FRI0478 SUBCHONDRAL BONE SCLEROSIS ON COMPUTED TOMOGRAPHY – DOES IT HAVE ANY VALUE IN THE DIAGNOSIS OF INFLAMMATORY SACROILIITIS OR IS IT A NON-SPECIFIC FINDING?

O. Azmat¹, R.G. Lambert¹, Z. Jibri¹, W.P. Maksymowych². ¹ Radiology; ²Medicine, University of Alberta, Edmonton, Canada

Background: Sclerosis in the sacroiliac joints (SIJ) on radiography and computed tomography (CT) is common but widely considered a non-specific finding of sacroiliitis due to an association with degeneration and osteitis condensans ilii, despite little formal study. Availability of low dose radiation CT may lead to more widespread use for diagnostic evaluation.

Objectives: We standardized the definition of sclerosis on CT and then aimed to determine whether this lesion could be reliably detected and its diagnostic utility.

Methods: 215 CT scans were obtained from patients with a history of low back pain. 107 patients had a clinical diagnosis of spondyloarthritis (SpA) and 108 patients were clinically proven not to have SpA. Groups were age and gender matched (140 males, 75 females, mean age was 45 years). Three musculoskeletal radiologists, blinded to patient demographics and diagnosis, scored the CTs after standardization of lesion definitions and calibration. Erosions, sclerosis, and ankylosis were graded by size and number of articular surfaces/ joints involved. Sclerosis was considered definite if located along the cartilaginous compartment, measured >5mm in all 3 planes, and present >5mm from the joint surface. Discrepant scores were arbitrated and inter-reader reliability calculated by intra-class correlation coefficient (ICC). Diagnostic utility of CT lesions was determined by calculating sensitivity and specificity for the clinical diagnosis and by logistic regression.

Results: ICC for sclerosis and erosion for each articular surface ranged from 0.65–0.76 and 0.71–0.78, respectively. ICC for ankylosis was 0.87–0.89. Sclerosis occurred in 87 (81%) cases with SpA and 25 (23%) controls. For a single articular surface the specificity for sacroiliitis ranged between 88–94%, for any two articular surfaces 95–100%, for all 4 articular surfaces 100%. Sensitivity ranged from 14% (4 articular surfaces) to 55% (either ilium). Erosion and ankylosis had a similar specificity range of 91–100% and 92–93%. The odds ratio was 4.9 for presence of definite sclerosis, and 12.6 for bilateral joint involvement. The odds ratio increased to 84.2 for bilateral erosion and 22.8 for bilateral ankylosis.

Conclusions: When sclerosis measures >5mm in three planes and is located >5mm from a joint perimeter, it has high specificity for sacroiliitis, regardless of how many articular surfaces are involved, with similar specificity to erosion and ankylosis.

Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2017-eular.6292

FRI0479 PREDICTORS OF LONG-TERM MODIFIED MINIMAL DISEASE ACTIVITY RESPONSE IN PERIPHERAL SPONDYLOARTHRITIS PATIENTS TREATED WITH ADALIMUMAB

L.C. Coates¹, S. Abraham², W. Tillett³, P.J. Mease⁴, S. Ramiro⁵, T. Wu⁶, X. Wang⁶, A.L. Pangan⁶, I.-H. Song⁶. ¹ University of Leeds and Leeds Teaching Hospitals NHS Trust, Leeds; ² NIHR/Wellcome CRF, Imperial College Healthcare NHS Trust, London; ³ Royal National Hospital for Rheumatic Diseases and University of Bath, Bath, United Kingdom; ⁴ Swedish Medical Center and University of Washington, Seattle, United States; ⁵ Leiden University Medical Center, Leiden, Netherlands; ⁶ AbbVie Inc., N Chicago, United States

Background: There is a lack of validated outcome measures in non-psoriatic peripheral spondyloarthritis (pSpA). Therefore, a modified version of the minimal disease activity (mMDA)¹ was developed and validated. Identification of factors that predict long-term mMDA response in pSpA patients (pts) can facilitate decisions regarding treatment initiation and maintenance.

Objectives: The purpose of this analysis was to determine predictors of long-term mMDA response following adalimumab (ADA) treatment in pSpA pts from the ABILITY-2 study.

Methods: ABILITY-2² was a phase 3 randomized, double-blind trial evaluating the efficacy and safety of 40 mg ADA every other week versus placebo (PBO) over 12 weeks (wks) followed by open-label (OL) ADA for 144 wks in pts with pSpA. This post-hoc analysis included pts who received at least one dose of ADA during the PBO-controlled period or OL extension. The mMDA for pSpA was defined as achieving at least 5 out of the following 6 criteria: 1) TJC78 ≤1; 2) SJC76 ≤1; 3) pt pain visual analog scale (VAS) ≤15 of 100 mm; 4) pt global activity

(PtGA) VAS ≤20 of 100 mm; 5) HAQ-DI ≤0.5; and 6) tender entheseal points ≤1 (Leeds Enthesitis Index [LEI] or Spondyloarthritis Research Consortium of Canada [SPARCC] Enthesitis Index). In this post hoc analysis, multiple logistic regression with stepwise variable selection was used to determine predictors of long-term (yrs 1–3) and sustained (defined as mMDA for at least 24 consecutive wks) mMDA responses. Variable selection of baseline (BL) pt demographics and disease characteristics were performed with and without mMDA response at wk 16 (mMDA16) as a candidate. In pts achieving mMDA at wk 16, ADA exposure ranged between 4 and 16 wks.

Results: In pSpA pts treated with ADA, mMDA (5/6 LEI or SPARCC) was achieved by almost 41%, 49%, and 50% of pts at yrs 1, 2, and 3, respectively and sustained mMDA response was achieved by 42% of pts. Regardless of mMDA definition, achieving mMDA response at wk 16 (up to 16 wks of ADA) was a robust positive predictor of attaining both long-term mMDA at yrs 1–3 and sustained mMDA (Figure). In the model examining the BL predictors (model without mMDA16), age, BL enthesitis and BL BASDAI scores were most commonly selected as negative predictors for achieving long-term and sustained mMDA. Other selected predictors included BL dactylitis, physician's global assessment, hsCRP, and male sex; however, these predictors were not consistently selected for all time points or sustained mMDA.

Conclusions: Early mMDA response is a stronger and more consistent predictor of long-term mMDA, whether at 1, 2, or 3 yrs or sustained over time, than BL

Figure. Odds Ratio for Predictors of Long-term (years 1-3) and Sustained mMDA responses*

*Only variables selected by stepwise selection model are shown (model selected variables are significant at P<0.05)
mMDA16 = modified minimal disease activity response at week 16; LEI = Leeds enthesitis index; SPARCC = Spondyloarthritis Research Consortium of Canada enthesitis index; hsCRP = high sensitivity C-reactive protein; PhGA = physician's global assessment of disease activity; BASDAI = Bath ankylosing spondylitis disease activity index; SJC76 = swollen joint count (76 joints); CI = confidence interval

Abstract FRI0478 – Table 1

Sclerosis of articular surface (s) involved	Specificity (95% CI)	Sensitivity (95% CI)
Single articular surface	Either ilium: 87% (82–91) – 91% (87–95) Either sacrum: 93% (89–96) – 94% (90 – 97)	Either ilium: 46% (39–52) – 51% (44–58) Either sacrum: 19% (14–25) – 21% (16–26)
Any 2 articular surfaces	96% (94–99) – 99% (98–100)	10% (6–14) – 41% (35–48)
All 4 articular surfaces	99% (8–100)	14% (9 – 19)
Erosion of articular surface (s) involved	Specificity (95% CI)	Sensitivity (95% CI)
Single articular surface	Either ilium: 90% (85–94) Either sacrum: 94% (91–98)	Either ilium: 77% (71–83) Either sacrum: 65% (58–72)
Any 2 articular surfaces	96% (93–99) – 100% (100–100)	24% (18–31) – 67% (60–74)
All 4 articular surfaces	100% (100–100)	38.1% (31–45)
Ankylosis of articular surface (s) involved	Specificity (95% CI)	Sensitivity (95% CI)
Single joint	92% (88 – 95)	60% (53–66)
Both joints	93% (89 – 96)	58% (51–64)

characteristics. The 5/6 versions of mMDA could be an appropriate treatment target in pSpA pts.

References:

[1] Coates LC, et al., Ann Rheum Dis, 2016; 75:334.
[2] Mease PJ, et al., Arthritis Rheumatol, 2015; 67(4): p.914–23.
Acknowledgements: AbbVie funded the study (NCT01064856), contributed to its design, and participated in data collection, analysis and interpretation of the data, and in writing, review, and approval of the publication. Medical writing support was provided by Deepa Venkitaramani, PhD, of AbbVie.
Disclosure of Interest: L. Coates Grant/research support from: AbbVie, Boehringer-Ingelheim, BMS, Celgene, Eli Lilly, Janssen, MSD, Novartis, Pfizer, Sun Pharma, and UCB, Consultant for: AbbVie, Boehringer-Ingelheim, BMS, Celgene, Eli Lilly, Janssen, MSD, Novartis, Pfizer, Sun Pharma, and UCB, Speakers bureau: AbbVie, Boehringer-Ingelheim, BMS, Celgene, Eli Lilly, Janssen, MSD, Novartis, Pfizer, Sun Pharma, and UCB, S. Abraham Grant/research support from: AbbVie, Celgene, Novartis, Pfizer, and UCB, Consultant for: AbbVie, Celgene, Novartis, Pfizer, and UCB, Speakers bureau: AbbVie, Celgene, Novartis, Pfizer, and UCB, W. Tillett Grant/research support from: AbbVie, Celgene, Novartis, Pfizer, and UCB, Consultant for: AbbVie, Celgene, Novartis, Pfizer, and UCB, Speakers bureau: AbbVie, Celgene, Novartis, Pfizer, and UCB, P. Mease Grant/research support from: AbbVie, Amgen, Bristol Myers, Celgene, Genentech, Janssen, Lilly, Merck, Novartis, Pfizer, Sun Pharma, and UCB, Consultant for: AbbVie, Amgen, Bristol Myers, Celgene, Genentech, Janssen, Lilly, Merck, Novartis, Pfizer, Sun Pharma, and UCB, S. Ramiro: None declared, T. Wu Shareholder of: AbbVie, Employee of: AbbVie, X. Wang Shareholder of: AbbVie, Employee of: AbbVie, A. Pangan Shareholder of: AbbVie, Employee of: AbbVie, I.-H. Song Shareholder of: AbbVie, Employee of: AbbVie
DOI: 10.1136/annrheumdis-2017-eular.1279

FRI0480 SCORING SYNDESMOPHYTES ON CT SPINE IMAGES OF PATIENTS WITH RADIOGRAPHIC AXIAL SPONDYLOARTHRITIS FROM THE SENSITIVE IMAGING OF AXIAL SPONDYLOARTHRITIS (SIAS) COHORT

F. de Bruin¹, R. van den Berg¹, X. Baraliakos², J. Braun², F. van Gaalen¹, M. Reijnierse¹, D. van der Heijde¹. ¹LUMC, Leiden, Netherlands; ²Rheumazentrum, Herne, Germany

Background: Low dose Computed Tomography (CT) could potentially be more sensitive than radiographs in the follow up of patients with axial spondyloarthritis (axSpA).
Objectives: Our first goal was to develop a scoring method for the spine and test its interreader variability and frequency of progression in the various parts of the spine.
Methods: Patients (pts) of the Sensitive Imaging of Axial Spondyloarthritis (SIAS) cohort fulfilled the modified New York (mNY) criteria, had ≥1 syndesmophyte in cervical or lumbar spine on radiographs and ≥1 inflammatory lesion on MRI-spine. Baseline and 2 years follow up low-dose CT scans (approximately 2–3 mSV) were performed. Syndesmophytes were scored in the coronal and sagittal planes for all “corners” per view, thus scoring 8 ‘quadrants’ per vertebral unit (VU). Syndesmophytes were scored as absent (score 0), <50% of the intervertebral disc height (IVDH) (score 1), ≥50% of the IVDH but no bridging (score 2) or as “bridging the IVDH” (score 3). Score range 0–552. Two readers, blinded for clinical information and time order, scored the CT scans paired by patient. Scores of the 2 readers were compared using heatmaps. Interreader variability was assessed by (two-way average) ICC and smallest detectable change (SDC) for the whole spine and per segment.
Results: In total, 56 pts (84% male, mean age 48.6) were included. The heatmap (fig 1) presents the similarity in baseline and change scores per reader per VU (VU on the y-axis). Ankylosis (score 3) is most prevalent in the thoracic spine, and syndesmophytes in general are least prevalent in the cervical spine. Both readers use almost the entire possible range, pick up a similar magnitude of change and have high ICCs. Most change is present in the thoracic spine. A change ≥SDC is seen in 33.9% of the patients.
Conclusions: A fine-grained scoring system for CT spine was developed. Scoring syndesmophytes with good accuracy on CT images was feasible, picking up

Figure 1
changes over a 2-year period in a high percentage of patients, especially in the thoracic spine, which is insufficiently visible on radiographs.
Disclosure of Interest: None declared
DOI: 10.1136/annrheumdis-2017-eular.3533

FRI0481 INTERPLAY BETWEEN PATIENT GLOBAL ASSESSMENT, PAIN AND FATIGUE AND INFLUENCE OF OTHER CLINICAL DISEASE ACTIVITY MEASURES IN PATIENTS WITH ACTIVE SPONDYLOARTHRITIS

O.R. Madsen^{1,2}, E.L. Egsmose^{1,2}. ¹Department of Rheumatology, Copenhagen University Hospital Rigshospitalet Gentofte, Hellerup; ²The DANBIO registry, Copenhagen University Hospital Rigshospitalet Glostrup, Glostrup, Denmark

Background: The Assessment of SpondyloArthritis international Society (ASAS) has selected core sets of variables to include as standardised end points in clinical trials and clinical practice. These core sets include fatigue, pain and patient global assessment (PaGI) as key patient-reported outcome measures (ref.). However, although associations between fatigue, pain and PaGI have been examined to some extent on the group level, studies focusing on the agreement between these patient-reported measures in individual patients are missing. A better understanding of how tight the measures are bounded in individuals may improve our ability to deal with them in the daily clinic.
Objectives: To examine associations on the group level and agreements on the individual patient level between fatigue, pain and PaGI as scored on visual analogue scales (VAS) in the daily clinic by patients with active spondyloarthropathy (SpA).
Methods: Data on 118 SpA patients with active disease planned to initiate treatment with a biological agent were extracted from the Danish registry for biological treatment in rheumatology (DANBIO). Data included fatigue, pain and PaGI, BASDAI and BASFI assessed on VAS-scales (0–100) and age, CRP and physician global assessment. Associations between variables were examined using simple and multiple regression analysis (all mentioned variables including sex was incorporated as independent variables). Agreements between PaGI, pain and fatigue on the individual patient level was examined by Bland-Altman analyses yielding 95% lower and upper limits of agreement (LLoA and ULoA) between intra-individual assessments. The difference between the scores on the group level was expressed as the bias.
Results: Mean age was 42.9±12.6 years, mean BASDAI 56.0±19.0, mean CRP mg/dL 2.9 and mean PaGI 65.7±22.6. No significant differences in BASDAI, fatigue, pain, PaGI were demonstrated between men (n=76) and women. Fatigue, pain and PaGI were significantly but only moderately inter-correlated with high standard errors of estimation (SEE): Fatigue vs. PaGI (r = 0.57, p<0.0001, SEE = 21.4), fatigue vs. pain (r = 0.55, p<0.0001, SEE = 21.6), and pain vs. PaGI (r = 0.81, p<0.0001, SEE = 15.1). In multiple regression analyses, pain was independently predicted by PaGI (beta = 0.52, p<0.0001) and BASDAI (beta = 0.36, p<0.0001) [R = 0.82, SEE = 14.1, p<0.0001], PaGI by pain (beta = 0.54, p<0.0001) and BASDAI (beta = 0.33) [R = 0.81, SEE = 12.7, p<0.0001], and fatigue by BASDAI (beta = 0.44, p<0.0001) and PaGI (beta = 0.23, p<0.05) [R = 0.63, SEE = 20.2, p<0.0001]. Biases between the patient-reported VAS-scores were small but intra-individual differences were substantial: LLoA and ULoA [bias] for fatigue vs. PaGI were -45.5 and 43.5 [-0.97], for fatigue vs. pain -42.3 and 52.9 [5.3], and for

Abstract FRI0480 – Table 1. SDC and interreader variability between readers on timepoint 1, timepoint 2 and for the difference between the timepoints (syndesmophyte growth)

Segment (max score)	Time point	Median and range reader 1	Median and range reader 2	SDC (inter-reader)	No. of patients with growth ≥SDC (%) (n=58)	ICC
Whole spine (552)	Time 1	144 (16–428)	135 (6–447)	12.4	19 (32.8)	0.99 (0.94–1.00)
	Time 2	157 (18–428)	146 (8–461)			0.98 (0.92–0.99)
	Change	9 (-11–96)	8 (-6–93)			0.75 (0.49–0.88)
Cervical (144)	Time 1	8 (0–140)	8 (0–128)	5.41	9 (15.6)	0.96 (0.92–0.98)
	Time 2	8 (0–140)	8 (0–128)			0.98 (0.95–0.99)
	Change	0 (-12–38)	0 (-9–38)			0.85 (0.75–0.91)
Thoracic (264)	Time 1	84 (2–250)	72 (0–264)	12.4	15 (25.9)	0.97 (0.92–0.99)
	Time 2	93 (2–256)	81 (0–264)			0.97 (0.85–0.99)
	Change	6 (-6–94)	6 (-12–93)			0.85 (0.75–0.92)
Lumbar (144)	Time 1	32 (0–140)	36 (0–140)	4.51	14 (24.1)	0.91 (0.79–0.96)
	Time 2	34 (0–144)	39 (0–144)			0.99 (0.98–1.00)
	Change	2 (-10–14)	1 (-4–12)			0.56 (0.26–0.73)