On the other hand, REMS examinations at femoral neck, performed on 397 people, revealed that osteoporosis resulted in 25% of the sample and osteopenia in 54%. Also in this case, people with a T-score < -2.5 was suggested to perform a DXA, considering that the accuracy and operator-independent automatic analysis performed by REMS, make more reliable the obtained data.

Conclusions: Nowadays, with REMS introduction, F.I.R.M.O. foundation and the health system could avail themselves of a new non-invasive, rapid, easy-to-use and automatized technology for the prevention of osteoporosis.

§ Equal contributors listed in alphabetical order

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AB1201

ULTRASONOGRAPHY POWER DOPPLER(PDUS) IN EARLY ARTHRITIS. DOES 44 JOINT COUNT PREDICTE MORE ACCURETLY THE DEVELOPMENT OF RA THAN OTHER ULTRASOUND COUNTS?

L. Mayordomo¹, C. Almeida², M.C. Jurado³, M.L. Velloso¹, P. González-Moreno⁴, J.L. Marengo¹. ¹Rheumatology Department; ²Research and Statistics Unit; ³Radiology Department, Hospital Universitario Valme; ⁴Rheumatology department, HVM, Sevilla, Spain

Background: Early rheumatoid arthritis is a diagnostic challenge for the rheumatologist since early treatment may be crucial for reaching remission and low rate of structural damage. Previous correlation studies between different ultrasonographic (US) scores suggested that few joint examination may be equivalent to more comprehensive ones about the inflammatory activity in established rheumatoid arthritis.

Objectives: To determine if the presence of basal power doppler US signal in patients with early arthritis by three different US joint counts (12, 28 or 44 joint based) may be equally useful in order to establish the risk of final diagnosis of rheumatoid arthritis (RA) according ACR criteria 1987 at a year of follow up.

Methods: We studied the presence of US Power Doppler (PD) signal on 28 joints (shoulders, elbows, wrists, MCPs, PIPs, knees), 44 joints (28 joints and in addition hips, ankles, tarsus and MTP joints) and in 12 joints (elbows, MCFs 2 and 3, wrists, knees and ankles), with a mid-range equipment GE L5 in 70 patients with suspected RA. The patients met at least one of the following inclusion criteria: a) Swelling in 2 or more joints b) pain in MCPs, MTPs and/or the wrists c) morning stiffness of more than 30 min with <12 months of duration of the symptoms and no previous steroid nor DMARDs treatment. At one year of follow-up was established whether patients met ACR 1987 classification criteria for RA or not. PD signal was scored 0-3, and PD score sum index (IPD) was the total sum of scores in each joint for 44, 28 and 12 joint counts. Correlations between 44, 28 and 12 joint US IPDs were studied as well. Statistical study: Chi-square, Fisher exact test, p univariate, Odds Ratio, Spearman correlation.

Results: The presence of basal power doppler signal in ≥1 joint of 44 (PD44) is associated to RA diagnosis at 12 months by ACR 1987 criteria, p=0.003, OR=5.43^{1,71-17,24} but the presence of ≥1 joint with power doppler signal of 28 joints (PD28) did not (p=0.051). The presence ≥1 joint with basal power doppler signal of 12 joints (PD12) was associated to RA diagnosis at 12 months with OR 3.11^{1-12-8,6} p=0.026 as well, so may predict development of RA. However, we missed 6/44 (14%) of patients that were not diagnosed of RA when we evaluate only 12 joints. We found high correlations between IPD44 and IPD28 (0.845), IPD44 and IPD12 (0.807) and between IPD28 and IPD12 sum scores (0.913).

BASAL VARIABLES n=70		RA YES	p (univariate)	OR	95% CI
PD 44	YES	38/52 (73,1%)	0.003	5,43	(1,71-17,24)
	NO	6/18 (33,3%)			
PD 28	YES	35/50 (70%)	0.051	-	-
	NO	9/20 (45%)			
PD 12	YES	32/44 (93,9%)	0.026	3,11	(1,12-8.60)
	NO	14/26 (53,7%)			

Abstract AB1201 – Figure 1

Conclusions: The presence of at least one joint with power doppler signal of 44 joints (PD44) on baseline visit may help to predict the RA diagnosis at 12 months of follow up according ACR 1987 criteria in patients with early RA, but PD28 did not. PD12 reduced joint count may help to predict RA as well but missed 14% of RA patients. Odds ratio rendered better information for different PD joint count about early identification of RA, whereas correlations were high between all different US joint scores. Further studies are required to decide the best US joint set for early identification of patients with early rheumatoid arthritis, but inclusion of ankle/foot joints may be important.

Disclosure of Interest: None declared

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AB1202

IS FLUORESCENCE OPTICAL IMAGING ASSESSMENT ASSOCIATED WITH ULTRASONOGRAPHY SYNOVITIS IN THE WRIST AND HAND OF RHEUMATOID ARTHRITIS PATIENTS?

M.A. Danielsen, M. Østergaard, L. Terselv, D. Glinatsi. Copenhagen Center for Arthritis Research, Center for Rheumatology and Spine Diseases, Rigshospitalet, Copenhagen, Denmark

Background: Fluorescence optical imaging (FOI) has been used for assessment of inflammation (i.e. synovitis) in the hands and has in several cross sectional studies been compared with ultrasonography (US) and magnetic resonance imaging (MRI), using different, but not validated scoring systems.

Objectives: The primary objective was to examine the association between FOI and US for assessment of synovitis in the rheumatoid arthritis (RA) hands, in a longitudinal study, using a new validated and clinically feasible FOI scoring system.

Methods: 46 RA patients, eligible for induction or intensification of conventional synthetic or biological disease modifying anti-rheumatic drugs and with ≥1 clinically swollen joint in the hand, were included. FOI image-sets of both wrists and hands were obtained at baseline and 6 months' follow-up using a Xiralite system unit (nanoPET Pharma GmbH, Berlin, Germany). The patients received a bolus of i.v. indocyanine green (ICG) pulsion 10 s after starting the examination, which obtained 1 image/second for 6 min.

All FOI images were scored by two readers for synovitis at the wrist, 1st-5th metacarpophalangeal, 1st interphalangeal and 2nd-4th proximal interphalangeal joint levels in both hands, using the novel semiquantitative scoring system. Each joint was scored 0-3 (range 0-66) for synovitis. The readers were blinded to patient data, but not chronology and had previously showed a high intra- and inter-reader agreement (intra-class correlation coefficient (ICC):0.70-0.92).

For ultrasound assessment, a GE Logiq E9 US unit with a high frequency linear 6-15 ML probe and with Doppler settings according to published recommendations was used. Synovitis was scored from 0-3 for grey scale (GS) and Doppler (DP) using the OMERACT US synovitis scoring system by two trained assessors who had previously demonstrated high intra- and inter-reader agreement (wKappa:0.88-0.95).

DAS28-CRP and swollen joint count (SJC) in the hand were assessed at both time points.

Descriptive statistics and the Wilcoxon signed-rank test were used to assess change in score over time. Agreement for status and change scores were assessed using single measure ICCs and spearman's correlation (SP). Responsiveness was assessed using standardised response mean (SRM).

Results: Median (IQR) total score at baseline was FOI 11.0 (6;19), GS 14.5 (8;22), DP 8 (3;14), DAS28 5 (4.4;5.4) and SJC 6 (3;8) and improved with -7.8 (-13;-3.5) -9 (-15;-3.5), -5.5 (-11;-0.5), -2(-2.9;-0.8) and -4(-7;-2) at 6 months' follow up, respectively (p<0.01). Figure 1 presents the change score and a trend line based on 4 patients' average score.

ICC and SP between FOI and US (GS and DP) total scores were low for both readers at baseline (range 0.3-0.4) (p<0.05), and low to moderate (range 0.31-0.54) (p<0.01) for change scores. The mean SRM for total change scores between baseline and 6 months' follow-up were good for all parameters (FOI:0.9,

GS:1.0, DP:0.8, DAS28:0.9 and SJC:1.0). The average time required to score one patient was 140 s.

Abstract AB1202 – Figure 1. Scatterplot for FOI and US changes sum score and 4 patient averages trendlines

Conclusions: This study shows a significant correlation and corresponding trendlines between FOI and US for change over time, and good responsiveness using the new FOI scoring system. FOI may therefore be used as an alternative to known imaging modalities for monitoring RA patients in clinical trials, and potentially in the daily clinical practice.

Disclosure of Interest: None declared

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AB1203

USE OF MAGNETIC RESONANCE IMAGING OF THE PELVIS TO DESCRIBE INFLAMMATORY CHANGES AT DIFFERENT ANATOMIC SITES IN THE PELVIS WHICH ARE POTENTIALLY SPECIFIC FINDINGS IN PATIENTS WITH POLYMYALGIA RHEUMATICA

M. Fruth¹, M. Franklin², B. Buehring², X. Baraliakos², J. Braun². ¹Radiologie Herne; ²Rheumazentrum Ruhrgebiet, Herne, Germany

Background: Pelvic girdle pain is a common clinical symptom of patients with polymyalgia rheumatica (PMR). It also occurs in patients with rheumatoid arthritis (RA). The origin of this characteristic pain is not really clear, even though some imaging findings have been reported. However, this has neither changed pathophysiological thinking nor clinical practice related to diagnosis.

Objectives: To describe pelvic structures in PMR patients in detail which show signs of inflammation by magnetic resonance imaging (MRI) in order to find a disease specific pattern.

Methods: In a retrospective study we used MRIs of patients who had presented with clinical symptoms suggestive of PMR in our centre between 2015 and 2017. Only patients with complete MRI examinations, including contrast enhanced scans in coronal and transversal planes were included to be carefully examined by an experienced musculoskeletal radiologist (MF). After having first described all findings in much detail we developed a preliminary semiquantitative scoring system that assesses a total of 12 sites which appeared to be frequently involved. A total of 40 patients with pelvic girdle pain and complete data were identified from the hospital records. The median (25th/75th percentiles) age of the patients was 67 (55/73) years, the median symptom duration was 13 (6/22) weeks, 55% were female, the median C-reactive protein measured close to the day of the MRI examination was 1.9 (0.7/4) mg/dl, and the median erythrocyte sedimentation rate was 30 (17/43) after the 1st hour. Only 3 patients were rheumatoid factor positive, and 2 patients had anti-CCP antibodies. Ten patients had a diagnosis of RA (25%) in addition to the leading PMR like symptom.

Results: The MRI signal of interest for PMR is a post-gadolinium signal in T1 weighted pelvic images. The most frequently involved anatomic sites were: the hamstring tendon and the M.gluteus medius and minimus tendon near the greater trochanter in all cases, which were found to be bilaterally involved as was the proximal M.rectus femoris in all cases, and the insertion of the adductor muscles, especially the M.adductor longus at the inferomedial pubic symphysis in 90% of cases. Other sites were also, but less frequently, involved. We think that the involvement of 4 sites including either the M.rectus femoris or the M.adductor

longus is rather specific for PMR, see exemplary images below. There was no major difference between patients with and without RA.

Abstract AB1203 – Figure 1

Conclusions: This study suggests that there may be a MRI pattern specific for PMR. The target structure of the characteristically inflamed anatomic site seems to be the paratenon which implies that the pattern observed in PMR differs from the enthesitis seen in patients with spondyloarthritis. Prospective randomised trials are needed to further test and prove the clinical usefulness of this approach.

Disclosure of Interest: None declared

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AB1204

QUANTITATIVE MRI AND DYNAMOMETERS CAN DISTINGUISH MYOSITIS FROM HEALTHY CONTROL MUSCLE

M. Farrow^{1,2}, J. Biglands², S. Tanner², M. Buch^{1,2}, P. Emery^{1,2}, A. Grainger², A. L. Tan^{1,2}. ¹Leeds Institute of Rheumatic and Musculoskeletal Medicine, University of Leeds; ²NIHR Leeds Biomedical Research Centre, Chapel Allerton Hospital, Leeds, UK

Background: Myositis is an autoimmune disease which can decrease quality of life and increase mortality. Clinical presentation includes muscle weakness, changes in muscle microstructure, myosteatosis, raised muscle enzymes and myalgia. Diagnosis is reliant on subjective clinical examinations, blood tests and invasive muscle biopsies. Quantitative MRI techniques such as diffusion tensor imaging (DTI) and fat fraction (FF) measurements offer non-invasive measurements, which could improve the understanding of muscle pathology and potentially inform diagnosis. DTI measures water diffusion within tissues which is sensitive to changes in muscle microstructure⁽¹⁾. FF provides a quantitative measure of myosteatosis in muscles⁽²⁾. The use of these techniques could provide new imaging biomarkers in the diagnosis and management of myositis.

Objectives: To evaluate whether fat fraction, mean diffusivity and dynamometer measurements are sensitive enough to detect muscle differences in myositis patients compared to healthy controls.

Methods: 10 active myositis patients (6 female, mean age 55±18) diagnosed according to the Bohan and Peter myositis criteria (mean CK 2,015±10,787) and 16 healthy controls (10 female, mean age 44±17), were imaged using STEAM-EPI diffusion and 2-point Dixon to obtain FF measurements. Myositis patients included 5 polymyositis, 3 dermatomyositis and 2 inclusion body myositis. Mean measurements of FF and mean diffusivity (MD) were obtained from regions drawn manually within the individual muscles of the quadriceps and hamstrings (image 1). No distinction was made between affected and unaffected muscles. In addition to MRI, all participants had knee extension and flexion power and torque measured on an isokinetic dynamometer and handgrip measurements on an isometric dynamometer. Differences were assessed using independent T-tests.

Results: FF and diffusion measurements were higher in myositis patients compared to healthy controls, whereas muscle power and torque were reduced (table 1). These results were consistent across both quadriceps and hamstrings.

Abstract AB1204 – Table 1

		Mean		Mean difference (95% CI)		Significance (p value)	
		Hams	Quads	Hams	Quads	Hams	Quads
FF (%)	Myositis	15.09 (-9.21, 39.39)	14.33 (-16.95, 45.6)	10.08 (5.12-15.05)	11.2 (5.79-16.61)	<0.001	<0.001
	Healthy	5.0 (-4.89, 14.82)	3.13 (-0.28, 6.54)				