FRI0209

RECOMMENDATIONS FOR ACQUISITION AND CONSIDERATIONS FOR INTERPRETATION OF MRI OF THE SPINE AND SACROILIAC JOINTS IN THE INVESTIGATION OF AXIAL SPONDYLOARTHRITIS IN THE UK

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Background: The use of magnetic resonance imaging (MRI) has been instrumental in the early recognition and characterisation of axial spondyloarthritis (axSpA). However, a recent survey in the UK showed that there is diverse practice in the use of MRI and limited knowledge of MRI features suggestive of axSpA among radiologists.¹

Objectives: To develop clinical practice recommendations for the acquisition and interpretation of MRI of the spine and sacroiliac joints (SIJs) in the investigation of axSpA through a collaboration between rheumatologists and radiologists.

Methods: A working group comprising 9 rheumatologists and 9 musculoskeletal radiologists with an interest in axSpA was established. The EULAR standardised operating procedures were followed.² Two working group meetings were held, the first to define the scope of the exercise and the second to review the results of the Systematic Literature Review that informed the recommendations. An anonymised Delphi process was used to formulate the final set of recommendations. The level of evidence and strength of recommendation was added to the recommendations. The level of agreement by working group members was assessed using a numerical rating scale.

Results: A total of 2 overarching principles and 7 recommendations were formulated (figure 1). The first 3 recommendations address the MRI acquisition protocol, namely anatomical areas to be scanned and sequences to be used. The remaining 4 recommendations address the interpretation of active and structural lesions of the spine and SIJs.

OP1	The diagnosis of axSpA is based on clinical, laboratory and imaging features.
OP2	Some patients with axSpA have isolated inflammation of the SIJs or spine.
Rec1	When requesting an MRI for suspected axSpA, imaging of both the SIJs and the spine is recommended.
Rec2	T1-weighted and fat-suppressed, fluid sensitive sequences (including STIR, fat-saturated T2 or Dixon methods) are recommended when requesting an MRI for suspected axSpA.
Rec3	The minimum protocol when requesting an MRI for suspected axSpA should include sagittal images of the spine with extended lateral coverage and images of the SIJs which are coronal to the joint.
Rec4	In the SIJs, the presence of bone marrow oedema, fatty infiltration or erosion is suggestive of the diagnosis of axSpA. The presence of more than one of these features increases the diagnostic confidence of axSpA.
Rec5	In the spine, the presence of multiple corner inflammatory lesions and/or multiple corner fatty lesions increases the diagnostic confidence of axSpA.
Rec6	In the SIJs and/or spine the presence of characteristic new bone formation increases the diagnostic confidence of axSpA.
Rec7	The full range and combination of active and structural lesions of the SIJs and spine should be taken into account when deciding if the MRI scan is suggestive of axSpA or not.

Abstract FRI0209 – Figure 1. Overarching principles (OP) and recommendations (Rec)

Conclusions: A UK joint rheumatology and radiology consensus on the most appropriate MRI acquisition protocol and interpretation of images in the investigation of axSpA was achieved. This consensus will help standardise practices and ensure prompt and effective patient management in the diagnosis and treatment of axSpA.

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FRI0210

EXTRA-ARTICULAR MANIFESTATIONS ARE ASSOCIATED WITH WORSE QUALITY OF LIFE AND CLINICAL OUTCOME IN PATIENTS WITH AXIAL SPONDYLOARTHRITIS

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Background: In the 1960s, the association between axial spondyloarthritis (SpA) and extra-articular manifestations (EAMs), acute anterior uveitis (AAU),

inflammatory bowel disease (IBD) and psoriasis, was first reported. Still, knowledge of axial SpA disease outcome associated with the development of EAMs is scarce.

Objectives: To investigate the prevalence and 4 year incidence of EAMs and to explore associations of newly developed EAMs with disease outcome after 4 years of follow-up in a large cohort of axial SpA patients.

Methods: All consecutive patients fulfilling the modified New York criteria for AS or the ASAS criteria for axial SpA from the prospective observational Groningen Leeuwarden Axial Spondyloarthritis (GLAS) cohort with a baseline visit between November 2004 and December 2011 were included in the analyses. Baseline and follow-up data of EAMs from the GLAS database were verified in the medical records. EAMs were only recorded and used for analyses when a description of the diagnosis by an ophthalmologist, gastroenterologist or dermatologist was present. Prevalence and 4 year incidence of EAMs was calculated and comparative analyses regarding disease outcome was performed.

Results: 421 axial SpA patients were included with a mean age of 43.4±12.5 years, 65% were male, mean symptom duration was 17.4±11.7 years, 78% were HLA-B27 positive, mean ASDAS was 3.3±1.1 and 66% started TNF- α inhibitors at baseline. Of the 421 patients, 132 (31.4%) had a positive history of one or more EAMs: 104 (24.8%) AAU, 40 (9.5%) IBD, and 18 (4.3%) psoriasis. Of the 362 patients with 4 year follow-up data, 57 (15.7%) patients developed an EAM: 48 (13.3%) patients AAU, of which 13 (3.6%) had a first episode, 7 (1.9%) patients developed IBD, and 3 (0.8%) patients developed psoriasis.

Patients who developed a new EAM without a history of EAMs at baseline had higher ASQoL (mean 10.0 vs. 5.9, p=0.001), larger occiput to wall distance (median 6.3 vs. 2.0, p=0.021) and also the modified Schober test was more limited (mean 12.6 vs. 13.6, p=0.014) after 4 years of follow-up. The difference found for BASFI was not statistically significant (mean 4.4 vs. 3.4, p=0.12).

Conclusions: The prevalence rates of EAMs in our cohort are similar as found in other axial SpA studies. The 4 year incidence of EAMs was relatively low, possibly due to the relatively large proportion of patients starting TNF- α inhibitors at baseline. However, these axial SpA patients showed worse quality of life and clinical outcome than patients without a newly developed EAM.

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FRI0211

ASSOCIATION OF NEUROPATHIC-LIKE PAIN CHARACTERISTICS WITH CLINICAL AND RADIOGRAPHIC FEATURES IN PATIENTS WITH ANKYLOSING SPONDYLITIS

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Background: Ankylosing spondylitis (AS) is a chronic progressive inflammatory disorder that mainly involves the axial skeleton and causes chronic back pain. It is not unusual for patients with AS to have symptoms similar to neuropathic pain. There were several studies showing that various rheumatic diseases, including rheumatoid arthritis, primary Sjogren syndrome, and fibromyalgia, had neuropathic pain components. However, the existence of neuropathic pain in patients with AS has not been well investigated. The painDETECT questionnaire (PD-Q) is a relatively simple and self-administered screening tool for determining neuropathic pain and has high sensitivity, specificity, and positive predictive accuracy values.

Objectives: The aim of this study was to investigate the neuropathic pain component in patients with AS using PD-Q, and to assess the relation between neuropathic pain and disease characteristics of AS.

Methods: A single-centre prospective study was performed on 105 patients. The patients with AS completed three questionnaires: PD-Q, Beck depression inventory (BDI), and Euro Quality of life (EQ-5D) questionnaires. Patients were classified into three groups according to the PD-Q scores: nociceptive pain (NoP) (score <13), mixed pain (MP) (score 13–18), and neuropathic (NeP) (score >18) pain. Fifteen patients (14.3%) were classified in the NeP group, 22 patients (21.0%) in the MP group, and 68 patients (64.7%) in the NoP group. The questionnaires and clinical and radiographic findings were analysed.

Results: Patients with NeP and MP scored worse on Bath ankylosing spondylitis disease activity index (BASDAI), BDI, modified Stoke Ankylosing Spondylitis Spine Score, pain-visual analogue scale (VAS), EQ-5L index, and showed an increased prevalence of enthesitis and peripheral arthritis (table 1). There were no differences in objective inflammatory markers. PD-Q scores positively correlated with pain-VAS, BASDAI, BDI, and inversely correlated with EQ-5D index (figure 1). Presence of enthesitis, BDI, age, and pain VAS score independently associated with PD-Q scores.

Conclusions: The findings showed a neuropathic pain component in AS. Neuropathic pain in AS was associated with age, high disease activity, radiographic progression, enthesitis, peripheral arthritis, depression, and low quality of life.

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FRI0212 THE RELATIONSHIP BETWEEN ANTI-TNF THERAPY USE AND METABOLIC SYNDROME IN PATIENTS WITH ANKYLOSING SPONDYLITIS

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Background: Ankylosing spondylitis (AS) is an inflammatory disease associated with accelerated atherosclerosis and the presence of metabolic syndrome (MetS) features. TNF- α is considered as one of the factors responsible for favouring insulin resistance and dyslipidemia, which are important features of the metabolic syndrome.

Objectives: In this study, we aimed to investigate the relationship between anti-TNF therapy and metabolic syndrome rate in patients with ankylosing spondylitis (AS).

Methods: AS patients who visited the outpatient rheumatology clinic between 2016 February and May were included in to the study. Systolic and diastolic blood pressures, body mass index (BMI), waist-hip circumference were measured. Erythrocyte sedimentation rate (ESR), C-reactive protein (CRP), fasting blood sugar, cholesterol panel were evaluated. MetS was defined by abdominal obesity, elevated blood pressure, elevated glucose, high triglycerides and reduced high-density lipoprotein cholesterol according to National Cholesterol Education Program's Adult Treatment Panel III report (NCEP ATP III) criteria. Duration of disease and use of anti-TNF was recorded. Bath Ankylosing Spondylitis Functional Index (BASFI) – Bath Ankylosing Spondylitis Disease Activity Index (BASDAI) measurements were performed to assess the disease activity and functional capacities. Patients were divided into two groups as anti-TNF treated and anti-TNF naive. For comparisons between groups statistical analyses included descriptive statistics, *t*-tests and one-way ANOVA.

Results: A total of 223 patients were analysed. Of the total 223 patients, 78 (35%) were receiving anti-TNF therapy. Age distribution was similar in between groups. In the group receiving anti-TNF therapy, the number of male patients was higher (75.6% vs. 58.6%) and the duration of disease was longer (145.2 $\pm$ 90.8 vs 103.3 $\pm$ 97.1). Serum lipid levels, glucose, ESR, CRP, BASFI, BASDAI measurements, BMI and blood pressures were not significantly different in between the groups. MetS was present in 26 (33.3%) of 78 patients receiving anti-TNF and 29 (20%) of 145 patients in anti-TNF naive group. The effect of TNF- α inhibitor use on MetS was independent from the gender.

Conclusions: Patients with AS who received anti-TNF therapy were found to have a higher incidence of MetS than those who did not. Suppression of the catabolic effect of inflammation with treatment may have been effective in this result.

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FRI0213 THE PERFORMANCE OF 12 FLARE DEFINITIONS INCLUDING THE ASSESSMENT OF SPONDYLOARTHRITIS INTERNATIONAL SOCIETY (ASAS)-ENDORSED DEFINITION OF CLINICALLY IMPORTANT WORSENING IN ASDAS IN PATIENTS WITH AXIAL SPONDYLOARTHRITIS TREATED WITH ADALIMUMAB FOR 5 YEARS

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Background: In 2016 the Assessment of Spondyloarthritis International Society (ASAS) published proposals for 12 definitions of 'flare' (ref. 1) for patients with axial spondyloarthritis (axSpA). The definitions are based on pain, BASDAI and ASDAS (see table 1). In January 2018, ASAS published the ASAS-endorsed definition of clinically important worsening based on ASDAS (Δ ASDAS $\geq$ 0.9) (ref. 2).

Objectives: The aim of this study was to describe the frequency of 'flares' as detected by the 12 flare definitions including the ASAS-endorsed definition.

Methods: Data from an investigator-initiated double-blinded randomised placebo-controlled trial of adalimumab versus placebo of 12 weeks with a 5 year open-label extension (NCT00477893, ref. 3) were used for this study. The number of patients experiencing a flare at each visit according to the 12 ASAS 'flare' definitions was recorded for 20 study visits performed from two weeks after initiation of treatment and to year 5.

Results: 52 patients started treatment and 41 (79%) patients completed the 5 year follow-up visit. The total number (percentage) of study visits where pain, BASDAI and ASDAS flares could be calculated was 879 (84.5%), 875 (84.1%) and 842 (81.0%), respectively. The mean (SD) number of patients with a flare per visit ranged from 0.7 (1.2) to 3.8 (2.2) and the median (inter-quartile-range (IQR)) from 0 (0–1) to 5 (3–7) (table 1). The mean number of patients per visit with a flare was significantly higher when the definition "change in ASDAS $\geq$ 0.6" ($p < 0.0001$ to $p = 0.001$, *t*-test) and "change ASDAS $\geq$ 0.6 AND observed ASDAS $\geq$ 1.3" ($p < 0.0001$ to $p = 0.04$) were applied, and the mean number of patients was significantly lower when the BASDAI flare definitions were applied ($p < 0.0001$ to $p = 0.02$).

Abstract FRI0213 – Table 2. Patients per study visit fulfilling a 'flare' definition

Flare definition	Mean (SD)	Median (IQR)	Min-max	Number	Percent
Δ pain $\geq$ 2 AND final value $\geq$ 4	2.7 (1.7)	2 (1–4)	0–6	53	6.0
Δ pain $\geq$ 3	1.6 (1.0)	1 (1–2.75)	0–3	31	3.5
If observed value is $\geq$ 4: Δ pain $\geq$ 2 points. Otherwise: Δ pain $\geq$ 3 points	2.9 (1.7)	2.5 (1.25–4)	0–6	57	6.5
Δ BASDAI $\geq$ 2 points	1.9 (2.0)	1 (0–3)	0–7	37	4.2
Δ BASDAI $\geq$ 2 points AND final value $\geq$ 4	1.2 (1.9)	0 (0–1.75)	0–6	23	2.6
Δ BASDAI $\geq$ 3 points	0.8 (1.2)	0 (0–1)	0–4	15	1.7
Δ BASDAI $\geq$ 3 points AND final value $\geq$ 4	0.7 (1.2)	0 (0–1)	0–4	14	1.6
If observed value is $\geq$ 4: Δ BASDAI $\geq$ 2 points. Otherwise: Δ BASDAI $\geq$ 3 points	1.2 (1.9)	0.5 (0–1.75)	0–6	24	2.8
Δ ASDAS $\geq$ 0.6	5.0 (2.5)	5 (3–7)	0–9	100	11.9
Δ ASDAS $\geq$ 0.9 (endorsed by ASAS)	2.9 (2.2)	2.5 (1–4.75)	0–8	58	6.9
Δ ASDAS $\geq$ 1.1	2.1 (1.6)	1.5 (1–4)	0–5	42	5.0
Δ ASDAS $\geq$ 0.6 AND observed ASDAS $\geq$ 1.3	3.8 (2.2)	4 (2–5)	0–8	75	8.9

Conclusions: The frequency of flares as detected by the 12 ASAS flare definitions for patients with axial spondyloarthritis differed substantially. The ASAS-endorsed definition performed well.