polyarthritis,⁵ dactylitis,¹ enthesitis,¹ psoriasis,¹ uveitis¹ and inflammatory bowel disease.¹ All patients were therapeutic-naïve for glucocorticosteroids, DMARDs or TNF- α inhibitors.

Methods: First, we performed examination of the sacroiliac joint with X-ray, to exclude those patients, who already had radiographic lesions. Then an MRI was performed in the following sequences: T2- weighted STIR for the bone marrow oedema (BME) and T1-weighted sequence for the fat metaplasia (FM). The HDP SPECT/CT was used within one week to examine the sacroiliac joint. Thereafter, the MRI images were fused with HDP SPECT/CT images. On the MRI images the BME (active lesion) and FM (chronic lesion), on the CT scans the sclerotic lesions (SCL, chronic lesion) were drawn manually as volume of interest (VOI). Uninvolved cortical areas were drawn on the different modality slices as reference region (ref). Then, we determined the isotope (99mTc-labelled HDP) uptake of the different lesions and areas.

Results: Four active sacroileitis and five chronic sacroileitis without active lesions were diagnosed according to the MRI results. On the other 8 patient's sacroiliac joints images (MRI, scintigraphy, CT scans), no inflammation-related lesions were observed. The MRI and HDP SPECT-CT findings were 100% concordant. The isotope uptake of BME was the highest, the radioisotope uptake of sclerotic lesions was moderate, whereas the isotope uptake of FM lesions was not different from the HDP uptake of reference regions.

Conclusions: According to the initial results, the different MRI lesions have different isotope uptake, which suggests, that the HDP SPECT/CT can distinguish the early and chronic stage of axial SpA from chronic lesions. Thank to whole body imaging technique we can have further information about disease activity and extent. The presented data are the first of our prospective study, and examinations of new patients are still in progress and we plan to investigate our SpA patients in remission to explore the utility of this new method in subclinical activity assessment. We also plan to investigate the corner lesions of the spine to find other potential uses of the HDP SPECT-CT imaging in SpA.

Disclosure of Interest: None declared

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SAT0670 DYNAMIC THIOL/DISULFIDE HOMEOSTASIS AS A NOVEL OXIDATIVE MARKER IN BEHÇET'S DISEASE

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Background: Behçet's disease (BD) is a relapsing systemic inflammatory disorder of unknown etiology.¹

Objectives: In this study, we aimed to evaluate the relationship between the thiol-disulfide balance and disease activity and organ involvement in BD.

Methods: One hundred fifty (150) patients with BD and 100 age-gender matched healthy controls were included in the study. Disease activity was assessed with the BD Current Activity Form (BDCAF) score. Serum levels of native thiol (NT), total thiol (TT), and disulfide were measured and the disulfide/native thiol, disulfide/total thiol and native thiol/total thiol levels were calculated for the patient and control groups.

Results: NT, TT, NT/TT values of the BD patients were significantly lower than those of the control group. The disulfide/NT, disulfide/TT values of BD patients were higher compared to the control group and the disulfide value of the BD group was slightly higher compared to the control group (table 1). No correlation was determined between thiol levels and disease activity and organ involvement in BD.

Abstract SAT0670 – Table 1. Laboratory results of the BD and the control group

	BD	HC	p
Native Thiol (SH)(μmol/l)	357.93 $\pm$ 76.65	453.01 $\pm$ 60.8	0.000*
Total Thiol (μmol/l)	398.57 $\pm$ 78.33	490.29 $\pm$ 58.48	0.000*
Disulfide (μmol/l) (SS)	20.32 $\pm$ 8.19	18.64 $\pm$ 7.87	0.109
Disulfide/native thiol x100	5.93 $\pm$ 2.76	4.25 $\pm$ 1.99	0.000*
Disulfide/total thiol x100	5.2 $\pm$ 2.13	3.86 $\pm$ 1.69	0.000*
Native thiol/total thiol x100	89.6 $\pm$ 4.26	92.28 $\pm$ 3.38	0.000*

*p<0,05

Conclusions: In patients with Behçet's disease, the dynamic thiol-disulfide homeostasis balance shifted towards disulfide formation due to thiol oxidation. It may be used as a novel marker in BD because it is easy, practical, fully automated and relatively inexpensive.

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SAT0671 INITIAL DEVELOPMENT OF A WHOLE-BODY MAGNETIC RESONANCE IMAGING INFLAMMATION INDEX FOR ACTIVE DISEASE OF PERIPHERAL JOINTS AND ENTHESES IN PATIENTS WITH INFLAMMATORY ARTHRITIS

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Background: Magnetic resonance imaging (MRI) allows objective assessment of inflammation in peripheral joints and entheses. MRI scoring systems have until now focused on assessing specific parts of the musculoskeletal system in detail, e.g. the Rheumatoid Arthritis MRI Scoring System (RAMRIS), which is applied to wrist and metacarpophalangeal joints and adjacent tendon sheaths. The interest in a whole-body MRI approach is growing as modern MRI scanners now permit whole-body scanning within an acceptable time frame, and future improvements in MRI hardware and pulse sequences are expected to improve scan time and image resolution further.

Objectives: To develop a whole-body MRI scoring system for inflammation of peripheral joints and entheses and to investigate its feasibility and reliability.

Methods: Definitions of the key pathologies and locations for assessment have been agreed upon in the OMERACT MRI Working Group¹. In a first round in June 2017, 9 readers (AJM/DG/FG/IE/MØ/PB/SJP/SK/WPM) scored MR images of 2 patients with spondyloarthritis using a draft web-based scoring system. Results were discussed and the scoring system was slightly modified. Hereafter, in a second round in October 2017, 14 MRI readers (3 musculoskeletal radiologist (IE/JLJ/RGL) and 11 rheumatologists with varying exposure to MRI (AJM/DG/FG/MS/MØ/PB/RP/SJP/SK/VF/WPM), scored 5 similar patients by the modified scoring system. Using a semiquantitative scale 0–3 (none/mild/moderate/severe), synovitis and osteitis were scored separately for 83 joints, and soft tissue inflammation and osteitis were scored separately for 33 entheses. Discrepancies between readers were discussed during an online meeting to obtain consensus, to train inexperienced readers, and to identify potential pitfalls when applying the scoring system.

Results: Inter-reader reliability was overall moderate for joint scores and poor for enthesis scores; however, among the 3 musculoskeletal radiologists, enthesis scores were as reliable as joint scores (Table). Reliability did not improve between the first and second round, possibly because patients with several very conspicuous inflammatory lesions were selected as cases in the first round.

Abstract SAT0671 – Table 1. Inter-reader reliability of scoring inflammation of peripheral joints and entheses (Cohen's kappa with squared weights for individual scores, ICC(3,1), agreement, for sum scores). All values are median (IQR; range) of all reader pairs (36 reader pairs for 9 readers, 91 reader pairs for 14 readers, 3 reader pairs for 3 readers [values for 3 reader pairs provided]).

	Kappa for osteitis scores (joints)	Kappa for synovitis scores (joints)	Kappa for osteitis scores (entheses)	Kappa for soft tissue inflamm. (entheses)	Kappa for all sites combined	ICC
First round (9 readers)	0.86 (0.81-0.90; 0.67-0.98)	0.63 (0.43-0.84; 0.26-0.94)	0.51 (0.27-0.63; 0.03-0.84)	0.36 (0.17-0.74; -0.08-0.92)	0.67 (0.62-0.75; 0.47-0.90)	0.64 (0.28-0.89; -0.26-1.00)
Second round (9 readers that had participated in first round)	0.61 (0.52-0.67; 0.36-0.80)	0.66 (0.61-0.70; 0.53-0.82)	0.33 (0.26-0.42; 0.02-0.69)	0.21 (0.12-0.31; -0.01-0.62)	0.53 (0.50-0.58; 0.42-0.70)	0.68 (0.60-0.82; 0.47-0.99)
Second round (all 14 readers)	0.48 (0.36-0.60; 0.10-0.80)	0.57 (0.45-0.66; 0.24-0.82)	0.32 (0.18-0.44; -0.06-0.80)	0.22 (0.12-0.35; -0.06-0.62)	0.47 (0.40-0.54; 0.25-0.72)	0.60 (0.30-0.75; -0.02-0.99)
Second round (3 musculoskeletal radiologists)	0.50 / 0.32 / 0.26	0.68 / 0.58 / 0.54	0.53 / 0.67 / 0.68	0.51 / 0.58 / 0.45	0.57 / 0.54 / 0.49	0.70 / 0.52 / 0.23

Conclusions: It is feasible to perform online multi-reader scoring exercises of whole-body MRI using a web-based scoring interface. MRI readers need to be further trained and calibrated in the semiquantitative scoring approach used to increase inter-reader reliability.

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SAT0672 IS ULTRASOUND REMISSION ACHIEVABLE IN PATIENTS WITH EARLY RHEUMATOID ARTHRITIS?

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Background: In rheumatoid arthritis (RA) the "window of opportunity" has a crucial role for better long-term outcomes.¹ The ACR/EULAR remission criteria for RA are mostly represented by clinical parameters, while ultrasound (US) is not included.² However, in early diagnosed and early treated patients, who fulfil the remission criteria, residual US modifications can be identified.³

Objectives: The aim of this study was to investigate whether significant US-detectable differences between early RA (ERA) patients treated for one year and healthy controls (HC) are present.

Methods: We enrolled in this cross-sectional study consecutive patients with ERA at 1 year after having initiated RA disease-modifying (DMARD) therapy and who had received treatment following RA recommendations. Only patients who had fulfilled EULAR/ACR 2010 criteria for RA⁴ and with symptoms duration of less than 1 year at treatment initiation were included. US exams were performed in 10 joints bilaterally (wrist, MCP II-V) by using both gray-scale and Doppler for evaluating synovitis was graded according to a semi-quantitative 4-point scale (0–3). A total US score for synovitis was calculated by adding the values recorded at each joint site. The presence of erosions was also recorded. Finally, US results obtained in patients were compared to those detected in HC.

Results: 84 subjects were enrolled – 45 ERA patients and 39 HC. In ERA patients the mean duration of symptoms prior to diagnosis was 3.5±3.5 months. The demographic, clinical and US data are reported in table 1.

Abstract SAT0672 – Table 1. Demographic, clinical and US data for ERA patients and HC [n (%), mean±SD or median (IQR)]

Parameters	ERA (n=45)	HC (n=39)	p
Gender (Female)	28 (62.2%)	25 (64.1%)	0.859
Age	56.16±19.91	46.59 ±12.93	0.003
VAS pain	19 (10.25–30)	0 (0–2)	<0.001
US score	4 (1.5–6.5)	1 (0–3)	<0.001
Erosions	23 (51.11%)	0 (0%)	<0.001

As expected, the values of visual analogue scale (VAS) for pain and of the total US score and the incidence of erosions were significantly higher in ERA patients than in HC. The values of the US score correlated with the presence of erosions ($r_s=0.427$, $p<0.001$) as well as with the values of acute phase reactants (CRP: $r_s=0.539$, $p=0.412$ and ESR: $r_s=0.412$, $p=0.005$). VAS of disease activity reported by patients ($r_s=0.473$, $p<0.001$) and physician ($r_s=0.412$, $p<0.001$).

Conclusions: Patients with RA, who had been early diagnosed and early treated, after 1 year of tight control had still US inflammatory and erosive changes compared to HC. US assessment gives an added value to clinical evaluation in ERA, for its capacity to detect residual inflammatory abnormalities, even under optimised treatment and consequent structural lesions.

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SAT0673 MAGNETIC RESONANCE IMAGING IN THE DIAGNOSIS OF AXIAL SPONDYLOARTHRITIS: A SYSTEMATIC LITERATURE REVIEW

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Background: Magnetic resonance imaging (MRI) is an essential tool in the diagnosis and management of axial spondyloarthritis (axSpA). However, a recent survey showed variable practices in the use of MRI across the UK.¹ To inform a joint rheumatology and radiology consensus exercise aimed at standardising practice, we systematically reviewed the literature regarding the use of MRI in the diagnosis of axSpA.

Objectives: We aimed to answer three research questions:

1. How does the choice of anatomical region influence diagnostic performance?
2. How do MRI acquisition parameters influence diagnostic performance?
3. Which lesion, or combination of lesions, is most sensitive and specific for the diagnosis of axSpA?

Methods: MEDLINE (via Pubmed) and EMBASE (via Ovid) databases were searched using previously-reported terms.² These terms identified studies including adult patients with clinically suspected axSpA undergoing MRI, where a diagnosis of axSpA was used as an outcome and where patients with a negative test for SpA were used as controls. We included studies performed between January 2013 and March 2017, in addition to those included in a previous systematic literature review, which included all studies up to January 2013.² Search results were screened by title and abstract, and the included studies were subject to detailed review and quality assessment using the QUADAS-2 tool.³

Results: The combined search resulted in a total of 8114 studies; 34 of these were finally selected for inclusion.

Five studies evaluated the added value of spinal MRI over SIJ MRI alone, with variable results depending on the cohort.

Three studies addressed the effect of sequence choice on diagnostic accuracy, demonstrating comparable utility of fat-saturated T2-weighted (T2w) sequences and STIR imaging, and suggesting T2w Dixon imaging as a potential alternative