mild and moderate-severe pathological MSGUS exam. These data suggest that there could be differences for antiRo60, AntiLa and ESSPRI variables even though statistical significance was not achieved ($p>0.150$ in all associations explored). No differences have been found for RF, C3 and C4 hypocomplementemia, ESR, CRP and ESSDAI variables (table 1).

Conclusion: In this series of patients, a statistically significant association was found between the positivity of anti-Ro antibodies, hypergammaglobulinemia and MSGUS, as well as its subdivision by pathological grades. No statistical significant association was found between MSGUS and positivity of antiRo60 and antiLa antibodies and ESSPRI, probably due to the small sample size. There were no differences for the rest of the variables analyzed (RF, complement, acute phase reactants and ESSDAI).

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TABLE 1. ASSOCIATION BETWEEN MSGUS GRADES AND THE ANALYZED VARIABLES

MSGUS	NORMAL	GRADE 2 (MILD)	GRADE 3 (MODERATE-SEVERE)	p
AntiRo 52%	21	38	71	0.004
AntiRo 60%	32	44	62	0.150
AntiLa%	21	28	48	0.163
Hypergammaglobulinemia	16	53	76	0.001
Rheumatoid factor%	47	31	52	0.460
Hypocomplementemia C3%	11	6	5	0.757
Hypocomplementemia C4%	11	10	19	0.555
ESR mean	31	34	38	0.094
CRP mean	2	1	3	0.059
RF mean	10	9	17	0.229
ESSPRI mean	5	5.6	6.3	0.349
ESSDAI mean	2	1	2	0.078

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FRI0633

POSSIBLE ADVANTAGES OF 18F-FDG PET/CT-MR IN ADULT-ONSET STILL'S DISEASE: A STUDY FROM AN ITALIAN COHORT

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Background: Adult-onset Still's disease (AOSD) is a systemic complex autoinflammatory disorder whose diagnosis is essentially clinical and necessitates the exclusion of potential mimickers. A specific diagnostic test to define the diagnosis or assess the disease activity is still not available.

Objectives: To define the advantages of PET/MR in diagnosis and therapeutic response in AOSD patients and to assess a characteristic uptake pattern of ¹⁸F-FDG at PET/CT-MR images of our cohort.

Methods: 18 AOSD patients and 30 age- and sex-matched controls underwent ¹⁸F-FDG PET/CT-MR between 2008 and 2018. A total of 44 PET/MR and 9 PET/CT performed at Padova University Hospital were analyzed. All AOSD patients were diagnosed according to Yamaguchi's criteria and had a regular follow-up at the Rheumatology Unit. Disease activity was evaluated using Pouchot's criteria. Uptake of affected organs was considered pathological when higher than liver uptake value. In order to analyze possible statistical differences of SUV ratios between the two groups, Mann-Whitney U-Test was applied. The variables considered were SUV ratios of spleen and bone marrow (BM). The SUV ratios were calculated between SUV of spleen-to-liver and of bone marrow-to-liver. We compared PET/MR and PET/CT of AOSD patients, evaluating possible statistical differences on SUV max ratios of bone marrow and spleen with Mann-Whitney U Test. To determine the strength and direction of the relationship between the continuous variables SUV ratios and Pouchot's score in our cohort Spearman's Rank Order Correlation Coefficient was applied.

Results: All our patients presented areas of focal ¹⁸F-FDG uptake. High and homogeneous accumulation of ¹⁸F-FDG was observed at PET/CT-MR in spleen, BM, lymph nodes, pharynx, salivary glands and brown adipose tissue. PET/CT-MR of patients affected presented higher SUV ratios than controls. A statistically significant difference was observed for each SUV ratio in BM. In spleen p-values of 0.014, <0.001 and 0.002 were observed for SUV min ratio, SUV max ratio and SUV mean ratio respectively. Responders to therapy showed lower uptake at PET/CT-MR images during the follow-up. The SUVratios of PET/CT and PET/MR in AOSD were not significantly different.

Conclusion: Our patients presented higher ¹⁸F-FDG uptake at PET/CT-MR images compared to controls. Both PET/CT and PET/MR are not related to the disease activity expressed by Pouchot's score, however PET/CT-MR seems to be more reliable than Pouchot's score in disease activity assessment. PET/MR is more sensitive than PET/CT for the evaluation of BM in patients with low-disease activity and it is a better repeatable analysis compared to PET/CT because of less radiation dosage.

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FRI0634

STANDARD REFERENCE VALUES OF METACARPAL HEAD CARTILAGE THICKNESS MEASUREMENT BY ULTRASOUND IN HEALTHY SUBJECTS

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Background: The hyaline cartilage of metacarpal head (MH) is frequently involved in patients with chronic arthritis. Moreover, in a recent study a high correlation has been found between the anatomical and sonographic (US) measurements of hyaline cartilage¹. However, only very few data are available on the prevalence of pathological findings and the standard reference values in healthy subjects (H).

Objectives: To determine the prevalence of the US abnormalities at metacarpal head (MH) in H, and to measure MH cartilage thickness (CT) in order to provide standard reference values.

Methods: US examinations were performed on 944 metacarpophalangeal (MCP) joints of 118 consecutive H using a MyLab Twice (Esaote Biomedica, Genoa, Italy), equipped with a high frequency probe (up to 22 MHz). H were recruited among the staff of Rheumatology Department of the "Carlo Urbani" Hospital (Jesi, Ancona, Italy), students in medicine and patients' healthy relatives. Exclusion criteria were: hand pain (VAS score >1/10) or stiffness in the previous month or hard tissue enlargement of MCP, proximal and distal interphalangeal joints.

The MH hyaline cartilage from II to V digits of both hands was scanned with the MCP joints in maximal flexion in longitudinal and transverse dorsal views, paying attention on maintaining an angle of 90° between the direction of the US beam and the cartilage surface². CT was scored both semi-quantitatively (using a five-grade scoring system³) and quantitatively (using the mean value of longitudinal and transverse measurements of the CT). Moreover, the presence of osteophytes and bone erosions was recorded.

The association between CT and demographic data was analyzed.

Results:

Semiquantitative score: Cartilage damage was found in 21 out of 118 H (17.8%) and in 59 out of 944 MHs (6.3%): grade 1 and grade 2 in 43 (4.6%) and in 16 (1.7%), respectively. No grades 3 and 4 were detected. Osteophytes and bone erosions were respectively found in 12 (10.1%) and in 8 (6.7%) out of 118 H and in 24 (2.5%) and in 12 (1.3%) out of 944 MHs.

A slight correlation between semi-quantitative score and the presence of osteophytes was found ($r=0.16$, $p<0.01$). No association between bone erosion and cartilage thinning was found.

Quantitative assessment: A significantly thicker cartilage was found in males [0.71 ± 0.10 mm (mean $\pm$ SD)] than in females [0.68 ± 0.12 mm, (mean $\pm$ SD)] ($p < 0.01$). No significant difference was found between left and right side for each digit ($p > 0.05$).

CT value of the II MH was significantly greater than the one of the other fingers ($p < 0.01$). No difference was found between the CT values of III, IV and V MH ($p > 0.05$).

There was a significant association between the CT value and gender ($r = 0.39$; $p < 0.01$), age ($r = -0.33$; $p < 0.01$), height ($r = 0.28$; $p = 0.01$) and grade of the semiquantitative scoring system ($r = -0.19$, $p < 0.01$). No correlation was found between the CT value and weight ($p = 0.20$).

Conclusion: This study confirms the presence and provides data on the prevalence of US abnormalities at MH level in healthy individuals. Moreover, normal values for US CT of MH were reported.

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FRI0635

ULTRASOUND IN THE ASSESSMENT OF TENOSYNOVITIS IN JUVENILE IDIOPATHIC ARTHRITIS: SYSTEMATIC LITERATURE REVIEW

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Background: Tendon involvement is common in patients with juvenile idiopathic arthritis (JIA). Differentiating tenosynovitis and underlying arthritis may be challenging on the basis of clinical examination (CE) alone. In daily clinical practice, ultrasound (US) imaging with Doppler information can be more versatile as it allows a dynamic assessment of joint inflammation and can be done quickly at the bedside. US can reliably evaluate the location of inflammation and provide direct visualization when local steroid injection is considered as treatment for children with JIA.

Objectives: To present the published data concerning the US assessment of tenosynovitis and the US metric properties investigated in JIA.

Methods: A systematic literature review (SLR) was conducted comprising PubMed, Embase and the Cochrane Library (before June 2018). Search terms: "arthritis, juvenile" AND, "tenosynovitis OR tendinopathy" AND "ultrasonography" OR "Doppler" AND "diagnosis OR therapy management". Selection criteria: Original articles published in English reporting US, tenosynovitis and tendinopathy in the paediatric population (up to 18 years old) with JIA. Data were extracted from manuscripts meeting the selection criteria, with particular focus on the definition used, scoring system applied and the US metric properties investigated. The quality of the studies was assessed using the same methodology developed for the SLR on paediatric synovitis [1].

Results: After selection, 11 articles were analysed. The tibialis posterior tendon group and peroneal tendons were the most commonly evaluated. Most authors applied the OMERACT definition proposed to rheumatoid arthritis (RA) [2] for evaluating paediatric tenosynovitis. Binary scoring

system on both grey scale and Doppler was applied in most of studies. Doppler function was commonly included, with only five specifying the Doppler parameters that were used. Construct validity was reported in roughly 50% of articles, including the CE as the main comparator. However, some of those articles have shown that clinical evaluation underestimates tendon involvement. US reliability and responsiveness for tenosynovitis in JIA was rarely included.

Conclusion: Although US seems a promising image modality to assess tenosynovitis in JIA, this SLR emphasizes the definitions of US elementary lesions of RA are frequently used in children. Moreover, there is insufficient evidence of studies exploring the construct validity of the US-determined tenosynovitis in JIA. Further validation studies are needed for implementation in clinical practice and trials.

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FRI0636

SUSCEPTIBILITY WEIGHTED SEQUENCES IN MAGNETIC RESONANCE IMAGING CAN CREATE COMPUTED TOMOGRAPHY-LIKE IMAGES AND IMPROVE THE ACCURACY OF STRUCTURAL LESION DETECTION OF THE SACROILIAC JOINT IN AXIAL SPONDYLOARTHRITIS

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Background: In patients with axial spondyloarthritis (axSpA) the accurate depiction of structural lesions in magnetic resonance imaging (MRI) is impeded because MRI – while gaining signal from the bone marrow – allows only an indirect depiction of the cortical bone and sclerotic areas. Computed tomography (CT) is considered to be the gold standard as it displays the calcium-containing cortical and trabecular bone substance. However, the exhibited radiation exposure in CT limits its application in the clinical routine. Susceptibility weighted imaging (SWI) is an advanced MRI technique, that is able to visualise calcium due to its magnetic properties and allows a reconstruction of CT-like images without radiation exposure. (1)

Objectives: To investigate the diagnostic accuracy of CT-like images generated from SWI for the detection of structural lesions of the SI-joint.

Methods: Twentytwo patients with suspicion of or known axSpA were included. All patients underwent a 1.5-Tesla-MRI including T1 and SWI sequences and a low-dose CT of the sacroiliac joints. CT images were reconstructed in 4 mm oblique coronal reconstructions matching the orientation and slice thickness of the MRI. MRI and CT images were scored for erosions, sclerosis and joint space alterations applying the 24 regions method, a modification of the Berlin score. (2) Using CT as standard of reference, sensitivity (SE) and specificity (SP) values were calculated on patients' level. A score of 2 or higher in any quadrant was considered positive. The sumscores of T1 and SWI were compared to CT using Pearson's test.

Results: The mean erosion sumscore was 5.5 ± 5.5 , 6.3 ± 8.2 and 5.9 ± 9.2 for T1, SWI and CT respectively. The mean sclerosis sumscore was 0.78 ± 1.5 , 5.5 ± 6.5 and 6.9 ± 6.9 . Five patients had joint space alterations (pseudowidening or ankylosis) in CT. Both, T1 and SWI showed an SE of 100% and a SP of 84.5% for erosions, however, the erosion sumscore correlated better for SWI (Pearson's r : 0.93) than for T1 (r : 0.64). With respect to sclerosis T1 (SE 30%, SP 100%, r 0.42) was inferior to SWI (SE 90%, SP 92%, r 0.81). It was also less