were identified as affected by CPPD at US. In 4 patients, the SFA was positive and the US was negative, while in 2 patients the SFA was negative and the US positive. Using the chi-squared test, a very strong association was found between the exams, with a p-value $<$0,0001.

Conclusions: The new OMERACT US criteria for CPPD identification have already demonstrated to be reliable, considering the good to high kappa values yielded in previous multi-observer studies (2). This preliminary study, indicates that the new criteria seem to be also accurate for diagnostic purposes as they strongly correlate with the SFA for the presence of CPPD in knee joints. Further validation studies that will be able to assess the diagnostic accuracy of US are already in the research agenda of the OMERACT group "US in CPPD".

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FRI0638 COMPARISON OF ULTRASOUND AND MRI IN THE DIAGNOSIS OF PROXIMAL AND DISTAL BICEPS TENDON PATHOLOGY

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Background: Disorders of the long head of the biceps brachii tendon (LHBt) are commonly recognized as a source of shoulder pain. Ultrasound (US) is thought to be of limited value in the diagnosis of partial-thickness tear and non-tear abnormalities of the LHBt because of the difficulty to assess its intra-articular proximal portion. Brasseur recently described that placing the arm in extension/external rotation increased LHBt intra-articular portion visibility.

Objectives: The goal of this study was to determine if the systematic assessment of the intra-articular portion of the tendon, from the rotator interval to its glenoid insertion, with the arm placed in extension/external rotation could increase US sensitivity.

Methods: This was a cross-sectional study. All patients referred for the treatment of a rotator cuff disease (rupture, tendinopathy, calcific deposit) with an available MRI were included. US was performed blinded from the results of the clinical or MRI using a Sonosite Edge with a 6–13 MHz probe. LHBt was studied at different level: in the bicipital groove, at the rotator interval, over the upper pole of the humerus head to its insertion on the superior glenoid tubercule. To increase the visibility of the proximal portion, we placed the arm in extension/external rotation as described by Brasseur [1]. Diagnosis of tendinopathy were tendon enlargement, hypoechogenicity and an increase in the interfibrillar distance. Subluxation or dislocation of the LHBt was defined as a partial or total loss of contact between the tendon and its groove. Tearing of tendon was defined as discontinuity or absence of tendon fibers. Fluid collection was defined as an anechoic ring around the tendon $>$2 mm. Abnormalities of the LBHt on MRI was retrieved from the report. LBHt abnormalities detected on arthroscopy were used as the gold standard.

Results: We included 129 patients, 57 female (44%), and mean age 54 years (33–73). Seventy-five (58%) had a rotator cuff tear and 54 (42%) a tendinopathy. Arthroscopy found LHBt pathological changes in 39% of the case. The summary of the findings obtained with MRI, US (distal and proximal) and arthroscopy are summarised in table 1.

Table 1

LHB	MRI	US distal	US proximal	Arthroscopy
Normal	99	90	111	78
Subluxation	15	6		9
Effusion	12	30		
Tear	3	3	6	6
Flattened			12	2
Thickening				30
Nodular				1
Inflammatory				3

We calculated the sensitivity/specificity of MRI and US (at the proximal and distal level) in the detection of LHBt changes using arthroscopy as gold standard (Table 2).

Table 2

	Sensitivity	Specificity	PPV	PNV
MRI	52%	96%	90%	73%
US proximal	59%	88%	77%	77%
US distal	29%	96%	83%	67%

Conclusions: US has a good specificity but a poor sensitivity in the detection of LHB tendon changes even when a systematic and carreful study of the proximal part of the tendon is undertaken. If detection of distal changes of the tendon in the inter-tubercular groove seems feasible with US, the involvement of the more proximal, intra-articular part of the tendon remains challenging. MRI sensitivity remains also poor. Overall, arthroscopy still remains the gold standard to detect LHB tendon intra-articular pathology.

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FRI0639 COULD BE THE ULTRASOUND STUDY OF PATIENTS WITH TROCHANTERIC PAIN USED TO CHOSE AN SPECIFIC THERAPEUTIC APPROACH?

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Background: Previous studies on tendinopathies of the hand (Quervain's tendinitis) and enthesis knee (anserine syndrome) have shown that some sort of ultrasound findings could predict the therapeutic response to specific treatments. Globally, acute inflammatory (power Doppler, synovial effusion) US findings predicts a better response to steroids injection than the chronic US findings (enthesophytosis, bone cortical irregularities).

Objectives: The aim of present study is to determine the probability of therapeutical success of different treatment approaches according to the presence of some specific US findings, in patients with trochanteric pain.

Methods: The image and clinical charts of patients who were assessed due to trochanteric pain between June 2015 and June 2016 in our clinic were reviewed. From those registries, dichotomic data about US findings were collected: Superficial bursitis, deep bursitis, cortical irregularities, enthesophytosis and power Doppler signal. The follow up data were collected from the electronic app or paper control form at day 6 to 9 from the original consultation. Successful treatment was interpreted as at least a reduction of 50% of the basal visual pain scale (rated from 1 to 10). Correlations with US findings were performed using single or composite variables.

Results: One hundred and twenty six registries of patients with trochanteric pain were included. From all of them, 119 belongs to female patients (94.4%). The global US findings were as follows: 43 superficial bursitis, 39 deep bursitis, 47 cortical irregularities, 32 enthesophytosis and 6 power Doppler signal. Thirty seven steroids injection, 64 prescriptions of non steroideal antinflammatory drugs (NSAIDs) and 66 prescriptions of transdermal NSAIDs were performed.

Therapeutic success was achieved in 76.8% of patients who underwent an steroid injection in whom superficial or deep bursitis were identified in the US, and in 79.9% of patients who were treated with transdermal NSAIDs in whom enthesophytosis of cortical irregularities were identified.

By the other hand, patients treated with steroids injections in whom chronic US findings were achieved showed a failure treatment rate of 54.4%. For those in whom any kind of bursitis were identified the failure treatment rate of transdermal NSAIDs was 65.5%. Oral NSAIDs treatments were success in 35% of patients with any kind of bursitis and in 70% of patients with cortical irregularities or enthesophytosis.

Into the composite variables study we find that the treatment with steroid injection in patients with any kind of bursitis with independence of the presence of any chronic US findings had a Relative Risk (RR) of success of 2.66 compared to transdermal NSAID and a RR of 2.26 compared with oral NSAD treatment ($P<0.001$ y $P<0.01$, respectively). The only independent factor that demonstrated a 100% success treatment rate was the presence of power Doppler signal treated using steroid injection.

Conclusions: US findings are useful predictors of therapeutic response in patients with trochanteric pain. In general terms, we found that patients with US acute findings have an increased probability of treatment success when treated with steroid injection while those with US chronic findings have an increased probability of success when treated with NSAIDs (transdermal or systemic).

Disclosure of Interest: None declared

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FRI0640 STRUCTURAL DAMAGE PROGRESSION IN LUPUS ARTHRITIS: A PROSPECTIVE OBSERVATIONAL STUDY

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Background: Joint involvement is one of the main causes of chronic pain and disability in SLE patients (pts); despite arthritis in SLE is usually considered mild, joint erosions and deformities can be observed with significant impact on patient's quality of life. Imaging techniques are more sensitive than joint count in detecting synovitis and early joint damage.

Objectives: This study was aimed at evaluating the progression of joint damage in SLE and at evaluating predictive factors for damage accrual

Methods: Consecutive SLE pts with active hand-wrists synovitis (detected by joint

count and/or ultrasounds) were enrolled in this 5-years prospective observational study. Clinical assessments as well as joint ultrasound (US) and MRI were performed at baseline and after 5 years. Each patient underwent a non-dominant hand–wrist US examination using a Logiq 9 with a linear probe operating at 14 MHz. Synovitis was defined as the presence of synovial hypertrophy and/or the presence of power Doppler signal (PD). A non-dominant hand–wrist MRI study with a 0.3 T extremity dedicated machine to evaluate the presence of bone erosions (BE) and bone marrow edema (BME) was also performed. Coronal and axial T1-weighted gradient-echo images and coronal STIR images were acquired. The images acquired were scored according to the RAMRIS scoring system for RA by a trained radiologist unaware of the clinical picture and diagnosis.

Results: Fifty-seven pts were enrolled (female 91.2%, mean age 44±12.2 years, mean disease duration 15.9±9 years);43 (75.4%) completed the follow-up, 3 died (5.2%) and 11 (19.4%) were lost to follow-up. At baseline, 7 (12.3%)satisfied criteria for Jaccoud arthropathy (JA) and 7 (12.3%) had a recent onset arthritis (<1 year of duration). 22 pts (28.6%) showed clinical signs of synovitis, 56 (98.2%) presented positive hand-wrists US (synovitis) and in 14 (24.6%) PD signal was also recorded. Six pts (11.76%) already showed erosions at standard X-Ray, while MRI revealed at least one BE in 30 and 54 patients respectively, for a cumulative mean erosive burden of 9.2 erosions (range 1–63). After 5 years of follow-up, 34 pts consented to repeat the assessment; 11 (33%) had JA and 18 (29%) were still presenting clinical signs of synovitis; 28 pts (82.3%) showed synovitis at US with PD in 7 cases (20.5%). The final mean erosive burden resulted 12.3 (range 2–82) with a significant increase from the baseline evaluation (p=0.001). Overall, 16 pts accrued joint damage. Interestingly, erosion progression was observed also in 12 pts with negative joint count but positive US at baseline. The presence of PD at US and BME at baseline was associated with higher erosive burden at follow-up (p=0.03 and p=0.02 respectively)

Conclusions: Arthritis in SLE can be persistent over time and progress to joint damage even in a short tem period despite treatment; normal joint count at physical examination but US findings of synovitis can be associated with erosion progression over time. The presence of PD at US and bone marrow edema at MRI are associated with a more severe damage progression. US and MRI can be a valid help for the clinician to identify patients at higher risk of severe damage to be treated with a more aggressive therapeutic strategy targeting arthritis.

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FRI0641 WRIST INFLAMMATION AS ASSESSED BY MAGNETIC RESONANCE IMAGING IS ASSOCIATED WITH PATIENT-REPORTED PHYSICAL IMPAIRMENT, GLOBAL DISEASE ACTIVITY AND PAIN IN EARLY RHEUMATOID ARTHRITIS: LONG-TERM RESULTS FROM TWO RANDOMIZED CONTROLLED TRIALS

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Background: Studies in established rheumatoid arthritis (RA) have shown that radiographic progression is associated with increasing health assessment questionnaire (HAQ) score. However, most studies have failed to demonstrate this association at the early stage of the disease. In addition, little is known about how specific pathologies, e.g. joint inflammation, tenosynovitis and joint damage, contribute to different patient-reported outcomes (PROs).

Objectives: To examine the association between MRI wrist inflammation and damage with PROs in patients with early RA.

Methods: MRIs of the wrist and hand were obtained from 210 early RA patients participating in two investigator-initiated, randomized, controlled studies (CIMESTRA/OPERA), which aimed at achieving inflammatory control by use of conventional and/or biologic drugs combined with intra-articular injection of glucocorticoids. The image-sets were assessed according to the RA MRI scoring system (RAMRIS) for inflammation (synovitis, tenosynovitis, osteitis) and damage (bone erosions, joint space narrowing) at baseline (n=210), 1 (n=206) and 5 (n=113) years follow-up. Data from the two studies were pooled and assessed for associations between MRI features and HAQ, patient global visual analogue scales (VAS-PtGlobal) and VAS pain using Spearman correlation for status and change scores, univariate and multivariable linear regression analyses for change scores and generalized estimating equations for status and change scores. MRI features were further tested for trends against specific hand-related HAQ questions using the Jonckheere trend test.

Results: MRI inflammation, but not damage, showed statistically significant associations with HAQ, VAS-PtGlobal and VAS pain for status and change scores, independently of swollen joint count and level of C-reactive protein. Synovitis and tenosynovitis were the MRI features most consistently associated with PROs, particularly VAS-PtGlobal and VAS pain (Table 1). MRI synovitis and tenosynovitis mean scores increased with the level of difficulty to cut meat and open a milk carton (p<0.01), and similar patterns were seen for other hand-related HAQ items. As an additional analysis, the metacarpophalangeal joints were included in the analyses, but this did not strengthen the associations between MRI pathology and PROs.

Table 1 Univariate and multivariable generalized estimating equations

	Status				Change			
	Univariate		Multivariable		Univariate		Multivariable	
	B (95% CI)	p	B (95% CI)	p	B (95% CI)	p	B (95% CI)	p
	HAQ*							
MRI synovitis	0.03 (0.01;0.05)	**0.01**	-0.01 (-0.03;0.01)	0.48	0.08 (0.04;0.12)	**<0.001**	-0.01 (-0.04;0.03)	0.72
MRI tenosynovitis	0.02 (0.00;0.05)	**0.05**	0.02 (0.00;0.03)	**0.04**	0.07 (0.04;0.09)	**<0.001**	0.02 (0.00;0.03)	**0.05**
MRI osteitis	0.01 (0.01;0.02)	**<0.001**	0.01 (0.00;0.02)	**0.01**	0.02 (0.01;0.04)	**0.001**	0.00 (0.00;0.02)	**0.04**
MRI erosion	0.00 (-0.10;0.09)	0.96			0.04 (-0.13;0.21)	0.66		
MRI JSN	0.07 (-0.01;0.15)	0.08			-0.05 (-0.25;0.16)	0.64		
	VAS-PtGlobal*							
MRI synovitis	0.05 (0.01;0.09)	**0.01**	0.00 (-0.04;0.04)	0.89	4.13 (2.55;5.71)	**<0.001**	1.79 (0.34;3.23)	**0.02**
MRI tenosynovitis	0.04 (0.01;0.07)	**0.01**	0.03 (0.00;0.06)	0.06	2.12 (1.14;3.09)	**<0.001**	-0.08 (-1.08;0.92)	0.88
MRI osteitis	0.01 (0.00;0.02)	0.10	0.00 (-0.01;0.01)	0.84	0.90 (0.22;1.58)	**0.01**	0.21 (-0.25;0.66)	0.37
MRI erosion	0.01 (-0.14;0.16)	0.92			-1.55 (-8.80;5.71)	0.68		
MRI JSN	0.09 (-0.07;0.24)	0.27			-2.77 (-10.78;5.24)	0.50		
	VAS pain*							
MRI synovitis	0.05 (0.01;0.08)	**0.01**	0.00 (-0.04;0.04)	0.97	4.84 (3.20;6.08)	**<0.001**	2.20 (0.87;3.53)	**0.001**
MRI tenosynovitis	0.04 (0.01;0.07)	**0.003**	0.03 (0.00;0.06)	**0.02**	2.19 (1.30;3.09)	**<0.001**	-0.02 (-0.91;3.53)	0.96
MRI osteitis	0.01 (0.00;0.02)	0.16			0.89 (0.21;1.57)	**0.01**	0.21 (-0.27;0.68)	0.39
MRI erosion	-0.03 (-0.18;0.12)	0.69			-2.33 (-9.18;4.51)	0.50		
MRI JSN	0.08 (-0.08;0.23)	0.33			-1.24 (-9.09;6.61)	0.76		

Association between magnetic resonance imaging (MRI) parameters and patient-reported outcomes for status scores and change scores. All generalized estimating equations (GEE) were adjusted for age and sex. MRI parameters with a univariate p-value ≤0.10 were included in multivariable GEE analysis where C-reactive protein levels and swollen joint counts were incorporated. *Log-transformed for status scores. Abbreviations: HAQ: Health assessment questionnaire, JSN: Joint space narrowing, VAS: Visual analogue scale, PtGlobal: Patient global.

Conclusions: MRI-assessed inflammation, but not damage, in the early RA wrist is associated with patient-reported physical impairment, global disease activity and pain, and the amount of wrist inflammation influences physical hand function.

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FRI0642 THE POTENTIAL VALUE OF POSITRON EMISSION TOMOGRAPHY (PET)-SCAN IN SYSTEMIC SCLEROSIS FOR THE QUANTITATIVE ASSESSMENT OF INTERSTITIAL LUNG DISEASE

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Background: Interstitial lung disease (ILD) in systemic sclerosis is treated by immunosuppressive drugs (e.g. cyclophosphamide), aimed at reduction of inflammatory response. Differentiation between inflamed and non-inflamed fibrotic tissue might help to develop treatment stratification, with the aim of improving the prognosis of (subgroups of) SSc-ILD patients. ^{18}F-Fluoro-Dexoxyglucose Positron Emission Tomography (^{18}F-FDG PET) scan might be a promising tool to detect inflamed lung areas, as formerly shown in a semi-quantitative setting.[1, 2]

Objectives: This study aims to investigate the potential role of ^{18}F-FDG PET –scan for the quantitative assessment of metabolically active SSc related ILD.

Methods: ^{18}F-FDG PET -scans of 22 patients with systemic auto-immune disease, including 9 with SSc, 9 with systemic lupus erythematosus (SLE) and 4 with primary Sjögren's syndrome (pSS), were retrospectively analyzed. FDG-uptake was quantitatively measured within 2cm-sized Regions of Interest (ROI's) at apical, medial and basal lung levels. A total of 22 ROI's were drawn in each patient. SUVmean values of all ROI's were corrected by the medial SUVmean bloodpool value. Subsequently, the average of 6 posterior basal SUVmean values