the critical imaging elements radiologists must report to ensure precise procedural guidance and accurate assessment of therapeutic efficacy.

Materials and Methods

We conducted a retrospective analysis of CTA and conventional angiography images of 17 patients with type A dissection, spanning from initial diagnosis, pre-procedural planning to post-procedural follow-up. Our methodology integrates contemporary literature, established clinical guidelines, and institutional experience with diagnostic imaging assessment and procedure specifics.

Results

Our institutional experience with this innovative technique encompasses 17 patients, with optimal results in 15 cases. CTA facilitated diagnostic confirmation, precise intimal tear localization, dissection extent delineation, treatment feasibility and complication assessment. Conventional angiography provided crucial real-time intra-procedural guidance, enabling precise visualization of wire and catheter manipulation, confirming fenestration creation, and immediate assessment of flow dynamics within the isolated aortic lumen and involved branched vessels through the fenestrations.

Conclusion

In conclusion, we present a novel endovascular technique for Stanford A aortic dissection, employing stent-graft fenestration with an electrified wire to preserve perfusion to aortic arch branches. While this method continues to establish its feasibility and gain wider recognition, our institutional experience demonstrates its promising potential for achieving favorable outcomes. This innovative approach signifies a substantial advancement in the endovascular management of complex aortic pathologies.

FEMALE PELVIC IMAGING

(441) - OP-023
EVALUATION OF PUBORECTAL MUSCLE VOLUME IN MAGNETIC RESONANCE IMAGING IN PERIANAL FISTULAS

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Introduction
Magnetic resonance imaging(MRI) is the preferred modality for the evaluation of perianal fistulas, and in complex cases, the involvement of the puborectalis muscle and sphincter complex is important for diagnosis and treatment planning.

Purpose
In our study, we aimed to investigate the relationship between puborectalis muscle volume and fistula types in patients with perianal fistulas

Materials and Methods
Our study included 72 cases who underwent MRI for perianal fistula at Bolu Abant İzzet Baysal University Hospital between January 2021, and November 2024. Patients with perianal fistulas were grouped according to the St. James classification. Patients with fistulas were divided into two groups: St. James type 1 and others. The puborectalis muscle volume and the thickness of the internal and external anal sphincters were compared between patients with type 1 and other types of fistulas. Volumetric measurements were calculated using the 3D Slicer software.

Results
According to the St. James classification, we identified type 1 (simple linear intersphincteric) fistulas in 43 cases, type 2 (complicated intersphincteric) in 10 cases, type 3 (simple transsphincteric) in 8 cases, type 4 (complicated transsphincteric) in 9 cases, and type 5 (supralevator) in 2 cases. No significant differences were found among the groups in terms of puborectalis muscle volume or internal and external sphincter thicknesses.

Conclusion
According to the St. James classification, we identified type 1 (simple linear intersphincteric) fistulas in 43 cases, type 2 (complicated intersphincteric) in 10 cases, type 3 (simple transsphincteric) in 8 cases, type 4 (complicated transsphincteric) in 9 cases, and type 5 (supralevator) in 2 cases. No significant differences were found among the groups in terms of puborectalis muscle volume(9419.8 $\pm$ 3043.2 mm^3 vs 10336.4 $\pm$ 4177.6 mm^3, p=0.316) or internal and external sphincter thicknesses (5.9 $\pm$ 1.4 mm vs 5.8 $\pm$ 1.3 mm; p=0.576 and 2.8 $\pm$ 0.8 mm vs 2.6 $\pm$ 0.9 mm; p=0.458 respectively).

(331) - OP-024

RARE DISEASES: MAYER-ROKITANSKY-KÜSTER-HAUSER SYNDROME WITH ECTOPIC SPLEEN

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Introduction

A 20-year-old female with a history of amenorrhea presented to the ER department referring lower abdominal pain. An abdomen CT scan demonstrated an ectopic spleen with poor circulation - due to a constriction in the splenic vessels - and an ectopic right kidney, both placed in the lesser pelvis. Neither the uterus nor the vagina were identified. The uteruvagina aplasia indicates that the patient suffers from the syndrome "Mayer-Rokitansky-Küster-Hauser" (MRKH).

Purpose

CT scan performed on emergency basis has a major role in diagnosis and treatment, demonstrating not only the cause of the abdominal pain, but also an unknown, yet very crucial, syndrome of the patient, called MRKH. CT scan guided the surgery that followed.

Materials and Methods

The material and methods that were utilized for this case report are contast-enhanced abdomen and pelvis CT scan of a 20-year-old female presented in the ER for acute abdominal pain.

Results

The MRKH syndrome with both uterovagina aplasia and ectopic kidney is called MRKH Type II. Although the secondary sexual features were normal, there was absence of uterus and vagina, ectopy of one kidney and co-existance of ectopic hypoperfused spleen, which led the patient to the Emergency Department. CT scan conduction is of utmost importance for the diagnosis.

Conclusion

This case represents a MRKH syndrome type II patient with ectopic right kidney. This report highlights the possibility of splenic and renal ectopia occurence in MRKH syndrome and the importance of CT in confirming the diagnosis.

HEAD AND NECK RADIOLOGY

(525) - OP-031

COMPREHENSIVE MRI EVALUATION OF DYSEMBRYOPLASTIC NEUROEPITHELIAL TUMORS (DNETS): A SINGLE-CENTER RETROSPECTIVE STUDY

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Introduction

Dysembryoplastic Neuroepithelial Tumors (DNETs) are rare, benign glioneuronal tumors typically seen in children and young adults, often presenting with drug-resistant epilepsy. Early and accurate diagnosis using MRI is essential to differentiate them from more aggressive cortical lesions and to guide appropriate management.

Purpose

This study aims to comprehensively evaluate the imaging characteristics of DNETs by integrating both conventional and advanced MRI techniques to improve diagnostic accuracy and tumor differentiation.

Materials and Methods

This retrospective study evaluated 52 patients diagnosed with DNET between January 2015 and January 2025. Among them, 27 were diagnosed based on MRI findings alone, and 25 had histopathological confirmation. Imaging was performed using a 3 Tesla scanner with T1-weighted, T2-weighted, FLAIR, diffusion-weighted imaging (DWI), susceptibility-weighted imaging (SWI), perfusion imaging, diffusion tensor imaging (DTI), MR spectroscopy (MRS) and elastography (MRE).

Results

The mean patient age was 26.3 ± 12.2 years. Temporal lobe involvement was most common (69.2%, $p < 0.0001$), with right hemispheric dominance (61.5%). Common MRI features included T1 hypointensity, T2/FLAIR hyperintensity, and absence of diffusion restriction (100%). SWI revealed calcifications in 17.3% of cases. MRS showed minimally reduced NAA levels, elevated Cho/NAA ratios, and detectable myo-inositol peaks in 34.6% of patients. DTI demonstrated significantly reduced fractional anisotropy (FA) and increased apparent diffusion coefficient (ADC) values ($p < 0.001$). No contrast enhancement was observed in 78.8% of cases. Cerebral blood volume was indicating lack of perfusion (94.2%). MR elastography indicated lower lesion stiffness (mean 2.4 kPa). No significant difference was observed between the MRI only and the MRI and histopathology diagnostic groups.

Conclusion

DNETs demonstrate distinct MRI characteristics, non-enhancing, hypovascular, and hypocellular, most commonly affecting the temporal lobe. The strong concordance between MRI only and histopathology confirmed diagnoses underscores the value of advanced MRI in routine clinical practice and supports its role in distinguishing DNETs from other cortical tumors.

(424) - OP-032
OVERPNEUMATIZATION OF SPHENOID SINUS: CT EVALUATION

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Introduction
Pneumosinus dilation of the sphenoid sinus is a common finding on cranial CT scans. This study aims to highlight the CT characteristics of this condition and examine its correlation with clinical findings. Computed tomography (CT) of the paranasal sinuses plays a crucial role not only in diagnosis but also in presurgical planning, especially given the advancement of minimally invasive endoscopic sinus surgery techniques. In our analysis, we classify and describe the various types of sphenoid sinus overpneumatization and emphasize the cases in which radiologists should pay particular attention to this finding.

Purpose
CT evaluation for overpneumatization of sphenoid sinus

Materials and Methods
The CT findings of 83 patients with overpneumatization of the sphenoid sinus are presented in correlation with the clinical findings.

Results
Seventy-two patients had overpneumatization beyond the boundaries of the body of the sphenoid bone with or without bone remodelling but only two patients reported headaches. Thinning of the bone structures was also present in ten patients but only one patient reported headaches. Overpneumatization of the sphenoid sinus with thinning of bony walls reduced the width of the superior orbital fissure in one patient resulting in a gradual decrease of visual acuity.

Conclusion
CT is an accurate method for the evaluation of overpneumatization of the sphenoid sinus due to its high sensitivity in depicting evidence of bone erosion using a bone window as imaging settings.

HYBRID IMAGING

(417) - OP-028
INNOVATIONS AND CHALLENGES IN CONTRAST AGENTS: IMAGING, SAFETY, AND FUTURE PROSPECTS

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Introduction
Contrast agents remain at the forefront of modern medical imaging, contributing significantly to the diagnostic accuracy of modalities such as CT, MRI, and angiography. Although their clinical value is well-established, these agents present certain limitations, as they have the potential to trigger adverse effects such as allergies and nephrotoxicity, particularly in high-risk patient groups. These complications highlight the ongoing need for safer, more effective solutions.

Purpose
The aim of this review is to investigate recent advances in the development of contrast agents, to discuss current safety challenges, and to explore potential future directions in the rapidly evolving field of medical imaging technology.

Materials and Methods
A systematic review of literature published between 2018 and 2024 was performed through databases including PubMed and Scopus. Studies focusing on innovations in contrast media were prioritized, with particular emphasis on developments in nanotechnology, reduced-dose imaging protocols, improved biocompatibility, and contrast agents targeting specific molecular markers. Selected articles were analyzed based on their relevance to clinical effectiveness, patient safety, and diagnostic performance.

Results
Recent innovations include nanoparticle-based formulations, “smart” contrast agents with molecular targeting abilities, and new low-osmolar compounds designed to minimize adverse reactions. These advancements have contributed to more precise tissue characterization, reduced the risk of complications, and enhanced overall imaging quality. Nevertheless, challenges remain, such as high production costs, regulatory complexities, and the need for more extensive long-term safety data.

Conclusion
The evolving development of contrast agents is reshaping diagnostic imaging by increasing accuracy, safety, and tissue specificity. Although challenges related to cost and regulation persist, these innovations offer the promise of greater precision and personalization in medical imaging. Continued research and interdisciplinary collaboration will be essential to translate these advances into everyday clinical practice in the near future.

INTERVENTIONAL RADIOLOGY

(462) - OP-034

IS IT REALLY A HYPERDENSE MIDDLE CEREBRAL ARTERY SIGN? A COMPARATIVE ANALYSIS OF ARTERIAL DENSITY BEFORE AND AFTER MIDDLE CEREBRAL ARTERY OCCLUSION

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Introduction

The hyperdense middle cerebral artery sign(HMCAS) is one of the earliest radiological findings observed in non-contrast computed tomography(NCCT) imaging of patients with acute ischemic stroke.

Purpose

HMCAS is a widely accepted early imaging marker for acute ischemic stroke, typically indicating the presence of thrombotic occlusion in the middle cerebral artery(MCA). However, its diagnostic specificity and accuracy remain a topic of ongoing debate due to the possibility of pre-existing vascular wall calcification or other causes of increased arterial density.Study aims to investigate whether the hyperdensity observed during acute MCA occlusion on non-contrast CT truly reflects acute thrombus formation or if it may, in certain instances, represent chronic or baseline arterial wall hyperdensity.

Materials and Methods

A retrospective review was conducted on CT scans of patients diagnosed with acute MCA occlusion. Arterial densities were measured using region-of-interest analysis in bilateral MCA segments at three time points: pre-occlusion, during occlusion, and post-treatment. Comparative density analysis was performed to evaluate the specificity and potential diagnostic limitations of HMCAS.

Results

Between 2020 and 2025, 167 patients presented to our stroke clinic with M1 MCA occlusion. Of these, 155 had non-contrast CT images, and 135 exhibited HMCAS. Among those, 27 patients had previous CT scans within five years. Three of the 27(11.1%) had false-positive HMCAS findings based on baseline images, with MCA density $\geq$43 HU and MCA/contralateral ratio $\geq$1.20. Mean arterial densities were: Right MCA: 36.3 $\pm$ 6.6 HU(pre-stroke) vs. 44.7 $\pm$ 9.8 HU(stroke) Left MCA: 35.2 $\pm$ 7.0 HU(pre-stroke) vs. 46.4 $\pm$ 11.6 HU(stroke)

Conclusion

These findings suggest HMCAS may occasionally result from pre-existing arterial changes. Incorporating prior imaging or baseline density values may improve accuracy in acute stroke diagnosis. Future prospective studies are warranted to validate these findings.Incorporating prior imaging or baseline density values may improve accuracy in acute stroke diagnosis. Future prospective studies are warranted to validate these findings.

(488) - OP-036

FIRST PASS AND SECOND PASS OUTCOMES OF ASPIRATION VS. STENT RETRIEVER TECHNIQUES IN MECHANICAL THROMBECTOMY FOR MCA M1 OCCLUSIONS

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Introduction

Mechanical thrombectomy is the standard treatment for acute MCA M1 occlusions, but the optimal first-line approach remains debated. Direct aspiration and stent retriever + aspiration are commonly used, yet data comparing first pass efficacy, rescue success, and procedural time are limited.

Purpose

To compare first pass success, second pass outcomes after aspiration failure, and procedure time in patients treated with aspiration or stent retriever techniques.

Materials and Methods

We retrospectively analyzed 135 patients (mean age 73 years, range 33–99; 58.5% female) undergoing mechanical thrombectomy for MCA M1 occlusion. First pass success was defined as recanalization without a second attempt. In aspiration failures, we compared ≥2b success between switching to stent retriever and repeat aspiration. Procedure times were compared between techniques in first pass successes. Statistical analyses included chi-square or Fisher exact tests, odds ratios, and Mann-Whitney U tests.

Results

First pass success was achieved in 60.8% of stent retriever cases (31/51) and 43.9% of aspiration cases (36/82; p=0.086; OR=1.98). Among first pass aspiration failures, second pass ≥2b success was significantly higher when switching to stent retriever (90.0%, 27/30) compared to repeat aspiration (66.7%, 8/12; p=0.088; OR=4.5). Procedure time among first pass successful cases was significantly longer in the stent retriever group (mean 58.5 min, median 45 min) compared to the aspiration group (mean 33.3 min, median 30 min; p=0.0005).

Conclusion

Our findings suggest that aspiration offers favorable first pass performance and shorter procedure time, making it an efficient frontline option. However, switching to stent retriever significantly improves second pass success following aspiration failure, underscoring its critical role as a rescue technique. These results highlight the importance of tailored thrombectomy strategies that balance technical efficacy and procedural efficiency. Further prospective, multicenter studies are needed to validate these findings, refine patient selection, and guide evidence-based procedural decision-making.

(370) - OP-037

ENDOVASCULAR INTERVENTIONS IN PATIENTS WITH CRITICAL STENOSES OF CAROTID ARTERIES AND CONTRALATERAL TOTAL CAROTID OCCLUSION.

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Introduction

Even today endovascular treatment of carotid stenoses might be challenging.

Purpose

To present our experience in cases with severe carotid stenosis and contralateral total carotid occlusion.

Materials and Methods

From 2010 y to 2025 y 157pts (59 female and 98 male) were treated by endovascular techniques for severe carotid stenosis. In 5 patients we performed bilateral stenting / in one patient also left subclavian artery was stented/. The patients with critical carotid stenosis were 60 (38,21%), but 42 were diagnosed with critical carotid stenosis and contralateral total occlusion of the internal carotid artery or critical stenosis more than 90% on both sides (26.759 %).

Results

All the procedures were successful Procedure related complications were rare: haematomas at puncture site ,TIA and heart rate changes.

Conclusion

Critical carotid stenoses are challenging vascular pathology. It can be (safely) treated by endovascular approach, but experienced team is mandatory. It is crucial step in case of acute ischemic stroke, especially in patients with tandem lesions. Recanalization of chronic ICA occlusion remain controversial.

(444) - OP-039

BEYOND THE PAIN: IMAGING & EMBOLIZATION FOR PELVIC CONGESTION SYNDROME

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Introduction

Pelvic Congestion Syndrome (PCS), also known as pelvic venous insufficiency, is a frequent but often overlooked cause of chronic pelvic pain in premenopausal women. The condition arises from ovarian vein reflux and the development of pelvic varices. Despite its prevalence, PCS remains underdiagnosed due to nonspecific symptoms. While conservative treatments offer limited relief, endovascular embolization has become a leading minimally invasive option, demonstrating strong long-term results.

Purpose

This presentation provides an overview of pelvic venous anatomy, key imaging features of PCS, and the critical role of interventional radiology (IR) in both diagnosis and management. Through illustrative case examples, we highlight the effectiveness of transcatheter embolization in clinical practice.

Materials and Methods

We conducted a retrospective review of patients with CT or MRI-confirmed PCS, defined by pelvic or ovarian vein dilation (>5 mm) and reflux on time-resolved imaging. Eligible patients underwent embolization using coils, foam-sclerosant, or particles via endovascular access. Outcomes assessed included technical success, procedural complications, and symptom improvement at 6-month follow-ups.

Results

Embolization was technically successful in all treated cases, with significant symptom resolution observed at follow-up. Common imaging findings included dilated ovarian veins, pelvic varices, and, in some cases, left renal vein compression (Nutcracker phenomenon). The procedure was well-tolerated, with no major complications reported. Minor side effects, such as transient post-procedural pain, were occasionally noted but resolved without intervention.

Conclusion

PCS is a treatable yet frequently missed contributor to chronic pelvic pain. Accurate diagnosis relies on clinical suspicion and dedicated imaging, such as MR or CT venography. Embolization, performed by interventional radiologists, serves as a safe and effective first-line treatment, providing lasting symptom relief with minimal risk. A collaborative approach involving radiologists, gynecologists, and pain specialists is crucial for optimal patient selection and outcomes. Further research should focus on standardizing embolization techniques and evaluating long-term efficacy.

(316) - OP-040

MINIMALLY INVASIVE INTERVENTIONS IN CHRONIC LUMBAR PAIN: THE ROLE OF OZONE NUCLEOLYSIS AND PERIRADICULAR THERAPY

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Introduction

Low back pain (LBP) is one of the most common conditions globally, affecting over 80% of individuals during their lifetime. It represents a leading cause of disability and frequent medical consultations. In recent years, minimally invasive nonvascular techniques have gained popularity in managing chronic lumbar pain and radicular syndromes.

Purpose

To evaluate the clinical effectiveness of percutaneous ozone nucleolysis, alone or in combination with periradicular therapy (PRT), in reducing pain and avoiding surgical intervention in patients with lumbar disc herniation.

Materials and Methods

Patients with MRI-confirmed lumbar disc herniation and chronic radicular pain resistant to conservative treatment were included. Under CT or fluoroscopic guidance, ozone was injected intradiscally and periradicularly. In selected cases, an anesthetic and corticosteroid were additionally applied via PRT. Pain intensity (VAS scale) and functional status were assessed over a defined follow-up period.

Results

The majority of patients reported significant pain relief and functional improvement within weeks. The combined approach (ozone + PRT) enhanced both anti-inflammatory and analgesic effects. A substantial proportion of patients avoided surgical intervention. No major complications were observed.

Conclusion

Percutaneous ozone nucleolysis, especially when combined with PRT, is a safe and effective minimally invasive treatment for lumbar disc herniation and radiculopathy. It offers significant clinical improvement and may reduce the need for surgical procedures when incorporated into a multidisciplinary treatment strategy.

(251) - OP-043

UNUSUAL PREOPERATIVE MUSCULOSKELETAL TUMOR EMBOLIZATION FOR HEMODYNAMIC CONTROL

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Introduction

The basic treatment method for musculoskeletal malign neoplasms is surgery. However, surgical treatment is difficult and challenging for many reasons. The most important of these difficulties is bleeding during resection of tumors with high blood flow. Preoperative embolization significantly facilitates surgery and prevents possible complications.

Purpose

This study aims to evaluate the efficacy and safety of preoperative tumor embolization for intraoperative hemodynamic control in extremity and pancreatic neoplasms.

Materials and Methods

Patients who underwent preoperative tumor embolization in the Interventional Radiology Clinic between September 2023 and January 2025 were retrospectively reviewed. Patients with malignant musculoskeletal and pancreatic tumors were included in the study. Tumors that are frequently embolized, such as liver, kidney, uterus, JAF, and glomus tumors, were not included. Demographic characteristics, pathological diagnoses, and intraoperative blood transfusion requirements were obtained from patient records and analyzed.

Results

A total of 10 patients who met the inclusion criteria were examined; 6 of the patients were male (mean age: 57 years) and 4 were female (mean age: 53.75 years). Of these patients, 4 had metastatic extremity neoplasms leading to pathological fractures, and 6 had primary malignant tumors. All patients underwent computed tomography angiography (CTA) before surgery, followed by digital subtraction angiography (DSA) and particle embolization. The technical success rate was 100%. Embolization was performed using embolizing particles with an average size of 300–500 μm. The average peroperative blood transfusion requirement was ±0.5 units, which was much lower than routine transfusion requirements. No hemorrhage that would cause hemodynamic instability was observed in any patient. Findings of low-severity pancreatitis were observed in patients who underwent pancreatic tumor embolization.The clinical success rate was 100%. There was no off-target embolization.

Conclusion

Preoperative tumor embolization is a highly effective and safe method with a high technical success rate and minimal complication risk to provide intraoperative hemodynamic control in extremity tumors.

(379) - OP-044

DIRECT STENTING VS PERCUTANEOUS MECHANICAL THROMBECTOMY IN PATIENTS WITH ACUTE LOWER LIMB ISCHEMIA: MID- AND LONG-TERM OUTCOMES.

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Introduction

Percutaneous mechanical thrombectomy (PMT) has an evolving role in managing acute lower limb ischemia (ALLI), but access to PMT devices may sometimes be limited.

Purpose

This study compares the safety and effectiveness of a novel direct stenting (DS) technique versus PMT in patients with ALLI.

Materials and Methods

This retrospective study analyzed 56 patients diagnosed with ALLI, comprising 27 with Rutherford stage IIa and 29 with stage IIb. The causes of ischemia included in-situ thrombosis (n=41), embolism (n=9), and in-stent thrombosis (n=6). Patients were treated either with DS technique (n=20), involving deployment of self-expanding stents across the site of acute arterial blockage, or with PMT using the AngioJet device (n=36).

Results

Technical success was achieved in all cases. Access-site complications (hematoma, dissection, pseudoaneurysm) occurred in 2 patients in DS and 4 patients in PMT group. No cases of reperfusion injury and one case of distal embolization in PMT group was reported. During follow-up, 2 minor and 2 major amputations were performed in DS group and 3 major and 3 minor amputations in PMT group. Amputation-free survival rates for DS and PMT group were 85% vs 86.1% at 1 year, 72.9% vs 75.3% at 3 years and 65% vs 75.3% at 4 years, respectively (p=0.76). Primary patency rates for DS and PMT group were 90% vs 82.1% at 1 year, 84.7% vs 74.9% at 2 years and 69.3% vs 70.5% at 3 years, respectively (p=0.83).

Conclusion

The direct stenting technique appears to be a safe and effective approach to treat ALLI, offering short- and long-term outcomes similar to those achieved with percutaneous mechanical thrombectomy.

(473) - OP-045

MACHINE LEARNING-DRIVEN PREDICTION OF PERICATHETER BLEEDING RISK IN TUNNELED HEMODIALYSIS CATHETERIZATION

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Introduction

Tunneled hemodialysis catheters (THCs) represent a widely utilized form of vascular access in patients with chronic kidney disease. Despite their routine use, pericatheter bleeding (PB) remains a common post-procedural complication, potentially compromising patient comfort and clinical outcomes. The early prediction of PB may facilitate the implementation of targeted preventive strategies and improve manage.

Purpose

This study aims to develop machine learning (ML) models to predict the risk of PB following THC insertion, based on clinical and laboratory parameters.

Materials and Methods

A retrospective analysis was conducted on 906 patients who underwent tunneled hemodialysis catheter (THC) insertion between May 2020 and December 2022. Sixty PB cases were matched with sixty controls, and data from 120 patients were analyzed. Feature selection was performed using five methods (ANOVA, RFE, Lasso, Mutual Information, Random Forest). Eleven classification models were trained with 5-fold cross-validation. Models with ROC AUC $\geq$ 0.65 and variance $\leq$ 0.01 underwent hyperparameter tuning and were tested on an independent dataset.

Results

The Support Vector Machine (SVM) model, using age, blood pressure, and platelet count, achieved the best performance in predicting pericatheter bleeding (PB), with 87.5% accuracy, 0.7847 AUC, 83.3% sensitivity, and 91.7% specificity. The PB incidence in our cohort was 6.6%, aligning with reported rates (5.1%–42%). While most PB cases are manageable with compression, some require hemostatic agents, impacting patient comfort and resource use. Systolic blood pressure and platelet count emerged as key predictors. By identifying complex patterns beyond traditional statistics, the model provides a valuable decision-support tool.

Conclusion

Machine learning-based models may serve as effective tools for predicting the risk of pericatheter bleeding (PB) following tunneled hemodialysis catheter (THC) placement. In this study, the developed Support Vector Machine (SVM) model demonstrated high accuracy and sensitivity in predicting PB risk. Integration of such models into clinical practice may enable personalized patient management and help reduce complication rates.

(394) - OP-046

ENDOVASCULAR MANAGEMENT OF FALSE LUMEN IN CHRONIC AORTIC DISSECTION USING THE NEW GENERATION CANDY-PLUG II: TWO CASES FROM OUR DEPARTMENT DEMONSTRATING OCCLUSION STRATEGIES

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Introduction

Chronic aortic dissection remains a challenging condition, often requiring innovative endovascular solutions to prevent aneurysmal degeneration of the false lumen (FL). The Candy-Plug (CP) generation II device has emerged as a promising tool for FL occlusion, promoting thrombosis and reducing the risk of expansion.

Purpose

We present two cases of chronic aortic dissection treated with a novel CP device in our department during the last four months, demonstrating its efficacy and technical considerations.

Materials and Methods

The Candy-Plug II is a compact tubular stent graft featuring a narrow internal channel designed to accommodate the central cannula and facilitate the removal of the dilator tip. Upon removal of the dilator tip, the channel, which is unsupported, collapses and self-seals, effectively closing the lumen. Both patients had chronic aortic dissection and previous surgical treatment with FET. Pre-procedural imaging confirmed a suitable anatomy for CP II deployment.

Results

Patients were treated both with a thoracic endoprosthesis implantation in true lumen at the distal part of the FET and a CP insertion at the FL. The device was successfully utilized to achieve FL occlusion. In both cases we had satisfying angiographic outcomes post implantation. There were no complications during the interventions.

Conclusion

The Candy-Plug generation II device is a valuable tool for managing chronic aortic dissection. These cases underscore its potential to improve patient outcomes and reduce the need for open surgical intervention while promoting false lumen thrombosis and preventing aortic expansion. Further studies are warranted to validate long-term results and refine deployment techniques.

(395) - OP-047

ENDOVASCULAR STENT GRAFT REPAIR OF SYMPTOMATIC POPLITEAL ARTERY ANEURYSMS: A SINGLE-CENTER EXPERIENCE

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Introduction

Popliteal artery aneurysms (PAAs) are the most common form of peripheral arterial aneurysm and carry a risk of thrombosis, embolization, and limb-threatening ischemia. While open surgical repair has traditionally been the treatment of choice, the development of flexible endovascular stent grafts has expanded minimally invasive treatment options. Despite growing adoption, long-term outcome data for endovascular repair of PAAs remain limited.

Purpose

To evaluate the technical success, early safety, and mid-term patency of endovascular stent grafts in the elective treatment of symptomatic popliteal artery aneurysms at a single center.

Materials and Methods

Between 2020 and 2025, eight patients aged 52 to 81 years underwent elective endovascular repair of symptomatic PAAs at our center. Clinical presentations included posterior knee swelling, pain during ambulation, and limb discomfort. All patients were treated with Viabahn stent grafts using standard endovascular technique. Technical success was defined as accurate graft deployment with immediate restoration of arterial flow.

Results

Technical success was achieved in all eight cases, with complete exclusion of the aneurysm and restoration of distal perfusion. No intraoperative or early postoperative complications occurred. During the follow-up period, all stent grafts remained patent. No reinterventions, occlusions, or limb-related adverse events were reported.

Conclusion

Endovascular repair of symptomatic PAAs using Viabahn stent grafts demonstrated excellent technical and clinical outcomes with durable mid-term patency. These findings support the use of endovascular techniques as a safe and effective alternative to open surgery in appropriately selected patients.

(435) - OP-048

TRANSCATHETER ARTERIAL CHEMOEMBOLIZATION FOR GIANT HEPATIC HEMANGIOMAS : A SAFE, ORGAN-PRESERVING ALTERNATIVE TO SURGERY

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Introduction

Giant hepatic hemangiomas are rare, benign vascular liver lesions that may exert mass effect on adjacent structures or carry a risk of spontaneous rupture.

Purpose

This study aims to evaluate the safety and efficacy of transarterial chemoembolization (TACE) with bleomycin and Lipiodol as a minimally invasive alternative to surgery for the treatment of giant hepatic hemangiomas (>9.5 cm).

Materials and Methods

We conducted a retrospective analysis of 9 patients (mean age: 56 years; range: 45–71) with giant hepatic hemangiomas who underwent TACE between 2022 and 2024. Two patients presented with pressure-related symptoms, while the remaining seven were asymptomatic. TACE was performed using 15–30 IU bleomycin mixed with 10–20 ml Lipiodol, adjusted for lesion size. Clinical and imaging follow-up with CT or MRI was performed at 12 and 24 months to assess therapeutic response. Procedural complications and adverse events were also recorded.

Results

Technical success was achieved in all cases. The procedure was well tolerated, with no recorded complications or adverse effects. One patient with three lesions underwent two TACE sessions. The mean maximum lesion diameter was reduced from 11.9 ± 2.9 cm (range: 9.5–17 cm) to 7.8 ± 1.5 cm (range: 6.4–9.5 cm), representing a >50% reduction in overall volume. All patients remained asymptomatic during follow-up, with no recurrence of mass effect symptoms.

Conclusion

TACE using bleomycin and Lipiodol appears to be a safe and effective treatment for giant hepatic hemangiomas, achieving substantial volume reduction without complications. It represents a valuable minimally invasive alternative, particularly for patients at risk of hemorrhage or symptomatic progression.

MUSCULOSKELETAL RADIOLOGY

(468) - OP-051

INTRAOSSEOUS LIPOMAS: A PICTORIAL REVIEW OF IMAGING CHARACTERISTICS ACROSS DIVERSE ANATOMICAL SITES

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Introduction

Intraosseous lipomas are rare benign bone tumors composed of mature adipocytes. They are frequently discovered incidentally and may present with variable imaging features depending on the lesion's stage and anatomical location. Recognition of these features is essential for confident diagnosis and differentiation from other bone lesions.

Purpose

To present a comprehensive pictorial overview of intraosseous lipomas by correlating demographic data, anatomical distribution, and imaging characteristics in a retrospective institutional series.

Materials and Methods

Thirty patients with intraosseous lipomas were retrospectively reviewed. Recorded parameters included age, gender, lesion location, and imaging modality (Computed Tomography [CT], Magnetic Resonance Imaging [MRI], or plain radiography [XR]). Imaging features assessed included the presence of cystic changes, calcifications, and perilesional bone marrow edema, as well as other notable findings. Only patients with clinical and imaging follow up which confirmed the benign nature of the lesions were included in the study.

Results

The mean age was 51 years (SD: 19), with a female predominance of 63%. The most common location was the iliac bone, accounting for 23% of cases, followed by the calcaneus and proximal tibia, each comprising approximately 10% of lesions. MRI was the primary imaging modality in 60% of cases, with CT and XR used less frequently. Cystic changes were observed in 63% of lesions, whereas calcifications were present in only 10%, a proportion potentially underestimated due to the limited availability of CT or XR in several cases. Perilesional bone marrow edema was rare, detected in only 3% of cases.

Conclusion

Intraosseous lipomas demonstrate a diverse anatomical distribution and variable imaging features. The predominance in the iliac bone observed in our series differs from the classical calcaneal location described in the literature. Cystic changes were common, while calcifications were infrequent, likely underdetected in MR-only evaluations. Awareness of their imaging spectrum is crucial for accurate diagnosis and to avoid unnecessary interventions.

(452) - OP-052

COMPARISON OF ULTRASOUND-GUIDED PLATELET-RICH PLASMA AND CORTICOSTEROID INJECTION FOR SUBACROMIAL-SUBDELTOID BURSITIS: A PROSPECTIVE STUDY

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Introduction
Platelet-rich plasma (PRP) injections have demonstrated promising results in treating early rotator cuff disease; however, their short and long term clinical benefit remains under investigation.

Purpose
To compare the efficacy of ultrasound-guided subacromial-subdeltoid (SASD) bursa PRP and corticosteroid injections in patients with SASD bursitis secondary to shoulder impingement syndrome (SIS).

Materials and Methods
Consecutive patients with SASD bursitis due to SIS were prospectively enrolled. Patients with rotator cuff tendinosis/tears were excluded. Participants were randomly allocated into 2 groups depending on the injected substance (i) PRP-group, receiving 10 mL of autologous PRP or (ii) corticosteroid-group, receiving a 10 mL mixture of 1 mL of triamcinolone acetonide 40 mg/mL, 2 mL of lidocaine 2% and 7 mL of saline. All patients received a single SASD bursa injection under ultrasound guidance. Clinical outcomes were assessed with the Constant-Murley Score (CMS) at baseline, 1-week, 3-months, 6-months and 1-year post-treatment. Statistical analyses were performed using the Mann-Whitney U and Hosmer-Lemeshow tests. Statistical significance was set at $P<0.05$.

Results
Forty-one patients (26 females/15 males; mean age 43.4 years) and 42 patients (24 females/18 males; mean age 42.3 years) were included in the PRP-/corticosteroid-groups, respectively. Baseline CMS showed no statistically significant difference ($p=.11$). In both groups, CMS improved at all time-points compared to baseline ($P<.05$ for all comparisons). The corticosteroid-group showed significantly improved outcome at 1-week, 3-months and 1-year compared to the PRP-group (p values<.05). At 6-months no significant difference was observed between groups ($P= .076$). No treatment-related adverse events were reported.

Conclusion
Patients with SIS-related SASD bursitis, experienced pain alleviation and shoulder function improvement with both ultrasound-guided PRP and corticosteroid SASD bursa injections, with comparable benefits at 6-month follow-up. Corticosteroid injections were more effective within the first 3 months and at 1-year follow-up.

(533) - OP-055

DYNAMICS OF CHANGES IN THE CRANIOSELLAR INDEX (CSI) WITH AGE

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Introduction

The craniosellar index (CSI) is an anthropometric indicator that expresses the ratio of the dimensions of the skull to the dimensions of the sella turcica. It is most commonly calculated as CSI=(sagittal diameter of the sella turcica/sagittal diameter of the skull)*100. It is used in radiological and anthropological analyzes to assess: proportionality of craniofacial structures, growth and development, possible abnormalities in the area of the pituitary gland or the base of the skull.

Purpose

The aim of the work was to examine the craniosellar index (CSI) in relation to age.

Materials and Methods

The craniosellar index (CSI) from lateral craniograms in 80 patients of both sexes was analyzed. The patients were divided into two age groups, the first represented patients aged 19-25 years, and the patients of the second age group were older than 80 years.

Results

The average value of the craniosellar index (CSI) in the first group was 6.1 (range 4.6-7.2), and in the second 6.4 (range 5.0-7.3). No change in craniosellar index (CSI) was observed in relation to gender. One of the reasons for the increase in the value of the craniosellar index (CSI) can be explained by involutional changes on the skeleton, when the loss of calcium from the bones leads to a decrease in the resistance of the bony walls of the Turkish saddle during normal CSF dynamics.

Conclusion

The craniosellar index (CSI) can show clear age dynamics and can be used as a morphometric parameter in monitoring the development or pathological processes of the craniofacial region.

NEURORADIOLOGY

(436) - OP-029

A rare clinical manifestation of relatively fast progressing cognitive decline in a patient with Morgagni-Stewart-Morel syndrome presenting to the ER with persistent pulsating holocranial headache.

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Introduction: Hyperostosis frontalis interna (HFI) is a benign overgrowth of the frontal bone inner table, typically presenting with a bilateral and symmetrical pattern, exhibiting female preponderance and increasing prevalence with age. Although often asymptomatic, HFI may exert mass effect on the frontal lobe cortex, potentially leading to headaches, cognitive decline, seizures, behavioral disturbances, or psychiatric symptoms. HFI can appear as an isolated radiological finding or as part of syndromic conditions, most notably Morgagni-Stewart-Morel (MSM) syndrome, which is characterized by HFI, obesity, and neuropsychiatric or endocrine disorders (e.g., diabetes mellitus, hyperparathyroidism, hirsutism). The exact etiology remains unclear, but hormonal imbalances (such as hyperprolactinemia or acromegaly), genetic predisposition, and environmental influences have all been suggested, primarily based on limited case reports.
Purpose: This case report describes a rare presentation of MSM syndrome in an obese female exhibiting significant HFI, longstanding psychiatric symptoms, and relatively fast progression of cognitive decline.
Materials and Methods: A 58-year-old female presented with persistent pulsating holocranial headache, atypical dizziness, and nausea. Her psychiatric history since 2013 included: depression, disorganized behavior, delusions, aggression, alcohol abuse, hypersexuality and psychomotor

agitation. An emergency CT was performed, and she was admitted to the Neurology Department for further evaluation and concurrent psychiatric assessment.
Results: Neuroimaging (CT/MRI), in the context of longstanding psychiatric symptoms, was strongly indicative of MSM syndrome. CT revealed moderate to severe HFI extending to the temporal bone (type D, Hershkovitz classification) and cortical atrophy. In conjunction with obesity and neuropsychiatric features, these findings supported the diagnosis of MSM. Diagnosed in September 2024, the patient remains under psychiatric follow-up since her December 2024 admission.
Conclusions: This case highlights a rare, but significant, clinical manifestation of MSM, with progressive cognitive deterioration and moderate dementia. It supports the hypothesis that the syndrome may often remain undiagnosed for years and adds to the limited existing literature on this under- recognized condition.

(528) - OP-030

RADIOMICS MACHINE LEARNING APPROACH FOR THE DIFFERENTIAL DIAGNOSIS OF NEUROPSYCHIATRIC LUPUS ERYTHEMATOSUS FROM MULTIPLE SCLEROSIS

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Introduction

The differential diagnosis between Multiple Sclerosis (MS) and Neuropsychiatric Systemic Lupus Erythematosus (NPSLE) is a major clinical challenge.

Purpose

In this study, we aimed to identify unique neuroimaging biomarkers for the differential diagnosis between NPSLE and MS, using a machine learning approach.

Materials and Methods

Radiomics data were extracted from brain MRIs of 103 patients (MS=44, NPSLE=59). More specifically, a classification model was developed using Boruta for feature selection (α=0.01, max iterations=500) and a nested cross-validation model across six classifiers, including among others, k-nearest neighbors (KNN), support vector machines (SVM) and Random Forest. Performance was evaluated in terms of mean metrics such as Mathews Correlation (MCC), AUC, F1-score. Feature importance among commonly selected features was assessed using SHAP values.

Results

In 4 out of 5 outer folds, the selected model was SVM, and Boruta consistently identified 37 stable features across folds, yielding a stability score of 31.09%. In terms of metrics, we observed a mean AUC of 0.9882 $\pm$ 0.0179, a mean F1-score of 0.9482 $\pm$ 0.0502, and a mean MCC of 0.9093 $\pm$ 0.0891.

Conclusion

This work demonstrates a potential pipeline for systematically investigating radiomics features and machine learning models to assist in the differential diagnosis of MS and NPSLE. Future work will focus on further testing these results using external data.

(358) - OP-033

CT ANGIOGRAPHIC EVALUATION OF AZIGOS ANTERIOR CEREBRAL ARTERY VARIATIONS

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Introduction

The azigos anterior cerebral artery (ACA) arises from the persistence of the embryonic median artery of the corpus callosum, which supplies both cerebral hemispheres with a single A2 segment. This condition carries significant risks hemodynamically and during surgical intervention. The relationship with distal ACA aneurysms is particularly noteworthy.

Purpose

The aim of this study was to determine the different types of azigos ACA detected by computed tomography angiography (CTA) and to examine other cerebral vascular anomalies accompanying these cases.

Materials and Methods

A total of 3274 cases who underwent brain CTA between January 2023 and January 2025 were screened for the study. Based on the anatomical branching level, azygos ACAs were classified into four groups (A, B, C, and D). Aneurysms, anomalies, and malformations accompanying azygos ACA were also identified.

Results

Azygos ACA was observed in 31 patients (16 females and 15 males), with a frequency of azygos ACA was 0.83%. The average age of the patients with ACA was 55,5 ± 14,1 years (range, 23 – 79 years). The most common type of azigos ACA was Type C, accounting for 58% of all cases. This was followed by Type D (19%), Type A (13%), and Type B (10%). Two intracranial aneurysms were detected, both of which were type C (6.45%). One aneurysm was located in the ACoM and the other in the right MCA bifurcation. The most common vascular anomalies accompanying azygos ACA were non-visualization of the PComA, unilateral vertebral artery hypoplasia, and ACA A1 segment hypoplasia.

Conclusion

Azigos ACA is a rare variant. Accurate CT angiography is critical prior to surgical or endovascular intervention. Knowledge of variations and identification of accompanying vascular anomalies can guide clinical practice.

(459) - OP-035

RADIOLOGICAL AND CLINICAL OUTCOMES AFTER MIDDLE MENINGEAL ARTERY EMBOLIZATION WITH PVA PARTICLES IN CHRONIC SUBDURAL HEMATOMA: A RETROSPECTIVE SINGLE-CENTER STUDY

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Introduction

Chronic subdural hematoma (cSDH) is a common condition in older adults and is expected to become even more prevalent due to demographic changes. In patients with high surgical risk, middle meningeal artery (MMA) embolization has emerged as a promising minimally invasive alternative.

Purpose

This study aimed to evaluate both radiological and functional outcomes after MMA embolization using polyvinyl alcohol (PVA) particles in patients with cSDH.

Materials and Methods

We retrospectively analyzed 44 patients (mean age 77.7 ± 10.3 years; 61.9% male) treated with MMA embolization. In most cases (88.1%), prior burr-hole surgery had been performed. Embolizations were conducted using 100–300 μm PVA particles via a transfemoral approach. Based on angiographic selectivity, procedures were categorized as non-selective (type 0), selective (type 1), or supraselective (type 2). Hematoma thickness and functional status (mRS) were documented at baseline and follow-up. The mean radiological follow-up period was 80 days.

Results

Hematoma thickness decreased significantly from 16.9 ± 6.4 mm to 7.0 ± 6.5 mm ($p < 0.0001$). While 31.8% of patients showed functional improvement on the mRS, the change was not statistically significant ($p = 0.171$). Anticoagulation therapy had no measurable impact on outcome. Supraselective embolization was associated with a stronger reduction in hematoma size, although the effect did not reach statistical significance ($p = 0.064$). The recurrence rate was 4.5%, and complications occurred in 9.1% of cases, none of which led to permanent deficits. Average hospital stay was 12.8 days.

Conclusion

MMA embolization using PVA particles appears to be a safe and effective treatment for cSDH, particularly in elderly or multimorbid patients. Embolization technique may influence outcome and should be further explored in prospective studies.

(422) - OP-041

DIAGNOSTIC VALUE OF POSTERIOR EPIDURAL FAT INTERPOSITION ON MRI IN ADOLESCENT SPONDYLOLYSIS

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Introduction

Spondylolysis (LS) is a bone defect in the pars interarticularis of the vertebra. It is a common cause of low back pain in adolescents. It occurs in 47% of adolescent athletes with low back pain. MRI is often the initial diagnostic modality in patients with back pain or radiculopathy. However, direct visualization of a pars interarticularis fracture can be difficult with MRI. In spondylolysis, the epidural fat pad, located between the dura mater and the spinous process of the vertebra, to separate from its normal position, causing the previously separated fat pads to fuse. This appearance is described as the "permanent double hump sign," or epidural fat interposition (EFI). In patients with spondylolysis, fusion of the epidural fat pads was assessed with midsagittal T1-weighted MRI at the level of the vertebra with the pars interarticularis defect.

Purpose

To investigate the diagnostic value of EFI between the dura mater and the spinous process of L5 in adolescent lumbar spine spondylolysis.

Materials and Methods

Midsagittal T1-weighted lumbar spine MR images of 20 adolescents with spondylolysis and 23 adolescents without pars interarticularis fractures were randomized, and a radiologist unrelated to the study was asked to evaluate the presence of EFI between the dura mater and spinous process of L5 on the randomized images.

Results

EFI was detected in 16 of the 20 adolescents with spondylolysis (80%) and only in 4 of the 23 adolescents without pars interarticularis fractures (17,3%). The difference was statistically significant ($P<0.01$). EFI's sensitivity for the diagnosis of spondylolysis is 80.0%, specificity is 82.6%, positive predictive value is 80.0%, negative predictive value is 82.6% and accuracy is 81.4%.

Conclusion

MRI is not always sufficient to definitively diagnose spondylolysis; EFI may be a simple and useful sign in diagnosis.

ONCOLOGIC IMAGING

(551) - OP-015
IMAGING SPECTRUM OF LUNG CANCER IN CT

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Introduction
Lung cancer is a leading cause of cancer-related mortality worldwide. Imaging plays a critical role in diagnosis, staging, and follow-up, with most tumors first detected on chest radiographs, though often at an advanced stage. Chest Computed Tomography (CT) is the modality of choice for evaluating lung cancer, which can present with a broad range of radiologic findings, from typical solid nodules to subtle or atypical findings. Recognizing and evaluating these findings is essential for accurate patient management.

Purpose
The purpose of the presentation is to demonstrate the spectrum of CT findings in lung cancer, highlighting both typical and atypical presentations.

Materials and Methods
We reviewed CT scans performed in our institution of patients with histologically confirmed lung cancer. Representative cases were selected to illustrate typical nodules and lung masses, as well as less common findings such as scar-like lesions. CT scans were conducted in 16-slice, 64-slice, and 512-slice CT scanners, following an examination protocol tailored to the clinical question (contrast-enhanced chest CT, CTPA, CT Angiography of bronchial arteries, HRCT).

Results
Lung cancer appeared on CT scans most frequently as solid, subsolid or ground-glass nodules, hilar or peripheral masses. Uncommon manifestations of lung cancer included tumors in cystic airspaces, scar-like opacities, and lesions obscured by pre-existing lung disease, such as lung fibrosis. Awareness of these atypical features was crucial to avoid misdiagnosis.

Conclusion
Understanding the diverse imaging spectrum of lung cancer in CT improves diagnostic accuracy and supports timely and appropriate management. In addition, recognizing atypical findings is crucial to avoid misdiagnosis and to achieve better patient outcomes.

(442) - OP-050

PERFUSION PARAMETERS ANALYSIS OF THE VERTEBRAL BONE MARROW IN PATIENTS WITH PH1 CHRONIC MYELOPROLIFERATIVE NEOPLASMS (PHNEGMPN): A DYNAMIC CONTRAST-ENHANCED MRI (DCE-MRI) STUDY

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Introduction

Myeloproliferative neoplasms are characterized by excess terminally differentiated myeloid cells in the peripheral blood. Radiological findings are rare and non-specific; however Magnetic Resonance Imaging (MRI) is a potential tool in assessing tumor microvascularity and function, using dynamic contrast-enhancement.

Purpose

The evaluation of vertebral bone marrow perfusion using dynamic contrast-enhanced MRI (DCE-MRI) in patients with Philadelphia negative chronic myeloproliferative neoplasms (PhnegMPN).

Materials and Methods

The study enrolled 24 patients with PhnegMPN: 12 patients with myelofibrosis (Group A), 6 with essential thrombocythemia (ET), and 6 with polycythemia vera (PV) (Group B) who underwent DCE-MRI of the lumbosacral spine. Twelve normal individuals served as control group (Group C). Wash-in (WIN), wash-out (WOUT), maximum contrast-enhancement (CEmax), time-to-peak (TTPK), time-to-maximum slope (TMSP), and the WIN/TMSP ratio (WTSP) were calculated.

Results

WIN, CEmax, and WTSP parameters were higher in Group A than in Group C ($P < 0.05$). These parameters were significant ($P < 0.0001$) in discriminating patients with myelofibrosis from normal individuals with sensitivities 74.14%, 87.93%, 74.14%, and specificities 91.07%, 83.93%, 91.07%, respectively. WIN, WOUT, CEmax, and WTSP parameters were higher in Group A than in Group B ($P < 0.05$). Group B exhibited no differences in perfusion parameters as compared with Group C with the exception of WOUT.

Conclusion

Patients with myelofibrosis exhibited increased perfusion parameters in vertebral bone marrow, which could be consisted with increased vascularity, probably related to neoangiogenesis as opposed to ET or PV patients showing no increased perfusion. DCE-MRI may be of value in discriminating subgroups of PhnegMPN patients and in indicating those progressing to myelofibrosis.

PEDIATRIC RADIOLOGY

(409) - OP-056
THORACIC ULTRASOUND IN ACCIDENTAL PEDIATRIC CHEST TRAUMA: SCANNING PROTOCOL AND SEMIOLOGY

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Introduction
Although not frequently encountered, thoracic injuries remain a significant cause of mortality in pediatric trauma patients. Injury patterns are thought to differ between adults and children due to several anatomical and physiological factors. Radiography remains the mainstay of initial triage in these patients; however, ultrasound (US) has shown potential as a supplementary imaging diagnostic tool.

Purpose
This presentation aims to provide a detailed US approach of lungs and pleura space in traumatized children, to thoroughly describe scanning techniques and anatomy, to emphasize paediatric peculiarities and to analyze abnormal findings encountered in children following accidental thoracic trauma.

Materials and Methods
We conducted a retrospective study of US examinations of patients under 18 years of age who presented with chest trauma and retrieved videos and static images of normal and abnormal mediastinum, chest wall and pleural line patterns. Grey scale, color doppler, M-Mode was applied with high-frequency linear and lower frequency linear and curved array transducers, depending on patient's size. Subdiaphragmatic, subxiphoid, suprasternal, transthymic, parasternal/intercostal and focused rib/sternal/clavicular views for the evaluation of supradiaphragmatic pleura/lung surface, pericardium, mediastinum, pleural cavity and anterior/lateral/posterior lung surfaces, comprised our exhaustive US protocol.

Results
Normal findings exclusively encountered in children included prominent mediastinal thymus, cartilaginous ribs and sternal synchondroses. Abnormal semiology included loss of lung sliding, lung point sign, stratosphere sign, pleura shred sign, coalescent b lines, pleural effusion, stepladder gas pattern around/within the thymus, as well as thoracic wall injuries.

Conclusion
Chest US may supplement or complement radiographs as a first-line diagnostic modality and for follow-up in traumatized children. A meticulous scanning protocol, knowledge of paediatric peculiarities and the variety of available US signs, ensures high sensitivity and accuracy.

(427) - OP-057

APPLICABILITY OF THE ORADS-MRI SCORING SYSTEM IN THE EVALUATION OF PEDIATRIC OVARIAN MASSES

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Introduction

The Ovarian-Adnexal Reporting and Data System for MRI (O-RADS MRI) is a standardized tool for risk stratification and reporting of adnexal masses, aiming to improve diagnostic accuracy and streamline communication between radiologists and clinicians.

Purpose

This study assesses the diagnostic performance and interrater reliability of the O-RADS MRI system in pediatric ovarian masses.

Materials and Methods

Pathology archives were retrospectively reviewed for female patients (<18 years) who underwent surgery for ovarian lesions between May 2020 and March 2025, yielding 119 patients and a total of 124 ovarian lesions. O-RADS MRI scores were independently assigned by three radiologists blinded to histopathology, which served as the reference standard. Interrater reliability was assessed using the nonparametric Gamma statistic.

Results

The median patient age was 13 years (IQR: 13–16). Interrater agreement was excellent, with the Gamma scores ranging between 0.843 and 0.996, all with p-values <.001. Of the 124 lesions, 85 (68.5%) were non-neoplastic cysts, 32 (25.8%) were benign neoplasms, 1 (0.8%) was borderline, and 6 (4.8%) were malignant. No malignancies were found in O-RADS 1–2. O-RADS 3 included one borderline lesion (rest benign). O-RADS 4 had 4/6 malignancies (two immature teratomas, one dysgerminoma, one mixed germ cell tumor) and two benign mature teratomas. O-RADS 5 had 2/4 malignancies (both granulosa cell tumors) and two benign cases (one leiomyoma and one benign sclerosing stromal tumor).

Conclusion

The O-RADS MRI scoring system appears applicable to pediatric ovarian masses, effectively identifying low-risk lesions and demonstrating strong interrater reliability. However, the scoring system may have discordance for malignant lesions and was less reliable than in adult populations, possibly due to the broader spectrum of pathologies and the relative rarity of malignant ovarian lesions seen in children. Caution is warranted in pediatric patients with an O-RADS MRI score of 4 or 5.

THORACIC RADIOLOGY

(429) - OP-009
IMAGING ACUTE DYSPNEA: CT PATTERN RECOGNITION IN EMERGENCY DIAGNOSIS

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Introduction
Acute dyspnea is one of the most common complaints encountered in the emergency setting, including a wide spectrum of conditions from non-urgent to potentially life threatening. Prompt and accurate diagnosis is essential for optimal management. Computed tomography (CT), particularly high-resolution and angiographic modalities, offers detailed imaging of the cardiorespiratory system and plays a critical role in evaluating the underlying causes of acute dyspnea.

Purpose
This pictorial review aims to illustrate the spectrum of CT findings associated with acute dyspnea and to correlate these imaging features with common cardiopulmonary etiologies.

Materials and Methods
A retrospective review was conducted on selected chest CT studies of adult patients who presented with acute dyspnea to the emergency department. Cases were categorized according to underlying pathology, including cardiogenic pulmonary edema, acute respiratory distress syndrome (ARDS), pulmonary embolism and pneumonia. Other significant entities included pneumothorax, acute exacerbations of idiopathic pulmonary fibrosis (IPF), diffuse alveolar hemorrhage and conditions associated with the implications and treatment of lung cancer.

Results
CT imaging revealed a broad and often non-specific range of radiological features. Ground-glass opacities were the most frequently encountered abnormality, though they lacked specificity, appearing in conditions such as pulmonary edema, ARDS, and infection. Additional common findings included areas of consolidation, interlobular septal thickening, pulmonary nodules, pleural effusions and signs of right heart strain or cardiomegaly—none of which are pathognomonic. Given the significant overlap in imaging findings, identification of ancillary signs in combination with clinical context aided in narrowing differential diagnoses.

Conclusion
A structured approach to CT interpretation, with particular attention to the distribution of pulmonary changes, associated imaging signs, and correlation with clinical data can significantly expedite diagnosis and optimize patient outcomes.

(309) - OP-010

RADIOLOGICAL AND CLINICAL CORRELATIONS OF COUGH IN PULMONARY SARCOIDOSIS: AN HRCT-BASED STUDY

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Introduction

Sarcoidosis is a systemic inflammatory disease of unknown origin, characterized by the formation of non-caseating granulomas in various organs, most commonly the lungs and lymph nodes. The disease can involve multiple organ systems, leading to a wide range of clinical manifestations. Sarcoidosis is often diagnosed through a combination of clinical presentation, radiological findings, and histopathological evidence of granulomatous inflammation.

Purpose

is to detect HRCT features of pulmonary sarcoidosis and their correlation with cough.

Materials and Methods

Fifty patients diagnosed with sarcoidosis came to our University clinic of pulmonology and allergology-Skopje in the last two years. Computed tomography with high resolution was made on 128 slice CT scanner PHILIPS INCISIVE, using 1 mm thin-slice thickness and a special reconstruction algorithm.

Results

Cough was present in 80% patients, mostly with low intensity 40%. Patients with cough significantly less often than patients without cough had findings of micronodular changes with a size of 1 to 3 mm localized peribronchovascular in the upper and middle zones (10% vs 40%, p=0.041). A statistically significant difference between the groups with and without cough was confirmed for the localization of these changes in the peripheral and subpleural regions (p=0.037). Difference was confirmed between patients with and without cough in terms of the frequency of hypoattenuation findings in the lower peripheral and subpleural zones.

Conclusion

High-resolution computed tomography (HRCT) is the preferred imaging modality for evaluating pathological changes in pulmonary sarcoidosis. It provides detailed visualization of characteristic findings, such as lymphadenopathy, micronodules, and other lesions, along with their distribution patterns and any atypical changes. Despite its utility, further research is needed to better understand the mechanisms underlying cough in patients with sarcoidosis.

(434) - OP-011

IMAGING PATTERNS OF SYSTEMIC SCLEROSIS-ASSOCIATED INTERSTITIAL LUNG DISEASE: A RETROSPECTIVE HRCT REVIEW

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Introduction

Systemic sclerosis (scleroderma) is an autoimmune disorder characterized by diffuse fibrosis of the skin and internal organs, particularly affecting the lungs and gastrointestinal tract. Pulmonary hypertension and interstitial lung disease (SSc-ILD) are the most common cardiopulmonary manifestations, significantly contributing to morbidity and mortality. High-resolution computed tomography (HRCT) plays a pivotal role in the prompt detection and monitoring of patients with SSc-ILD.

Purpose

To describe and evaluate the typical HRCT patterns of lung involvement in patients with systemic sclerosis, with an emphasis on interstitial lung disease and its diagnostic implications.

Materials and Methods

We retrospectively reviewed all consecutive patients with SSc-ILD regularly followed at our department from March 2023 onward. Demographic, clinical, and laboratory data were collected. HRCT scans of 15 patients were assessed for ILD patterns, imaging features, and their correlation with disease severity and progression.

Results

Fifteen patients with SSc-ILD (mean age: 66.1 ± 8.4 years) were included, with a slight male predominance (53%), while 20% were never-smokers. Pulmonary function tests indicated moderate impairment (mean forced vital capacity [FVC]: $50.3\% \pm 14.5\%$; mean diffusing capacity for carbon monoxide [DLCO]: $72.7\% \pm 22.2\%$). Most patients (73.3%) received antifibrotic therapy; two patients (13.3%) died during follow-up. HRCT revealed a nonspecific interstitial pneumonia (NSIP) pattern in 80% of patients and a usual interstitial pneumonia (UIP)-like pattern in 20%. Key imaging features included reticular abnormalities (93%), ground-glass opacities (67%), traction bronchiectasis (60%), and honeycombing (33%). Pulmonary artery enlargement, suggestive of pulmonary hypertension, was observed in 27% of cases.

Conclusion

HRCT is a vital tool for the early identification and longitudinal evaluation of pulmonary fibrosis in systemic sclerosis, most frequently demonstrating an NSIP pattern. Accurate interpretation of imaging findings is essential for guiding prognosis and optimizing patient care.

(476) - OP-014

EVALUATING THE ROLE OF RADIOMICS ON NON-CONTRAST CHEST CT IN DIFFERENTIATING SARCOIDOSIS AND LYMPHOMA

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Introduction

Mediastinal lymphadenopathy can result from both benign and malignant causes. Malignant causes include lung cancer, lymphoma, and extrathoracic malignancies, while benign causes are often granulomatous diseases like sarcoidosis and tuberculosis. Differentiating sarcoidosis from lymphoma is crucial due to overlapping clinical and radiologic features but different treatments. Radiomics enables the quantitative extraction of imaging features, offering an objective assessment of tissue heterogeneity not detectable by conventional radiology.

Purpose

The present study aimed to investigate the diagnostic efficacy of radiomic features derived from non-contrast chest computed tomography (CT) in distinguishing mediastinal lymphadenopathy attributable to sarcoidosis versus lymphoma.

Materials and Methods

Seventy-nine patients diagnosed with sarcoidosis or lymphoma exhibiting mediastinal lymph nodes with short-axis diameter $\geq$1 cm on non-contrast chest CT between January 2016 and March 2025 were included. Exclusion criteria included lymph nodes <1 cm, >50% calcification, mediastinal masses, known malignancies, and age <18 years. DICOM images were imported into 3D Slicer software for manual segmentation of lymph nodes. Subsequently, 107 radiomic features were extracted per patient. Statistical analysis employed the Mann–Whitney U test with significance set at $p<0.05$.

Results

Analysis of 318 lymph nodes revealed 15 radiomic parameters with significant intergroup differences ($p<0.001$). Difference Variance demonstrated superior discriminatory capacity ($p=0.000003$; AUC=0.904), reflecting increased tissue heterogeneity in sarcoidosis. Features related to Gray Level Variance and Entropy were elevated in sarcoidosis, indicating heightened textural complexity, whereas Uniformity, Idm, and Id were predominant in lymphoma, consistent with homogenous tissue architecture. Parameters like Maximum Probability, MCC, and Imc2 further corroborated these distinctions.

Conclusion

Findings corroborate prior studies affirming the diagnostic utility of radiomics in differentiating sarcoidosis from lymphoma. Non-contrast CT-based radiomics offers a reproducible, noninvasive, and contrast-free modality particularly advantageous for patients with contraindications to contrast media. This approach may reduce reliance on invasive diagnostic procedures. Limitations include a small cohort; thus, validation via larger, multicenter studies is warranted.

UROGENITAL RADIOLOGY

(470) - OP-026

SEGMENTAL CAVERNOSAL ARTERY DOPPLER EVALUATION IN ERECTILE DYSFUNCTION: IS PROXIMAL OR DISTAL MEASUREMENT MORE INFORMATIVE?

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Introduction
Penile Doppler ultrasonography (PDU) is the standard imaging modality to assess vascular causes of erectile dysfunction (ED). Typically, peak systolic velocity (PSV) and end-diastolic velocity (EDV) are measured in cavernosal arteries, yet comparative data from different arterial segments are limited.

Purpose
To determine whether proximal or distal cavernosal artery Doppler measurements better differentiate erectile function and Doppler-based diagnosis by comparing values across time points and erection hardness.

Materials and Methods
Twenty-eight patients underwent PDU using a Samsung RS85 ultrasound system after intracavernosal injection of approximately 20 μg alprostadil (Jectera®). Examinations were performed by a single radiologist under standardized conditions. The penis was positioned ventrally against the lower abdomen, and measurements were taken at proximal and distal cavernosal artery segments before injection and at 5, 10, and 20 minutes post-injection. PSV, EDV, and arterial diameters were recorded. Erectile quality was scored using the Erection Hardness Score (EHS), and patients were grouped as normal, arterial insufficiency, or venous-occlusive dysfunction. Statistical analyses included paired t-tests, Kruskal-Wallis tests, and eta-squared (η^2) effect sizes.

Results
Proximal PSV at 5 minutes was significantly higher than distal PSV ($p < 0.001$) and showed the largest effect size across all comparisons ($\eta^2 = 0.25$). Among diagnostic groups, only proximal PSV at 20 minutes showed significant differences ($p = 0.017$). No EDV parameter reached statistical significance. EHS-based comparisons yielded no significant p-values, but trends favored higher PSV and lower EDV in the EHS-sufficient group. Overall, proximal measurements had greater discriminatory potential.

Conclusion
Proximal cavernosal artery Doppler measurements, particularly PSV at 5 and 20 minutes, more effectively reflect hemodynamic variation and diagnostic categorization than distal measurements. Arterial diameter changes and segmental flow differences suggest the importance of anatomic variation and collateral pathways, which should be further explored in future studies.

(426) - OP-027
RENAL CELL CARCINOMA IN HORSESHOE KIDNEY: CT EVALUATION

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Introduction
A variety of benign and malignant tumours often accompanies horseshoe kidney. The most commonly seen tumour is renal cell carcinoma, which is estimated to account for 45% of tumours in these patients. Both carcinoids and Wilms' tumour occur with high frequency in patients with horseshoe kidney . Oncocytomas, which are benign tumours, are seen more frequently in patients with horseshoe kidney compared to the normal population .

Purpose
The purpose of this study is to evaluate the incidence and imaging characteristics of renal masses in patients with horseshoe kidney using computed tomography (CT).

Materials and Methods
We included 87 patients (61 males and 26 females) diagnosed with horseshoe kidney who underwent contrast-enhanced CT imaging at our institution. We analyzed the CT findings to identify and characterize any renal masses. The presence or absence of malignancy, tumor location, size, and enhancement patterns were recorded and analyzed.

Results
Our study with CT, included 87 cases (61 males and 26 females) with horseshoe kidney. 6 Patients (6.9%) were found to have renal tumors consistent with malignancy on CT imaging. The remaining 81 patients (93.1%) had no evidence of malignant neoplasm.

Conclusion
Horseshoe kidney is a very common congenital disorder of the urinary tract. Although it may be completely asymptomatic and an incidental finding, horseshoe kidney is often accompanied by a variety of benign and malignant tumors. CT imaging plays a vital role in the detection, characterization, and staging of these tumors, facilitating accurate diagnosis and informing treatment planning.