include Larsen score for radiographs, RAMRIS for magnetic resonance imaging (MRI) and EULAR-OMERACT score for ultrasound (US). However, pairwise correlations between all three imaging modalities and their correlations with synovial histopathological assessment have not been performed.

Objectives: To investigate the relationship between histological synovitis and radiological synovitis, assessed by conventional X-ray, US and MR of the wrist radio-carpal joint.

Methods: Forty patients, 20 with treatment naive early RA (ERA) and 20 with longstanding RA (LRA), were enrolled in a 6 month prospective study. RA patients underwent US guided synovial biopsy (USGSB) of the wrist at enrollment and after 6 months. Imaging was conducted on the same hand as biopsied. MRI was performed at baseline for all, and also at 6 month for the ERA group, and scored with the RAMRIS system. Wrist X-ray was scored by Larsen score at baseline and after 6 month. Hand US examination at baseline, 3 and 6 months was scored by the EULAR-OMERACT US system. Synovial biopsy inflammation at baseline and 6 months was determined by the Krenn score, scores for CD20, CD3, CD138, CD68 staining, and classification of synovial pathotypes.

Results: In the ERA group at baseline, Krenn score was strongly correlated with both EULAR-OMERACT US combined score ($r = 0.77$ $p < 0.001$) and RAMRIS MRI synovitis score ($r = 0.85$ $p < 0.001$), while uncorrelated at 6 months ($r = 0.18$, $p = 0.38$ and $r = 0.14$, $p = 0.65$). In the LRA group at baseline, these scores correlated strongly ($r = 0.83$, $p < 0.001$) to moderately ($r = 0.61$, $p = 0.002$), and persisted at 6 months for US score ($r = 0.81$ $p < 0.001$). Larsen score was not correlated with Krenn score at any point in any group. For all RA patients, change in Krenn score between baseline and 6-month biopsy, was correlated with both change in EULAR-OMERACT US combined score ($r = 0.65$, $p < 0.001$) and change RAMRIS MRI synovitis score ($r = 0.50$, $p = 0.03$), but not to change in Larsen score. Patients with the lymphoid pathotype had higher US combined score, MRI synovitis score and Krenn-score at baseline compared to other pathotypes (all $p < 0.05$).

Conclusion: The MRI RAMRIS synovitis score and EULAR-OMERACT US scoring system are sensitive measures of histological synovitis in LRA and ERA. After 6 months, this correlation persists in the established RA group despite effective treatment, but not in the ERA group. This suggests that ERA and LRA may have different responses to treatment intensification, possibly due to an immunological "window of opportunity" in the ERA group. Overall, significant fall in MRI/US synovitis are associated with significant fall in histological synovitis. These findings validate the use of MRI RAMRIS and EULAR-OMERACT US scores as surrogate markers of histological synovitis in established RA and early untreated RA. Synovial pathotypes have differences at baseline in degree of synovial inflammation and US and MRI imaging scores.

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FRI0641

THE 'SLOPE SIGN': A FEATURE OF LARGE VESSEL VASCULITIS?

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Background: Ultrasonography in large vessel vasculitis (LVV) has become popular as a non-invasive, radiation-free, point of care examination that allows assessment of entire temporal and axillary vessels. EULAR recommends ultrasound as first line imaging of giant cell arteritis (GCA) and LVV (1) and polymyalgia rheumatica (PMR).

Cranial and large vessels GCA (LV GCA) are considered the two sub types of the disease. Ultrasound in cranial GCA is well established, with the non-compressible halo of temporal arteries considered the key diagnostic finding. In LV GCA, increased intima-medial thickness (cut off > 1.0 mm), is the preferred method of diagnosis.

There are other causes of thickening of arterial wall, such as atherosclerosis. Atherosclerotic US changes in US scan are localized and discrete; however, at times it may be challenging to differentiate vasculitic from atherosclerotic changes.

Objectives: We describe the 'Slope sign' as a unique additional finding in US scan of axillary arteries in LV GCA. Ultrasound scan of the axillary arteries of all these patients showed increased intima-medial thickness (IMT) $>$ cut off value of 1.0 mm. Here we report the study of the junctional transitional region between involved and uninvolved arteries in these patients.

Methods: Images of 28 patients, with confirmed LV GCA who attended a GCA/LVV clinic at Southend Hospital between 1st September 2018 and

18th January 2019, were reviewed. They were scanned with an Esaote MyLabTwice using a LA435 linear transducer (band width 12-18 MHz). The axillary arteries were assessed in the grey scale mode in the longitudinal axis using tissue harmonic imaging. LV GCA was confirmed with an IMT of 1.0 mm or above in all patients.

Results: We observed a sloping smooth transitional zone connecting involved and uninvolved arteries (the "slope sign") in the ultrasound scan of axillary arteries in 24/28 patients with confirmed LV GCA. The remaining 4 patients did not have the transition zone imaged and therefore could not be assessed for presence of the 'slope' sign.

Table: Mean maximum and normal IMT and length of 'slope' in LV GCA patients

	Maximum (Proximal) IMT	Normal (Distal) IMT	Slope Length
Mean (SEM) mm	1.23 (0.04)	0.52 (0.03)	9.26 (0.8)

Conclusion: Presence of the 'Slope sign' in the ultrasound scan of the axillary arteries in patients with LVGCA, is a secondary confirmation alongside the abnormal IMT, of LV disease.

Biologics therapy has reduced the utility of inflammatory markers in GCA and highlighted need for imaging in disease assessment (2). The 'slope sign' may not only differentiate increased IMT of LVV from atheroma but the area under the 'slope' could potentially be used to estimate disease extent. We suggest the 'slope' sign be included in axillary artery ultrasound scan protocols for all patients with suspected GCA and also for monitoring disease activity in LVGCA.

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FRI0642

USE OF MAGNETIC RESONANCE IMAGING FOR ASSESSMENT OF PATIENTS WITH IDIOPATHIC INFLAMMATORY MYOPATHIES – A SUBANALYSIS OF THE PROMETHEUS STUDY

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Background: Prometheus study was a prospective, randomized, assessor-blind multicenter trial, conducted to evaluate the efficacy and safety of the combination therapy with methotrexate and glucocorticoids (GC) compared to GC treatment only in patients with polymyositis (PM) and dermatomyositis (DM). Muscle MRI has been used to assess disease activity and response to treatment.

Objectives: To assess MRI findings we developed new semi-quantitative scoring method and used it for activity assessment and evaluation of treatment effect after 3 months of therapy.

Methods: In a novel semi-quantitative assessment of edema, we used scoring 0, 1, 2, and 3 according to intensity of signal in each of the 16 thigh muscles. Muscle damage was evaluated in 3 basic thigh muscle compartments and pelvic muscles using Goutallier grading (0 – 5) based on extent of fatty replacement. Both sides were assessed, an average was made for each muscle, and values were summed up in the total score. Images were scored by 2 independent evaluators and the mean was used. Manual muscle test (MMT8) and creatin kinase (CK) were measured and patient's global assessment (PGA), physician's GA (PhGA) and muscle disease activity (MDA) were recorded on visual analogue scales.

Results: Seventeen patients had MR images taken before the baseline visit, 8 had also the second MRI after 3 months of therapy. There was a significant reduction of total MRI edema score (MRI ES) after 3 months in patients with PM and DM (from the mean 17.4 points, SD 13.7 to 8.0 points, SD 12.3; $p = 0.025$). No significant progression of fatty atrophy was observed (from 16.0 points, SD 8.8, to 19.4, SD 4.6; $p = 0.3$). At baseline, a significant correlation between MRI ES and PGA was noted ($p = 0.027$). There was also a borderline association of MRI ES with muscle strength evaluated by MMT 8 ($p = 0.053$). In a subset of 8 patients with longitudinally performed two MRI evaluations we found a good correlation between

initial MRI edema score and the level of serum CK ($p=0.028$). However, no correlation was seen between the level of improvement in MRI ES and drop in CK or with any other clinical parameters after 3 months of treatment. The intensity of muscle edema at baseline was not predictive to improvement of any clinical parameters or CK, with a tendency to a better improvement of muscle disease activity in those who had higher MRI ES at baseline (corr. coeff. 0.445, $p=0.073$).

Conclusion: We proposed a new semi-quantitative scoring system for assessment of MR images in patients with PM and DM. This system was applied to record degree of muscle edema and fatty replacement in a subpopulation of patients treated in the Prometheus study. A significant reduction of MRI ES and no relevant progression of muscle atrophy and fatty replacement after 3 months of therapy was demonstrated. Initial MRI edema score correlated with some clinical and laboratory parameters (PGA, CK) but was not predictive to a degree of improvement during treatment. The results are limited by a small sample size, particularly in the subset with longitudinal MRI. **Acknowledgement:** Supported by the project (Ministry of Health, Czech Republic) for conceptual development of research organization 00023728 (Institute of Rheumatology).

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FRI0643

SPINE AND SACROILIAC JOINTS LESIONS ON MRI IN PATIENTS WITH EARLY AXIAL SPA: CORRELATION WITH CLINICAL AND DISEASE ACTIVITY INDICES IN 24-MONTHS FOLLOW UP (ITALIAN ARM OF SPACE STUDY)

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Background: Recently several studies have focused on the use of magnetic resonance imaging (MRI) that might facilitate early diagnosis and monitor the disease activity of axial spondyloarthritis (axSpA).

Objectives: Evaluate the prevalence of spine and pelvis MRI lesions in patients (pts) with low back pain (LBP) and suspected axSpA; investigate how MRI features evolve over time and relate to radiographic damage; identify the predictive factors for a more severe disease pattern with a higher probability of radiological progression.

Methods: Seventy-five pts with LBP (≥ 3 months, ≤ 2 years, onset ≤ 45 years) underwent a physical examination, questionnaires, laboratory tests, X-rays and MRI of the spine and sacroiliac joints (SIJ) at baseline (T0) and during a follow-up (FU) period of 24 months. Two expert rheumatologists defined axSpA diagnosis and assessed fulfillment of Assessment of SpondyloArthritis International Society ASAS criteria. Disease activity and physical functioning were assessed using: Bath Ankylosing Spondylitis Metrology Index (BASMI); Maastricht Ankylosing enthesitis Spondilites Score (MASES); Bath Ankylosing Spondylitis Disease Activity Index (BASDAI); Bath Ankylosing Spondylitis Functional Index (BASFI); Ankylosing Spondylitis disease activity score (ASDAS); Visual Analogue Scale (VAS pain); VAS night pain; VAS disease activity; Bath Ankylosing Spondylitis Patient Global Score (BASG1); BASG2; Health Assessment Questionnaire (HAQ); ESR; serum ultrasensitive CRP (hs-CRP). Spine and SIJ MRI and X-

rays were scored independently by 2 readers following the SPARCC, mSASSS and score SIJ-mNY. Pts were classified in accordance ASAS criteria as: 21 pts classified according to axSpA imaging arm; 29 pts classified according to axSpA clinical+imaging arm; 25 pts not fulfilling ASAS criteria. The Kruskal Wallis test was used to compare all indices during FU. A regression analysis was performed to identify the predictors of inflammation and radiological progression of the disease evaluated using mSASSS, score SIJ-mNY, SPARCC-SIJ and SPARCC-spine. The following independent variables were considered in this analysis: female sex, age of LBP onset, duration of LBP, presence of HLA-B27, elevated ESR/CRP, BASDAI > 4 , use of NSAIDs.

Results: The median LBP onset was 28.51 ± 8.05 years, 45.3% were male, HLA-B27 was positive in 38.7% pts; 56% pts showed bone marrow edema (BME) in spine-MRI (19%, 39%, 33% in cervical/thoracic/lumbar region) and 61.3% pts in SIJ-MRI (respectively 58% on the right SIJ and 50% on the left SIJ). Signs of enthesitis were found in 62.7% pts (respectively 8%, 58%, 11% in the cervical/thoracic/lumbar spine). Eighteen (24%) pts presented a negative BME SIJ-MRI with a positive BME spine-MRI. Predictive factors of increased radiological activity were, respectively, for a higher SPARCC-spine score, a higher use of NSAIDs and for a higher SPARCC-SIJ score, the presence of HLA-B27 and increased ESR/CRP. The prevalence of BME lesions on MRI and SPARCC-SIJ decreased during the FU period in the 2 cohorts that met the ASAS criteria for axSpA (Table 1, Figure 1a-b).

Table 1. The prevalence of inflammatory and structural lesions at T0 and 24 months in three cohorts (axSpA imaging arm, axSpA clinical+imaging arm, not full ASAS axSpA).

	axSpA imaging arm	axSpA clinical+imaging arm	not full ASAS axSpA
T0 MRI evaluation			
Total number of patients	21 (100%)	29 (100%)	25 (100%)
SIJ total lesions	21 (100%)	27 (93.1%)	4 (16%)
BASMI lesions	21 (100%)	21 (72.4%)	0 (0%)
enthesitis lesions	17 (81%)	18 (62.1%)	0 (0%)
fatty lesions	7 (33.3%)	8 (27.6%)	4 (16%)
erosive lesions	0 (0%)	3 (10.3%)	0 (0%)
Spine total lesions	20 (95.2%)	28 (96.5%)	13 (52%)
BASMI lesions	18 (85.7%)	15 (51.7%)	9 (36%)
enthesitis lesions	17 (81%)	19 (65.5%)	11 (44%)
fatty lesions	6 (28.6%)	7 (24.1%)	4 (16%)
erosive/fundamental/physiologic lesions	4 (19.0%)	6 (20.7%)	3 (12%)
erosive lesions	2 (9.5%)	2 (6.9%)	1 (4%)
24 months MRI evaluation			
Total number of patients	18 (100%)	22 (100%)	18 (100%)
SIJ total lesions	18 (100%)	15 (68.2%)	1 (5.6%)
BASMI lesions	17 (94.4%)	13 (59.1%)	0 (0%)
enthesitis lesions	7 (38.9%)	10 (45.5%)	0 (0%)
fatty lesions	4 (22.2%)	4 (18.2%)	1 (5.6%)
erosive lesions	0 (0%)	2 (9.1%)	0 (0%)
Spine total lesions	13 (72.2%)	4 (18.2%)	7 (38.9%)
BASMI lesions	7 (38.9%)	3 (13.6%)	5 (27.8%)
enthesitis lesions	7 (38.9%)	6 (27.3%)	7 (38.9%)
fatty lesions	4 (22.2%)	4 (18.2%)	4 (22.2%)
erosive/fundamental/physiologic lesions	7 (38.9%)	9 (40.9%)	2 (11.1%)
erosive lesions	1 (5.6%)	2 (9.1%)	0 (0%)

Conclusion: At T0 a significant prevalence of BME lesions was observed both for SIJ and the spine, with predominant involvement of thoracic district. Since positive spine-MRI images were observed in absence of sacroiliitis, we can hypothesize that this finding could have a diagnostic significance in suspected axSpA. Further studies are warranted to assess in a more exhaustive manner the role of imaging in the monitoring of activity disease and radiological progression. **Disclosure of Interests:** None declared
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FRI0644

ANALYSIS OF CARDIOVASCULAR RISK AND CAROTID INTIMA-MEDIA THICKNESS IN PATIENTS WITH PSORIASIS

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Background: Psoriasis (Ps) is associated with atherosclerosis and an increased risk of cardiovascular disease (CVR). Currently, a new automated ultrasound software, based on radio frequency, called QIMT (quantitative intima media thickness) technology, proved to be a useful method for assessing subclinical atherosclerosis with the measurement of the intima-media thickness (IMT) in carotid arteries^{1,2}.

Objectives: To analyze the ultrasound results of the QIMT and Framingham score for psoriasis patients submitted to two types of treatments: methotrexate (MTX) and tumor necrosis factor inhibitor (TNF- α).

Methods: Fifty patients with psoriasis in plaques, were divided into two groups, using MTX and using TNF- α (infliximab and adalimumab). We