	Injury	Prevalence (%)
Lower border of C7 (n=26)	Normal	65,5%
	Sclerosis, squaring, erosion	23%
	Syndesmophyte	4%
	Bridge	7,5%
Upper border of D1 (n=14)	Normal	57%
	Sclerosis, squaring, erosion	28,5%
	Syndesmophyte	0%
	Bridge	14,5%

Conclusions:
- The cervical segment C7-D1 is not usually valuable through a lateral cervical radiograph.
- Most of our patients with Spondylitis have no significant lesions in this segment.
- It is recommended to modify the m-SASSS index by removing the assessment of the cervical segment C7-D1.

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FRI0455 RADIOGRAPHIC PROGRESSION OF HIP ARTHRITIS IN PATIENTS WITH ANKYLOSING SPONDYLITIS TREATED WITH TNF INHIBITORS

M. Konsta[1,2], M.T. Nurmohamed[2], A. Iliopoulos[1], J,C. van Denderen[2], I. Visman[2], P.P. Sfikakis[1], I.E. van der Horst-Bruinsma[2]. *[1]First Department of Propaedeutic Internal Medicine, Rheumatology Department, Joined Rheumatology Program, National and Kapodistrian University of Athens, Medical School, Athens, Greece; [2]Amsterdam Rheumatology and Immunology Center, Amsterdam, Netherlands*

Background: Although there is debate whether treatment with TNF inhibitors (TNFi) in AS may not inhibit spinal radiographic progression, the effect on hip involvement may be different (1,2).
Objectives: To estimate the impact of long-term TNFi treatment on radiographic progression of hip arthritis in AS, by adding a quantitative scoring method, previously applied in hip osteoarthritis, to the BASRI-hip score.
Methods: Consecutive TNFi-naïve AS patients (fulfilling the modified New York criteria) who were eligible for TNFi treatment were included. Hip involvement was assessed clinically (pain, reduced range of motion and intermalleolar distance) and radiographically. X-rays of the pelvis and lateral cervical and lumbar spine were obtained at 3 time points: at baseline two and seven years after the start of TNFi. Both hips were scored using: a) BASRI-hip score (BASRI-h score $\geq$2 is classified as definitive hip involvement), b) mean joint space width (MJSW), estimated by measurement of 3 distinct points of interbone distance: 2mm inner of the external end of the acetabulum, vertical line through femoral head center, head-neck center line (1). Spinal X-rays were scored were scored blindly, by 2 independent readers using the mSASSS. The significance of changes was tested by mixed models for longitudinal data.
Results: 262 AS patients (188 men, age: 49.8±12 years, disease duration: 24.4±12 years) under TNFi treatment were included. Definite hip involvement at baseline was detected in 95/262 (36%) patients, who had significantly higher BASRI-hip score [2 (2–2.5) median (IQR) vs. 0.5 (0–1) $p<0.0001$] and lower MJSW (3.6±0.7 vs. 4.5±0.7, $p<0.0001$), compared to those without. In patients with hip arthritis at baseline, both BASRI-h score and MJSW remained unchanged during follow up. In patients without hip arthritis, the BASRI-hip score remained unchanged after 2.5±0.7 years, but increased significantly after 7±2.3 years compared to baseline. In contrast, the MJSW in patients without hip arthritis remained unchanged at the three time points. The mSASSS raised significantly during the follow-up period, regardless of hip involvement (see table).

Variables	Baseline	After 2.5±0.7 years	After 7±2.3 years	P
All pts (n=262)				
BASRI-hip, mean±SD	1.15±1	1.14±1	1.2±1	<0.0001
MJSW (mm), mean±SD	4.17±0.8	4.16±0.8	4.12±0.7	NS
mSASSS, median (IQR)	6 (1–24.5)	8 (1–30)	11 (2–30)	<0.0001
Pts with hip involvement (n=95)				
BASRI-hip, median (IQR)	2 (2–2.5)	2 (2–2.5)	2 (2–2.5)	NS
MJSW (mm), mean±SD	3.59±0.7	3.58±0.7	3.53±0.7	NS
mSASSS, median (IQR)	12 (2.5–36)	17 (3–40.5)	15.5 (3–37.5)	<0.0001
Pts without hip involvement (n=167)				
BASRI-hip, mean±SD	0.49±0.5	0.5±0.53	0.58±0.57	<0.0001
MJSW (mm), mean±SD	4.5±0.7	4.47±0.6	4.44±0.6	NS
mSASSS, median (IQR)	4 (0–18)	7 (1–25)	9 (2–27)	<0.0001

Conclusions: One third of the AS patients suffer from radiographic hip involvement, which seems to stabilize during long-term anti-TNF treatment. Assessment of MJSW may contribute to detect minor changes in contrast to BASRI-hip score' rough estimation.

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FRI0456 AGE AT SPONDYLOARTHRITIS DIAGNOSIS AND RISK OF CARDIOVASCULAR COMORBIDITY: RESULTS FROM THE COMOSPA STUDY

M.H. Derakhshan[1], N.J. Goodson[2], J. Packham[3], R. Sengupta[4], H. Marzo-Ortega[5], A. Molto[6], S. Siebert[1] on behalf of BRITSpA and COMOSPA investigators. *[1]Institute of Infection, Immunity & Inflammation, University of Glasgow, Glasgow; [2]Academic Rheumatology Department, University of Liverpool, Liverpool; [3]Haywood Rheumatology Centre, Keele University, Keele; [4]Royal National Hospital for Rheumatic Diseases, Bath; [5]NIHR, Leeds Teaching Hospitals Trust and LIRMM, University of Leeds, Leeds, United Kingdom; [6]Paris Descartes University, Hôpital Cochin, Paris, France*

Background: Spondyloarthritis (SpA) and chronic inflammatory diseases are associated with a number of cardiovascular comorbidities. It is unknown whether age at SpA diagnosis is associated with cardiovascular outcomes in later life.
Objectives: To examine the relationship between "younger age at SpA diagnosis" and risk of various cardiovascular comorbidities.
Methods: COMOSPA is a large worldwide cross-sectional study comprising 3984 patients from 23 countries evaluating comorbidities in patients with SpA (1). We evaluated the association between "younger age at SpA diagnosis" (defined in 5-year blocks) and cardiovascular comorbidities using uni-variable and multi-variable binary logistic regression. Each model comprised one cardiovascular co-morbidity as dependent and "age at SpA diagnosis" as predictor adjusted for age, sex, BMI, history of smoking, alcohol, NSAIDs, DMARDs, biologics, steroids and other relevant factors
Results: The data of 3923 patients (64% male) were available for analysis. Current age ranged from 18 to 100 with median (IQR) of 42 (32–53) years. The median (IQR) age at SpA diagnosis was 33 (25–43) years. Main reported cardiovascular-related comorbidities were hypertension (22.4%), ischemic heart disease (IHD) (2.6%), stroke (1.3%) and diabetes mellitus (5.5%).
The risk of hypertension, after adjustment for potential confounding factors was associated with younger age at SpA diagnosis (OR=1.10, 95% CI: 1.05 -1.16), indicating 10% higher risk of hypertension for each 5 year younger age at time of SpA diagnosis (Table). Confounding variables showing significant association with hypertension were current age (OR=1.12, 95% CI: 1.10–1.13, $p<0.001$), male gender (OR=1.47, 95% CI: 1.20–1.80, $p<0.001$), current BMI (OR=1.09, 95% CI: 1.07–1.11, $p<0.001$), ever use of steroids (OR=1.24, 95% CI: 1.03–1.50, $p=0.027$) and ever use of synthetic DMARDs (OR=1.28, 95% CI: 1.05–1.57, $p=0.017$), but not ever use of NSAIDs or biologic DMARDs.
The other cardiovascular comorbidities were not associated with "younger age at SpA diagnosis" after adjustments for relevant confounding factors in multivariable analyses (Table)

Table 1. Association between "younger age at SpA diagnosis" and the risk of cardiovascular disease

	Univariable		Multivariable	
	OR (95% CI)	p value	OR (95% CI)	p value
Hypertension	0.76 (0.74 -0.79)	<0.001	1.10 (1.05 -1.16)	<0.001
IHD	0.74 (0.69 -0.80)	<0.001	0.99 (0.91 -1.086)	0.854
Stroke	0.79 (0.71 -0.87)	<0.001	0.98 (0.86 -1.11)	0.736
Diabetes Mellitus	0.78 (0.74 -0.82)	<0.000	0.95 (0.88 -1.02)	0.172

Conclusions: Younger age of SpA diagnosis is associated with increased risk of developing hypertension but not other cardiovascular comorbidities in this study. The explanation for this association is not clear and does not appear to be due to increased NSAID exposure.
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FRI0457 THE ROLE OF SERUM HMGB1 IN BONE REMODELİNG AND OSTEOPOROSIS IN A GROUP OF ANKYLOSING SPONDYLITIS PATIENTS

M. Calis[1], I. Cuce[2], I. Gunturk[3], E. Cuce[1], C. Yazici[4]. *[1]Department of Physical Medicine and Rehabilitation, Erciyes University, Faculty of Medicine, Kayseri; [2]Department of Physical Medicine and Rehabilitation, Adıyaman University Training and Education Hospital, Adıyaman; [3]Institute of Health Sciences, Biochemistry, Erciyes University; [4]Department of Medical Biochemistry, Erciyes University, School of Medicine, Kayseri, Turkey*

Background: Ankylosing spondylitis is characterized by new bone formation and bone loss, associated with inflammation, which are mediated by cytokine-signaling pathways. High mobility group box 1 (HMGB1) protein, is a nonhistone nuclear protein, which is secreted by inflammatory cells, is also defined as a bone-active

cytokine. Recent studies have shown that RANKL induces HMGB1 release and it is required for RANKL-induced osteoclastogenesis in vitro and in vivo.
Objectives: To investigate the relationship of serum HMGB1 levels with RANKL/Osteoprotegerin (OPG) axis and clinical and radiographic parameters in patients with AS.
Methods: In this cross-sectional study, serum samples for total HMGB1, sRANKL and OPG were detected from 54 tumour necrosis factor (TNF) inhibitor naive patients with AS according to the modified New York criteria [mean age 34.9 years (S.D. 7.1); duration of symptoms 8.6 years (S.D. 4.2); male gender 38 patients (70.4%)] and 26 healthy controls. ESR, CRP, Bath AS Disease Activity Index (BASDAI), Bath AS Functional Index (BASFI) were assessed for each patient. Bone mineral density was measured using dual-energy X-ray absorptiometry (DXA) at lumbar spine (L2–L4) and proximal femur. Lumbar spine radiographs were scored using the modified Stoke AS Spine Score (mSASSS).
Results: Serum HMGB1 levels were relatively higher in patients with AS than HCs however no statistically significant in each other. Serum HMGB1 levels correlated with CRP (rho=0.368 and *P*=0.006), ASDAS-CRP (rho=0.358 and *p*=0.008) and BASDAI (rho=0.334 and *p*=0.014) and BASFI (rho=0.355 and *p*=0.008) in patients with AS. CRP and ASDAS-CRP showed more correlated to HMGB1 serum levels than BASDAI. There was no significant correlation between HMGB1 levels with sRANKL, OPG, mSASSS and spine or femur BMD values. In addition, serum OPG levels and the ratio of sRANKL to OPG from AS patients were significantly higher than those of HCs.

Table 1

	AS patients (n=54)	Healthy controls (n=26)	*p*
Age (yrs)	34.9±7.1	33.3±4.0	N/A
Body mass index (kg/m^2)	26.3±4.7	26.3±2.8	N/A
Disease duration (yrs)	8.6±4.2	–	N/A
ESR (mm/hr)	22.0±8.5	–	N/A
CRP (mg/L)	11.5±8.9	–	N/A
HMGB1 (ng/ml)	337.1±166.1	286.3±126.1	N/A
sRANKL (ng/ml)	148.6±31.4	137.2±46.9	N/A
OPG (ng/ml)	285.5±68.9	317.8±51.8	0.02
sRANKL/OPG	0.6±0.2	0.4±0.1	<0.001

Conclusions: This study showed that levels of HMGB1 in the sera of AS patients, are increased compared to healty controls. Serum HMGB1 levels are related to BASDAI, ASDAS-CRP, BASFI and CRP in patients with AS. Different results in the literature on serum HMGB1 levels as well as our results support the hypothesis that HMGB1 plays a role in the pathogenesis of AS. According to our knowledge, it is the first trial evaluating association between serum HMGB1 levels with sRANKL-OPG axis, bone mineral density and new bone formation in AS patients and it seems not to be related for these conditions.
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FRI0458 ASSESSMENT OF BONE MINERAL DENSITY IN PATIENTS WITH EARLY AXIAL SPONDYLOARTHRITIS FROM CORSAR COHORT: 2 YEARS FOLLOW UP

O. Rumyantseva, T. Dubinina, A. Demina, D. Rumiantceva, S. Erdes, E. Agafonova, S. Krasnenko, E. Gubar. *Nasonova Research Institute of Rheumatology, Moscow, Russian Federation*

Background: Bone loss in patients (pts) with early axial spondyloarthritis (axSpA) is insufficiently studied and may be associated with disease activity.
Objectives: To assess the bone mineral density (BMD) in pts with early axSpA base on data from 2 years follow up of CORSAR cohort.
Methods: The research included 65 pts with axSpA (criteria ASAS 2009) with disease duration <5 years and age at onset <45 years. Pts at least 2 years follow up, 32 (49,2%) male, pts mean age was 28,5 (5,8) y., average disease duration 24,1 (15,4) mo, 60 (92,3%) pts were HLA-B27 positive. At baseline all pts were NSAID-naïve, DMARD-naïve, anti-TNF-naïve. For 2 years all pts taking NSAIDs at therapeutic doses, part of the pts received sulfasalazine and anti-TNF. BMD was measured using dual energy x-ray absorptiometry (DXA) of the femoral neck (FN) and lumbar spine (LS) (L2–4) at baseline and after 1 year, and 2 years follow up. BMD reduction was defined as Z score $\leq$ -2 (at least one site).
Results: Low BMD at baseline founded in 9 (13,8%) pts, in 10 (15,3%) pts after 1 year and in 5 (7,7%) pts after 2 years follow up. There were no significantly differences between the mean values of BMD at baseline and after 2 year, data are shown in the Table.

Table 1. BMD at baseline and after 1 and 2 years follow up

	Baseline	1 years after baseline	2 years after baseline	p
BMD LS mean (s.d)	-0,759 (1,13)	-0,679 (1,11)	-0,627 (1,11)	0,541
BMD FN mean (s.d)	-0,527 (0,91)	-0,633 (0,95)	-0,477 (1,00)	0,792

Conclusions: Low BMD was quite rare (14%) in patients with early axSpA. Small frequency of BMD reduction in the Russian cohort of axSpA patients after 2 years of study is probably due to disease activity decrease on anti-inflammatory therapy.
Disclosure of Interest: None declared
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FRI0459 DEVELOPMENT AND VALIDATION OF A SPANISH TOOL FOR SEMI-AUTOMATIC QUANTIFICATION OF SACROILIAC INFLAMMATION BY MAGNETIC RESONANCE IN SPONDYLOARTHRITIS (SCAISS)

P. Zarco[1], R. Almodóvar[1], A. Bueno[2], L.M. Molinero[3]. *[1]Unit Rheumatology; [2]Unit Radiology, Hospital Universitario Fundación Alcorcon; [3]Ingeniera ALCE, Madrid, Spain*

Background: Different systems to quantify inflammatory changes in sacroiliac MRI have been developed.[1, 2] These systems include the Spondyloarthritis Research Consortium of Canada (SPARCC), the Berlin, the Aarhus-Puhakka, and Aarhus-Madsen, the Leeds, the MR Imaging of Seronegative SpA (MISS), Leeds, Sieper/Rudwaleit and Hermann/Bollow scoring systems. In addition, the use of these quantification methods is restricted to clinical trials, since their use in clinical practice is limited due to their complexity, need for trained personal, and prolonged procedural time. The development of computers and data processing software has led to significant advances in methods for image analysis. With the objective to improve interobserver quantification of sacroiliitis while maintaining a practical perspective, our group has developed a semi-automated method to measure bone marrow edema (BME) in MRI images from sacroiliac (SI) joints.
Objectives: The aim of this study is to analyze the validity and reliability of the method.
Methods: The development of the method to quantify inflammation in SI joints involved software selection from a list of potential programs, process-mapping based on discussion, and tuning. Once developed, feasibility (time spent) interobserver reliability (intraclass correlation coefficient), and construct validity (convergent validity) were analysed. Two rheumatologists and a radiologist independently quantified sacroiliitis from SI images from 12 patients with a diagnosis of axial SpA by the new method, and by non-automated methods to rate sacroiliitis (SPARCC* and Berlin). Convergent validity, reliability and feasibility were calculated. (* In the present study, for simplicity reasons and in order to make it closer to the developed technique, the authors modified the SPARCC method by using a single coronal section instead of the standard six consecutive ones).
Results: The interobserver reliability was high, with intraclass correlation coefficients for global score of 0.81 (95% CI: 0.59–0.94). Convergent validity was good, with high correlation with the Berlin (rho between 0.797 and 0.913) and the SPARCC methods (rho between 0.566 and 0.897). Mean time employed in the reading procedure was 30 seconds.
Conclusions: The developed semi-automatic technique permits a fast and valid calculation of overall BME lesion at the SI joint on MRI images.
References:
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FRI0460 EXTRA-ARTICULAR MANIFESTATIONS IN PATIENTS WITH AXIAL SPONDYLOARTHRITIS: A CROSS SECTIONAL STUDY FROM SOUTHERN DENMARK

R.A. Andreasen[1,2], R. Christensen[1], L.E. Kristensen[1], T. Ellingsen[3,4], H.C. Horn[3], I.M.J. Hansen[2,5]. *[1]Rheumatology, The Parker Institute, Bispebjerg and Frederiksberg Hospital, Copenhagen; [2]Rheumatology, OUH, Svendborg Hospital, Svendborg; [3]Rheumatology; [4]Patient data Explorative Network (OPEN), Odense University Hospital; [5]Department of Clinical Research, University of Southern Denmark, Odense, Denmark*

Background: Axial (ax) spondyloarthritis (SpA) is a heterogenous group of chronic rheumatic diseases. Ax-SpA is subdivided into two groups referred to as nonradiographic and radiographic (i.e. AS) respectively. Next to the spinal and articular symptoms, many patients with SpA also have extra-articular manifestations (EAM) which contribute to reduced quality of life [1]. SpA appears to be more frequent in men than woman in its axial presentations, and in reference to the prototype of the disorder, AS, three male cases are documented for every female case. However, since the introduction of the new ASAS criteria for ax-SpA these differences are no longer so apparent[2]. Nevertheless, little is known of the differential clinical expression of SpA between males and females.
Objectives: The objective of this study was to compare patients with AS and