device. Enthesial changes such as positive PD, calcification, enthesiophytes as well as hypoechogenicity were also recorded. All ultrasound abnormalities were scored using validated OMERACT scores. The prevalence of observed changes was compared between subjects without palpation pain and participants with pain. By summing up the articular and enthesal changes a total score was calculated and correlated with the KOOS pain values.

Results: A total of 303 (Male 154; Female 149) aged participants (age: 75.3±6.9 years) underwent ultrasound examination of both knees. Knee tenderness was found by 30/149 (20.1%) women and 15/154 (9.7%) men. Ultrasound effusion ($p=0.010$), synovial hypertrophy ($p=0.001$), PD synovial activity ($p=0.003$) and osteophytes ($p=0.001$) were more prevalent in women with knee tenderness than without. In men, knee tenderness was associated PD synovial activity ($p=0.0014$), and enthesal calcification ($p=0.020$). Presence of more than 1 ultrasound pathology was associated with lower KOOS pain values, indicating higher impact on symptoms. This was observed in both women ($r=-0.285$, $p=0.021$) and men ($r=-0.298$, $p=0.008$).

Conclusion: In an elderly healthy population, knee pain is associated with the presence of joint and enthesal inflammatory lesions.

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Disclosure of Interests: David Simon Grant/research support from: Novartis, Consultant for: Lilly, Speakers bureau: Janssen, Arnd Kleyer Grant/research support from: Lilly, Consultant for: Lilly, Speakers bureau: Abbvie, Antonella Adinolfi: None declared, Johann Willeit: None declared, Stefan Kiechl: None declared, Nina Gasperi: None declared, Georg Schett: None declared, Christian Dejaco Speakers bureau: MSD, Pfizer, UCB, AbbVie, Roche, Novartis, Lilly, Celgene, Merck, Sandoz, Annamaria Iagnocco: None declared, Maria-Antonietta d'Agostino: None declared
DOI: 10.1136/annrheumdis-2019-eular.7153

THU0613

MRI AND ULTRASOUND (US) ASSESSMENT OF TEMPORO-MANDIBULAR JOINT (TMJ) INVOLVEMENT IN ADULT PATIENTS WITH DIAGNOSIS OF JUVENILE IDIOPATHIC ARTHRITIS (JIA) AND NON-JIA CHRONIC INFLAMMATORY ARTHROPATHIES

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Background: TMJ is involved in about 50% of JIA cases, often bilateral and asymptomatic in up to 71% of cases¹, leading to higher rate of dysfunction and anatomical abnormalities (as retrognathia, facial asymmetry, limited mouth opening, pain)². To date MRI is the gold standard to study both TMJ inflammation and damage³ but US is a widely used diagnostic imaging tool in rheumatic patients and may be a cheaper and more accessible alternative.

Objectives: To investigate the prevalence of TMJ involvement in young adults with JIA and young adults with non-JIA inflammatory rheumatism, comparing MRI with US.

Methods: Patients were recruited prospectively in 2 clinical centers. Inclusion criteria were: patients <35 years diagnosed with JIA who had undergone transition from the pediatric to the adult rheumatologist, and patients diagnosed with non-JIA inflammatory arthropathies. All patients underwent clinical examination for TMJs (tenderness to palpation, swelling, signs of damage such as joint crepitations, lateral deviation, retrognathia and decreased mouth opening) and MRI of the TMJs to detect inflammation (bone marrow edema, effusion, synovial thickening) or damage (condylar flattening, erosions, disk abnormalities). Blindly to MRI, US was performed to evaluate presence of inflammation (effusion and/or joint capsule abnormalities) or damage (erosion). MRIs and US with either inflammation or damage were considered pathological. Demographic and clinical characteristics were described using frequency or median and interquartile range (IQR), depending on the distribution of the variable. Differences

between groups were analyzed using the Mann-Whitney U test, the χ^2 test and Cohen's correlation index when appropriate. US sensibility (Se) and specificity (Sp) were also calculated.

Results: 11 patients were included in the JIA group and 7 patients in the non-JIA group. Patients' and TMJs involvement characteristics were reported in Table 1.

	JIA n 11	Non-JIA n 7
Sex F, n (%)	8 (72.7%)	4 (57.1%)
Age (ys) at diagnosis, median (IQR)	10 (5-12)	23 (22-26)
Current age (ys), median (IQR)	22.3 (20.3 – 25.1)	30.1 (28.8-32.5)
Disease duration (ys), median (IQR)	13.2 (11.9-16.1)	5.6 (5.3-7.8)
TMJs tenderness, n (%)	1 (9.1%)	2 (28.6%)
TMJs swelling, n (%)	0 (0%)	0 (0%)
TMJ damage, n (%)	7 (63.6%)	3 (42.9%)

Table 1. MRI and US results are collected in Table 2.

	JIA TMJs n 22	Non-JIA TMJs n 14
Inflammation on MRI, n (%)	11 (50.0%)	5 (35.7%)
Joint damage on MRI, n (%)	16 (72.7%)	9 (64.2%)
Pathological MRI, n (%)	16 (72.7%)	9 (64.2%)
Inflammation on US, n (%)	2 (9.1%)	0 (0%)
Joint damage on US, n (%)	10 (45.4%)	4 (28.6%)
Pathological US, n (%)	11 (50.0%)	4 (28.6%)

Table 2. Twelve out of 36 TMJs presented with damage on both MRI and US, 2 TMJs had damage on US but not on MRI and 13 TMJs had damage on MRI only; the concordance was discrete ($k = 0.23$ (0-0.48)). Only 2 TMJs had inflammation on US, of which only one was confirmed by MRI. 12 TMJs were pathological on both MRI and US, 3 TMJs were pathological on US only and 13 TMJs on MRI only; the concordance was poor ($k = 0.17$ (0-0.43)), Se=48% (95%CI 0.28,0.68), Sp=73% (95%CI 0.47,0.99).

Conclusion: The concordance between MRI and ultrasound is not optimal, and existing TMJ US protocols are based on children. Further studies are needed to develop a suitable US protocol to detect TMJ involvement in adult patients as a screening tool.

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Disclosure of Interests: None declared
DOI: 10.1136/annrheumdis-2019-eular.3069

THU0614

FINGER EXTENSOR TENDON INVOLVEMENT IS FREQUENT IN EARLY RHEUMATOID ARTHRITIS

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Background: Finger extensor tendon (FET) involvement at ultrasound examination (US) was previously described in patients suffering from early and established psoriatic arthritis¹. The reliability of the US measure of FET was as least as good as for synovitis². The involvement of the FET in patients suffering from rheumatoid arthritis remains controversial.

Objectives: To assess the involvement of FET in early rheumatoid arthritis (ERA) patients and in asymptomatic subjects (CTR).

Methods: Inclusion criteria for ERA patients were: less than 6 months since the ERA diagnosis; age >18 years; without DMARD treatment or oral glucocorticoid treatment. Inclusion criteria for CTRL subjects were: age >18 years; no pain in hands and fingers (VAS pain =0/100); no known rheumatic disease such a systemic diseases, rheumatoid, psoriatic arthritis, spondyloarthritis, hand osteoarthritis, gout, chondrocalcinosis; no psoriasis, no inflammatory bowel diseases. US assessments were performed blindly to the clinical and laboratory data. FET were assessed in longitudinal and in transverse view at the metacarpo phalangeal joint (MCP) and proximal phalangeal joint (PIP) level both in grey-scale (GS), power Doppler (PD) and in color Doppler (CD) mode. In addition the following joints were assessed for the presence and grade (0-3 according to OMERACT definitions) for both GS and PD synovitis: wrists, ankles, metatarsophalangeal (MTP) (2-5) and MCP (1-5) joints.

Results: Sixty-two consecutive ERA patients and 34 CTR were included in this study. Mean age and gender distribution were comparable between ERA and CTR (47,3±14,5 vs. 43,4±12,5). ACPA were present in 61%, rheumatoid factor in 54%, and bone erosions in 27% of ERA patients. 57% of ERA patients presented with FET and 0% of CTR ($p<0.001$). The delay between the first symptom and diagnosis, the DAS28CRP, SDAI, CDAI, CRP level, 44TJC, 44SJC, HAQ did not differ significantly between patients with FET involvement and those without. In univariate analysis, the presence of FET involvement was significantly associated with the presence of bone erosions ($p=0.02$), ACPA ($p=0.002$), rheumatoid factor ($p=0.02$) and tobacco use ($p=0.02$). In multivariate analysis, the presence of FET involvement was significantly associated with the presence of bone erosions ($p=0.01$), ACPA ($p=0.001$), RF ($p<0.01$).

Conclusion: FET is relatively frequent in ERA patients and it is not present in asymptomatic subjects. Our results show that FET involvement is associated with the presence of ACPA, rheumatoid factor and bone erosions, thus identifying patients with possibly more aggressive or severe disease at baseline.

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Disclosure of Interests: Mihaela Maruseac: None declared, Adrien Nzeuseu: None declared, Maria Stoeniu Grant/research support from: Abbvie, Roche, Wyeth

DOI: 10.1136/annrheumdis-2019-eular.5629

THU0615

POSITIVE MRI OF THE SPINE AS IMAGING CRITERION IN THE ASAS CLASSIFICATION CRITERIA FOR AXIAL SPONDYLOARTHRITIS

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Background: MRI is a useful tool for the evaluation of patients with chronic back pain suspected of axial spondyloarthritis. As defined by ASAS classification criteria, MRI suggestive of axial spondyloarthritis is based on the presence of inflammatory lesions in the sacroiliac joints. However inflammatory lesions in the spine may also occur. A consensus definition for a positive MRI-spine was developed by OMERACT MRI working group. In this consensus a positive MRI-spine is described as the presence of ≥ 3 inflammatory lesions in the corner of the vertebrae (bone marrow edema lesions), whereas each lesion needs to be present on ≥ 2 consecutive slices.

Objectives: The purpose of this study was to evaluate the presence of spinal inflammatory lesions on MRI performed between January, 2015 and December, 2015 in the Universidad de Chile Clinical Hospital.

Methods: Data from MRI performed between January, 2015 and December, 2015 in the Universidad de Chile Clinical Hospital was collected. The patients were derived by a physician as part of the study of chronic back pain.

Results: A total of 118 MRI were performed in this period, from which 8 showed evidence of spinal involvement without sacroileitis. The finding in MRI were: 3 patients with enthesitis of spinal ligaments, 2 patients with spondylodiscitis and 3 patients with bone marrow edema in the corner of the vertebrae. However, no patients fulfilled the OMERACT criteria for a positive MRI-spine (≥ 3 corner based inflammatory lesions). Patients with inflammatory lesions in the corner of vertebrae only showed 1 or 2 bone marrow edema sites. When we hypothetically added this criteria (assuming 2 bone marrow edema sites as a positive MRI-spine) to the ASAS-criteria for axial spondyloarthritis, only one patient could be classified via the imaging arm.

Conclusion: Adding a positive MRI-spine as an imaging criterion to the ASAS-criteria for axial spondyloarthritis did not resulted in newly classified

patients in this cohort. A combination of MRI-spine and MRI-SI had no incremental value compared with MRI-SI alone.

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Disclosure of Interests: Mauricio Ochoa: None declared, Daniel Rios: None declared, Annelise Goecke Consultant for: Roche, abbvie, novartis, Phizer, Paid instructor for: Roche, Speakers bureau: Roche, Novartis, Abbvie, pfizer, Maria Luisa Molina Speakers bureau: Novartis, Julio Cruz: None declared

DOI: 10.1136/annrheumdis-2019-eular.8250

THU0616

WHOLE-BODY MRI OF PSORIATIC ARTHRITIS AND RHEUMATOID ARTHRITIS PATIENTS AND HEALTHY CONTROLS – INTERSCAN, INTRAREADER AND INTERREADER AGREEMENT AND DISTRIBUTION OF FINDINGS

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Background: Whole-body MRI (WBMRI) is a promising tool for monitoring disease activity in inflammatory joint diseases. Earlier studies have shown good correlation with conventional MRI and scoring systems for WBMRI have been developed [1,2]. However, the validation of WBMRI is limited; no studies have evaluated the agreement between repeated scans (interscan agreement) and only few studies have evaluated the intra- and interreader agreement.

Objectives: To validate WBMRI by evaluating the interscan agreement in patients with psoriatic arthritis (PsA), rheumatoid arthritis (RA) and healthy controls (HC) and to evaluate the intra- and interreader agreement and determine the distribution of pathologies in the subjects.

Methods: WBMRI was performed twice with a one-week interval in 14 patients with PsA, 10 with RA and 16 HC. Coronal images of shoulders, hips, hands and ankles/feet, and sagittal images of knees, ankles, feet and spine were obtained (STIR and pre- and post-contrast T1 weighted spin echo images). Images were anonymized and read in pairs with unknown chronological order by experienced readers (peripheral: IE; spine: SK). WBMRI was scored for 83 peripheral joints and for 33 peripheral entheses according to the OMERACT WBMRI scoring system [1], and according to the CanDen MRI spine scoring system [2]. Ten image sets were re-anonymized for assessment of intra- and interreader agreement (peripheral and spine: MO). Agreement was calculated on lesion level by percentage exact agreement (PEA) and Cohen's kappa with squared weights, and for sum scores by absolute agreement single-measure intraclass correlation coefficient (ICC).

Results: The age in the PsA/RA/HC was median (range) 48(31-68)/49(26-58)/35(23-54) years and the symptom duration 10(0-24)/7(3-24)/NA years. WBMRI of the spine and peripheral joints and entheses generally showed moderate to almost perfect interscan agreement with a PEA ranging from 95-100%, kappa ranging from 0.71-1.00 and ICC ranging from 0.95-1.00 (Table 1). Intra- and interreader agreement showed moderate to almost perfect agreement with few exceptions (Table 2).

More lesions were found in patients than HC. PsA patients had more lesions in acromioclavicular and sternoclavicular joints, whereas RA patients had more hand lesions (Figure 1). PsA patients had more lesions in the spine (Figure 2).

Conclusion: WBMRI of the spine and peripheral joints and entheses showed very good interscan agreement, implying that repositioning between examinations does not markedly affect scoring of lesions. Intra- and interreader agreement showed moderate to almost perfect agreement. The distribution of findings in PsA, RA and HC was determined.

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Table 1. Interscan agreement between two WBMRI examinations performed with a one-week interval for all participants

			%-agreement	Kappa	ICC
WBMRI; Peripheral	Synovitis	Feet	96	0.83	0.93
		Hands	96	0.84	0.95
		Shoulders	92	0.54	0.60
		Pelvis	97	0.94	0.93
		Knees	87	0.64	0.79
	Joint BME	All	95	0.82	0.96
		Feet	98	0.84	0.98
		Hands	99	0.87	0.91
		Shoulders	95	0.87	0.91
		Pelvis	99	0.95	1.00
	Enthesal STI	Knees	100	0.97	1.00
		All	98	0.88	0.99
		Feet	98	0.96	0.98
		Hands	NA	NA	NA
		Shoulders	95	0.27	0.40
	Enthesal BME	Pelvis	96	0.82	0.93
		Knees	97	0.75	0.95
		All	97	0.79	0.96
		Feet	96	0.59	0.71
		Hands	NA	NA	NA
		Shoulders	96	0.70	0.60
WBMRI; Spine	BME	Pelvis	99	0.40	-0.04
		Knees	100	0.87	1.00
		All	98	0.71	0.93
		Feet	96	0.59	0.71
WBMRI; Spine	Fat	Feet	100	0.99	0.99
		Hands	100	0.99	1.00
		Erosion	100	1.00	1.00
		New bone formation	100	1.00	1.00

BME: bone marrow edema, STI: soft tissue inflammation, ICC: intraclass correlation coefficient

Figure 1: Percentage of participants with pathologies in the examined joints and entheses **Table 2.** Intra- and interreader agreement for ten participants (4 PsA, 3 RA, 3 HC)

INTRAREADER					
		%-agreement	Kappa	ICC	
WBMRI; Peripheral	Synovitis	90	0.58	0.87	
	Joint BME	97	0.52	0.45	
	Enthesal STI	92	0.67	0.85	
	Enthesal BME	97	0.08	0.14	
WBMRI; Spine	BME	100	0.93	0.99	
	Fat	99	0.91	0.99	
	Erosion	100	1.00	1.00	
	New bone formation	100	1.00	1.00	
INTERREADER					
		%-agreement	Kappa	ICC	
WBMRI; Peripheral	Synovitis	84	0.41	0.85	
	Joint BME	97	0.72	0.91	
	Enthesal STI	93	0.41	0.74	
	Enthesal BME	97	0.34	0.35	
WBMRI; Spine	BME	100	0.93	0.67	
	Fat	99	0.82	0.97	
	Erosion	100	0.83	0.91	
	New bone formation	98	0.17	0.23	

BME: bone marrow edema, STI: soft tissue inflammation, ICC: intraclass correlation coefficient