excluded. 51 patients were divided into two groups, patients with SLEDAI <6 (n=30) and with SLEDAI ≥6 (n=21). They were submitted to clinical evaluation, laboratory tests and a traditional echocardiogram.

Results: Patients presented an average age of 34.5 years and average time of diagnosis of SLE of 7.2 years. In the comparison between groups, patients with SLEDAI ≥6 had a higher daily dose of prednisone ($p=0.0016$), more hospitalizations in the last 12 months ($p=0.0173$), and a higher cumulative dose of pulse therapy with methylprednisolone ($p=0.008$). Patients with SLEDAI <6 had a longer average time of antimalarials (AM) use ($p=0.0309$). Regarding the echocardiographic parameters, group with SLEDAI ≥6 presented greater left ventricular mass (LVM, $p=0.0156$), thickness of ventricular septum ($p=0.0106$) and left ventricular posterior wall (LVPW, $p=0.0273$). In multivariate analysis the LVM presented a positive association with age ($p=0.0160$), current daily dose of prednisone ($p=0.0009$) and time of AM use ($p=0.0026$), r^2 0.3625. Regarding the thickness of the interventricular septum, there was a positive association with age ($p<0.0001$), current dose of prednisone ($p<0.0001$), SLEDAI ($p=0.02$), SLICC ($p=0.0093$) and pulse with methylprednisolone ($p=0.0062$), with r^2 0.6983. There is a positive association of daily dose of prednisone with the parameters LVPW, LVM and septum thickness and AM was a predictor of greater LVM.

Conclusions: Several factors may contribute to cardiac morphofunctional changes in SLE. Ventricular hypertrophy in asymptomatic cardiovascular patients was not related to the use of prednisone or time of AM use in other studies, however these factors should be taken into account. There are no adequate study designs in literature to evaluate the effect of high doses of corticosteroids and time of AM use on cardiac morphology and function. AM induced cardiomyopathy is a rare, probably under-recognised, complication of prolonged AM treatment, it presents as a hypertrophic, restrictive cardiomyopathy with or without conduction abnormalities. Early recognition and drug withdrawal are critical with a survival rate of almost 55%². Longitudinal studies are needed to determine the effect of prednisone and AM use in subclinical echocardiographic findings to avoid unfavourable cardiovascular outcomes.

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SAT0655 MYOSITIS AND FASCIITIS BY MAGNETIC RESONANCE IMAGING IN RECENT-ONSET POLYMYALGIA RHEUMATICA AND EFFECT OF TOCILIZUMAB THERAPY

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Background: In everyday practice, myofascial lesions are not usually evaluated on MRIs obtained for patients with PMR.

Objectives: To assess the prevalence of myofascial inflammatory lesions visible by magnetic resonance imaging (MRI) and their changes after tocilizumab therapy in active polymyalgia rheumatica (PMR).

Methods: We conducted a post hoc analysis of data from the TENOR study of tocilizumab monotherapy in PMR.¹ The 18 patients each received tocilizumab injections at weeks 0, 4, and 8. The shoulder and pelvic girdles were assessed at baseline then at weeks 2 and 12 using T1- and T2-STIR-weighted MRI. Radiologists blinded to patient data assessed each muscle group for myositis and fasciitis on baseline, week-2, and week-12 MRIs. Reproducibility was estimated by having two radiologists assess the week-2 MRIs of 13 patients then computing the kappa coefficient.

Results: For myofascial lesion detection, intraobserver reproducibility was almost perfect ($\kappa=0.890$) and interobserver reproducibility was substantial ($\kappa=0.758$). At baseline, all patients had at least one inflammatory myofascial lesion (example on right shoulder fig 1); sites involved were the shoulder in 10 (71.4%) patients, hip in 13 (86.7%), ischial tuberosity in 9 (60.0%), and pubic symphysis in 12 (80.0%). Sites involved at week 12 were the shoulder in 8 (53.3%) patients, hip in 5 (33.3%), ischial tuberosity in 1, and pubic symphysis in 3 (20.0%). At week 12, of 103 muscle groups studied in all, 43 (41.7%) had no inflammatory lesions, compared to 33 at baseline (Mac Nemar; $p<0.001$) but some areas seemed to be more responsive to tocilizumab compared to other areas. Improvements were noted in 66 (64.1%) muscle groups, worsening in 2 (1.9%), no change in 35 (34.0%).

Conclusions: Myositis and fasciitis are common in recent-onset PMR and improve during tocilizumab therapy. They could be used for the diagnosis in routine practice and as criteria of outcome evaluation.

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SAT0656 CIRCULATING MIR-99B-5P IS A MARKER OF INFLAMMATION AND STRUCTURAL DAMAGE ON MRI IN EARLY RHEUMATOID ARTHRITIS

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Background: Expression of several miRNAs occurs in the plasma and synovial fluid of patients with established rheumatoid arthritis (RA). We found that microRNA-143-3 p (miR-143-3 p), miR-145-5 p, and miR-99b-5p expression was associated with greater erosion volume in early RA (ERA)^{EULAR 2018}-abstract no 1980). Whether these miRNAs are associated with bone erosion and joint inflammation on magnetic resonance imaging (MRI) is unknown.

Objectives: To determine whether plasma cell-free circulating miRNAs are associated with (a) bone erosion and (b) inflammation severity on MRI in patients with ERA.

Methods: 66 ERA patients were recruited at presentation for this cross-sectional study. 60 of these 66 patients (90.9%) were treatment naïve. MRI of the most severely affected wrist was performed in all patients. The degree of bone damage (i.e. erosions), bone inflammation (osteitis) and soft tissue inflammation (synovitis/tenosynovitis) was scored on MRI (a) semi-quantitatively using the Rheumatoid Arthritis MRI score (RAMRIS) for scoring the severity of erosions, bone marrow oedema, synovitis and tenosynovitis; and (b) quantitatively by measuring synovial and tenosynovial volume (mm³). The three most dysregulated miRNAs (miR-143-3 p, miR-145-5 p, and miR-99b-5p) identified in our previous ERA study were validated by TaqMan[®] qRT-PCR in all patients.

Results: Expression of miR-99b-5p was higher in ERA patients with erosions (1.28±0.61) on MRI than those without erosions (0.23±0.43, $p<0.05$). Subdivided according to mean RAMRIS synovitis score (5.69), miR-99b-5p expression was higher in ERA patients with relatively more synovitis (0.75±1.24) on MRI than those with relatively less synovitis (0.34±1.14, $p<0.05$). Bone marrow oedema or tenosynovitis on MRI were not found to be associated with specific miRNA expression. Expression of miR-99b-5p did, however, correlate with synovial ($r=0.443$, $p=0.018$) and tenosynovial volume ($r=0.423$, $p=0.025$) on MRI. Linear regression analysis revealed miR-99b-5p expression to be independently associated with both increased synovial volume ($B=15.65$, 95% CI 3.42–27.89,

p=0.014) and increased tenosynovial volume (B=7.39, 95% CI 0.41~14.38, p=0.039) (Table).
Table 1 Univariate and multivariate analysis for factors associated with synovial volume and tenosynovitis volume at baseline in all ERA patients

Table Univariate and multivariate analysis for factors associated with synovial volume and tenosynovitis volume at baseline in all ERA patients

Synovial volume	Univariate			Multivariate		
	B	95%CI	P value	B	95%CI	P value
Age	0.79	0.09-1.50	0.026			
Sex	0.23	-0.043-0.51	0.098			
Dj	6.58	1.53-11.64	0.011			
DAS28-CRP	14.22	5.25-23.18	0.002			
miR-99b-5p	16.15	2.98-29.32	0.018	15.65	3.42-27.89	0.014

Dj: damage joint count; DAS 28: Disease Activity Score 28

Tenosynovial volume	Univariate			Multivariate		
	B	95%CI	P value	B	95%CI	P value
Age	0.51	0.10-0.92	0.016			
Sex	0.47	-0.07-0.94	0.054			
Tj	1.07	0.044-2.10	0.042			
DAS28-CRP	5.86	0.42-11.30	0.035			
miR-99b-5p	7.36	-10.05-13.71	0.025	7.39	0.41-14.38	0.039

Tj: Tender joint count; DAS 28: Disease Activity Score 28

Conclusions: Increased cell-free circulating miR-99b-5p is associated with increased synovial and tenosynovial volume as well as more severe bone erosion in ERA patients at presentation. Whether it may serve as a biomarker for monitoring the progression of synovitis and damage would need to be addressed in prospective studies.

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SAT0657 MICROWAVE RADIOMETRY-DERIVED THERMAL CHANGES OF SACROILIAC JOINTS AS A BIOMARKER OF SACROILIITIS IN PATIENTS WITH SPONDYLOARTHRITIS

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Background: Microwave Radiometry (MR) is a rapid, easy-to-perform, non-invasive method that detects in-depth tissue temperatures. In a proof-of-concept study we found that an increased knee joint temperature detected by MR reflects the presence of subclinical synovial inflammation in patients with rheumatoid arthritis.¹

Objectives: To test the hypothesis that MR-derived increased temperature of sacroiliac (SI) joints is a biomarker of local inflammation in patients with axial spondyloarthritis (SpA) in a cross-sectional study.

Methods: Sixty patients with SpA (32 with ankylosing spondylitis, 24 with psoriatic arthritis, 4 with enteropathic arthritis) underwent clinical and laboratory assessments, magnetic resonance, X-ray imaging, and MR measurements of SI joints. All MR measurements were performed by a physician who was blinded to the clinical evaluations. Patients were classified as having active sacroiliitis (pain and/or tenderness and/or bone marrow oedema on magnetic resonance, n=23), inactive sacroiliitis (n=19), whereas signs/symptoms of a present/past SI joint involvement were absent in the remaining 18 patients. Twenty five age-matched healthy individuals served as controls. Three MR measurements were performed along each SI joint and a number was calculated for each patient denoting the difference (ΔT) in temperature between the warmest point in either SI joint and a control point, which was the iliac bone.

Results: A lower ΔT , indicative of a warmer joint, was found in patients with either active or inactive sacroiliitis compared to patients without sacroiliitis [mean (SD) ΔT of 0.1 (0.5) vs. 0.6 (0.5), respectively, p=0.001] or healthy controls [mean (SD)

ΔT of 0.60 (0.55), p=0.003]. A warmer SI joint was not significantly associated with the presence of local tenderness or pain, the patient visualised analogue pain scale for SI joints, the BASDAI score, the New York radiological grading of SI lesions, or C-reactive protein levels. Notably, all 20 patients with increased SI joint temperature ($\Delta T < 0.05$, which was the mean ΔT value minus one SD in healthy controls) had either symptoms/signs of sacroiliitis or imaging confirmed sacroiliitis even in the absence of clinical findings. Receiver operating analysis showed that a ΔT cut-off of 0.35 could discriminate with a sensitivity of 78% and specificity of 74% patients with sacroiliitis from those without, or from healthy controls (both p=0.001); sensitivity reached 100% for ΔT values equal or lower than 0.05.

Conclusions: MR-derived increased in-depth temperature indicative of local inflammation of SI joints may serve as an additional diagnostic marker in axial SpA

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SAT0658 QUANTITATIVE ANALYSIS OF JOINT STRUCTURE BY HR-pQCT IN PATIENTS WITH RHEUMATOID ARTHRITIS: CORRELATION BETWEEN CARTILAGE LOSS AND BONE DETERIORATION

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Background: HR-pQCT is a high-resolution CT dedicated to human extremities. It has been used for the study of rheumatoid arthritis (RA) in recent years, enabling quantitative analysis of bone erosion, bone microstructure, and joint space.

Objectives: The purpose of this study is to investigate a correlation between cartilage loss and bone deterioration (juxta-articular osteoporosis and erosion) in patients with RA by HR-pQCT.

Methods: Twenty patients with RA (70±8 years, 15 female, 5 male) participated in this study. The second and third MCP joints were scanned by second-generation HR-pQCT (XtremeCT II, Scanco Medical, Switzerland) at the voxel size of 61 µm.

The following parameters were measured semiautomatically using dedicated software (TRI/3D-BON, Ratoc System Engineering, Tokyo) based on previous studies¹⁻³. 1) Average joint space width (ave-JSW) of MCP joints, 2) bone microstructure of metacarpal head: volumetric bone mineral density (vBMD), trabecular thickness (Tb.Th), trabecular number (Tb.N), and structure model index (SMI), 3) total volume of erosions (ER-volume) on the metacarpal head.

Results: Ave-JSW of MCP joints was 1.47 (1.00-1.89) mm. vBMD of the metacarpal head was 131.4 (54.3-263.5) mg/cm³, Tb.Th was 213.1 (166-329.3) µm, Tb.N was 0.95 (0.69-1.50)/mm, and SMI was 1.68 (0.65-2.52). The total number of erosions was 31, and an average number of erosions on each metacarpal head was 0.9 (0-4). Total ER-volume on the metacarpal head was 1.96 (0-16.7) mm³. Ave-JSW had significant correlations with vBMD, SMI and ER-volume (R=0.37, -0.40, -0.42, p<0.05).

Conclusions: Cartilage loss was correlated with juxta-articular osteoporosis and bone erosion in RA patients. Quantitative evaluation of total joint structure (joint space, bone microstructure, and erosion) by HR-pQCT would be useful for the pathophysiological research and drug development of RA.

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