Agency for Healthcare Research and Quality as a part of Healthcare Cost and Utilisation Project. Univariate and multivariate binomial logistic regressions were used to derive odds ratio for predictors of hip surgery. Statistical analysis was done using STATA version 13.0 (College Station, TX).

Results: NIS database from 2009–2011 contained 3538 (weighted counts in the whole US population $n=17,480$) patients with AS. Out of those, 190 (weighted $n=934$) had hip surgery (5.36%). Multivariate binomial regression analysis after controlling for confounders (table 1) showed male sex (OR 2.52, CI 1.65–3.83, $p<0.001$) and peripheral enthesopathy (OR 8.64, CI 2.48–30.12, $p<0.001$) to be significantly associated with hip surgery in AS patients, and an inverse relationship with inflammatory bowel disease (IBD) (OR 0.35, CI 0.16–0.76, $p=0.01$) was seen.

AS with Hip Surgery	Odds Ratio	Standard error	p-value	95% CI	
				Lower limit	Upper limit
Age	1	0	0.46	0.99	1.01
Male sex	2.52	0.54	<0.001	1.65	3.83
Non-white	1.11	0.25	0.65	0.71	1.74
Income quartile	1.33	0.21	0.07	0.97	1.83
CAD	0.6	0.16	0.06	0.35	1.02
CKD	0.65	0.31	0.36	0.25	1.66
DM	0.64	0.17	0.09	0.38	1.07
CHF	0.14	0.14	0.05	0.02	1.04
Current smoking	0.75	0.18	0.23	0.46	1.20
Obesity	1.24	0.35	0.46	0.71	2.16
Uveitis	1.04	0.77	0.96	0.25	4.43
IBD	0.35	0.14	0.01	0.16	0.76
Psoriasis	0.85	0.64	0.84	0.2	3.74
Peripheral enthesopathy	8.64	5.5	<0.001	2.48	30.12
Constant	0.04	0.01	<0.001	0.02	0.06

Conclusions: Our study found male sex and patients with peripheral enthesopathy to have higher odds of severe hip disease requiring surgery among hospitalised AS patients and significantly lower odds with IBD. Previous studies showed an association with age at onset, delay in diagnosis, bilateral involvement, axial/enthesial disease and severe sacroiliitis. Some of these associations could not be analysed in our study due to lack of individual level patient data. Interestingly, epidemiological factors like smoking and obesity which have been linked to severe disease in PsA, were not found to have any significant association. Routine clinical hip exam and radiological imaging might help to identify high-risk patients. Early therapeutic strategies might be indicated for this specific population to prevent severe hip disease and need for hip replacement surgery.

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FRI0193

PROGNOSTIC MARKERS IN AXIAL SPONDYLOARTHRITIS (PROMISE) – CROSS SECTIONAL EVALUATION OF SERUM BIOMARKERS IN AXSPA, MECHANICAL BACK PAIN AND HEALTHY CONTROLS

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Background: In recent years there has been increasing interest in biomarkers in axial spondyloarthritis, for diagnosis, disease prognostication, and to monitor treatment effect.^{1,2} Many biomarkers have been evaluated, but the role each of these plays and how they may interact is unclear.

Objectives: Our aim was to evaluate a broad panel of serum biomarkers in a large mixed cohort of patients, with Ankylosing Spondylitis (AS), non radiographic axial Spondyloarthritis (nr-axSpA), mechanical back pain (MBP) and healthy controls (HC), in order to identify any potential biomarkers for diagnosis by assessing the differences between the groups.

Methods: Cross sectional evaluation of 46 serum biomarkers was undertaken by Myriad RBM using multiplexed immunoassays of Multi-Analyte Panels, in a cohort of patients from a tertiary referral centre, consented as part of the Bath Spondyloarthritis BioBank. Validated patient reported outcomes (including BASDAI, BASFI) and BASMI were completed. 50 HC blood samples were also collected at University College London for biomarker analysis.

Results: 331 patients were included in the study, of which 59.5% AS, 8.2% nr-axSpA, 15.7% mechanical back pain, 15.1% HC. 64.7% were male, mean age 44.2 years (SD 16.6), mean disease duration in the AS group of 22.4 years (SD 13.6) with 84% HLA B27 positive.

IL1 alpha and beta, IL1 receptor antagonist, IL2, 3, 4, 5, 7, 10, 15, 17, IL12 subunit p70, factor VII, GM-CSF, IFN gamma, MMP9, TNF beta were the only biomarkers not to show statistical differences across the diagnostic groups (table 1.). 12 biomarkers showed a statistical difference between genders (table 1, column 1, p value significance indicated with * <0.05 , ** <0.01 using Mann Whitney U, in addition to Factor VII*).

Abstract FRI0193 – Table 1. Statistically significant serum biomarker results by diagnosis

Mean (SD)	AS	nr-axSpA	Mechanical back pain	Healthy controls	P value using Kruskal Wallis
N	197	27	52	50	
Alpha 1 anti trypsin, mg/ml	3.2 (1.2)	2.3 (0.8)	2.1 (0.8)	1.4 (0.4)	<0.001
Alpha 2 macroglobulin, mg/ml	4.0 (1.4)	3.7 (1.2)	3.6 (1.5)	3.1 (1.9)	<0.001
** Beta 2 macroglobulin, ug/ml	3.4 (2.7)	2.2 (0.8)	2.0 (0.9)	1.6 (0.3)	<0.001
Brain derived neurotrophic factor, ng/ml	28.4 (8.3)	30.3 (8.2)	28.9 (7.2)	21.0 (4.5)	<0.001
* C Reactive Protein, ug/ml	29.6 (69.1)	4.6 (9.2)	4.7 (9.0)	3.0 (4.4)	<0.001
Complement C3, mg/ml	2.8 (1.3)	1.9 (0.9)	1.8 (1.0)	0.8 (0.2)	<0.001
** Eotaxin 1, pg/ml	374.1 (193.5)	241.4 (174.8)	241.4 (161.2)	170.1 (123.5)	<0.001
** Ferritin, ng/ml	248.5 (231.2)	177.7 (177.3)	205.4 (212.0)	89.9 (74.9)	<0.001
** Fibrinogen, mg/ml	0.0 (0.0)	0.0 (0.0)	0.0	0.0 (0.0)	<0.001
Haptoglobin, mg/ml	4.0 (4.2)	2.5 (1.4)	1.6 (1.3)	1.6 (0.8)	<0.001
Interleukin Adhesion Molecule 1, ng/ml	175.2 (81.5)	149.6 (61.4)	154.5 (84.2)	98.8 (22.3)	<0.001
IL6, pg/ml	2.4 (6.9)	0.3 (1.4)	0.7 (1.6)	0.0	<0.001
IL8, pg/ml	33.4 (69.6)	329.7 (1484.9)	52.7 (127.0)	4.4 (7.1)	<0.001
IL12 subunit p40, ng/ml	0.4 (0.2)	0.4 (0.2)	0.3 (0.3)	0.3 (0.2)	0.001
IL18, pg/ml	321.8 (157.6)	295.1 (171.5)	281.8 (204.3)	146.2 (60.8)	<0.001
* IL23, ng/ml	0.8 (1.0)	0.3 (0.7)	0.3 (0.7)	0.1 (0.4)	<0.001
Macrophage Inflammatory Protein 1 alpha, pg/ml	23.1 (62.1)	20.2 (41.2)	14.2 (27.6)	0.0	0.005
Macrophage Inflammatory Protein 1 beta, pg/ml	678.5 (595.4)	604.0 (382.2)	618.3 (447.8)	290.8 (192.3)	<0.001
** Matrix Metalloproteinase 3, ng/ml	24.2 (15.9)	11.6 (4.6)	14.1 (8.3)	13.5 (6.7)	<0.001
** Stem Cell Factor, pg/ml	550.1 (222.6)	362.6 (259.0)	389.1 (235.5)	173.2 (164.9)	<0.001
T cell Specific Protein RANTES, ng/ml	26.5 (15.1)	25.0 (16.8)	21.2 (10.5)	20.4 (7.6)	0.03
** Tissue Inhibitor of Metalloproteinases 1, ng/ml	262.1 (94.4)	197.9 (55.8)	186.7 (44.9)	141.7 (32.0)	<0.001
TNF alpha, pg/ml	13.3 (30.2)	8.9 (30.3)	0.6 (4.3)	0.0	<0.001
** TNF receptor 2, ng/ml	298.2 (740.4)	92.9 (433.1)	9.7 (5.2)	5.8 (1.8)	<0.001
* Vascular Cell Adhesion Molecule 1, ng/ml	1093.0 (465.3)	931.6 (307.9)	965.9 (391.9)	651.0 (141.1)	<0.001
Vascular Endothelial Growth Factor, pg/ml	493.8 (359.1)	439.6 (316.8)	394.1 (215.4)	261.7 (168.6)	<0.001
Vitamin D Binding Protein, ug/ml	538.1 (233.7)	414.6 (186.6)	439.3 (227.9)	334.4 (135.1)	<0.001
Von Willebrand Factor, ug/ml	161.2 (89.9)	110.5 (51.9)	109.2 (77.0)	95.5 (51.1)	<0.001
Monocyte Chemoattractant Protein 1, pg/ml	484.7 (220.0)	524.9 (369.2)	396.5 (174.9)	314.7 (133.6)	<0.001

Conclusions: Serum biomarkers have been shown to vary with gender and diagnosis. Further work is planned to evaluate their relationship to disease activity using outcome measures such as the BASDAI, and radiographic scoring, to better understand the role of each factor and combination of factors, and any causal link.

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FRI0194

ANKYLOSING SPONDYLITIS DISEASE ACTIVITY SCORE (ASDAS) BASED ON A QUICK QUANTITATIVE CRP ASSAY PERFORMS SIMILARLY WELL TO ASDAS BASED ON CONVENTIONAL CRP IN PATIENTS WITH AXIAL SPONDYLOARTHRITIS

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Background: The Ankylosing Spondylitis Disease Activity Score (ASDAS) is a composite index to assess disease activity in patients with axial spondyloarthritis (axSpA). According to the treat-to-target (T2T) recommendations for SpA, and the

ASAS/EULAR management recommendations for axSpA, the C-reactive protein (CRP)-based ASDAS is the preferred instrument for the assessment of disease activity in the process of making decision on modification of axSpA treatment in clinical routine. Currently, measurement of CRP by routine lab methods takes hours to days what seriously challenges the feasibility of T2T approaches in clinical routine and clinical studies.

Objectives: To compare the performance of the ASDAS based on a quickCRP assay (ASDAS-quick-CRP) with the ASDAS-routine-CRP and with the erythrocyte sedimentation rate (ESR)-based ASDAS in the assessment of disease activity in patients with axSpA.

Methods: This cross-sectional study was performed in patients referred with a suspicion of axSpA as part of the Identification of the Optimal Referral Strategy for Early Diagnosis of Axial Spondyloarthritis (OptiRef) study. Briefly, referred patients underwent a structured assessment of SpA features by a rheumatologist. CRP was measured in the central lab (routine turbidimetric assay, lowest detection level: 0.3 mg/L) and locally by ESR and a quantitative quick-CRP test (QuickRead go, Orion Diagnostica Oy, lowest detection level: 5 mg/L, test duration approx. 2 min.). If the quick-CRP was below the limit of detection, the value of 2 mg/L was used. In patients with the final diagnosis of axSpA, ASDAS-routine-CRP, ASDAS-quick-CRP and ASDAS-ESR were calculated.

A

		ASDAS-quick-CRP (n=46)			
		Inactive disease (<1.3)	Moderate disease activity (1.3-2.1)	High disease activity (2.1-3.5)	Very high disease activity (>3.5)
ASDAS-routine-CRP	Inactive disease (<1.3)	3 (6.5%)	0	0	0
	Moderate disease activity (1.3-2.1)	1 (2.2%)	9 (19.6%)	0	0
	High disease activity (2.1-3.5)	0	0	22 (47.8%)	2 (4.3%)
	Very high disease activity (>3.5)	0	0	0	9 (19.6%)

B

		ASDAS-ESR (n=44)			
		Inactive disease (<1.3)	Moderate disease activity (1.3-2.1)	High disease activity (2.1-3.5)	Very high disease activity (>3.5)
ASDAS-routine-CRP	Inactive disease (<1.3)	2 (4.5%)	1 (2.3%)	0	0
	Moderate disease activity (1.3-2.1)	0	7 (15.9%)	3 (6.8%)	0
	High disease activity (2.1-3.5)	0	1 (2.3%)	16 (36.4%)	5 (11.4%)
	Very high disease activity (>3.5)	0	0	2 (4.5%)	7 (15.9%)

Abstract FRI0194 – Figure 1. Comparison of the disease activity state ascertainment by ASDAS-routine-CRP vs. ASDAS-quick-CRP (A) and ASDAS-routine-CRP vs. ASDAS-ESR (B).

Results: A total of 132 patients referred with suspicion of axSpA had available routine and quick CRP levels; 46 patients of them were diagnosed with axSpA. Mean $\pm$ SD routine/quick CRP serum levels were 3.20 ± 6.86 mg/L and 4.52 ± 6.78 mg/L, respectively, in the entire group, and 7.09 ± 10.18 mg/L and 8.22 ± 10.11 mg/L, respectively, in patients with axSpA. There was no significant difference ($p=0.11$) in the mean values of ASDAS-CRP (2.76 ± 0.97) and ASDAS-quick-CRP (2.80 ± 1.00), while the ASDAS-ESR (2.90 ± 1.02) was significantly higher than ASDAS-routine-CRP ($p=0.034$). In 43 of the 46 cases of axSpA (94%) the status scores for disease activity showed no difference between ASDAS-routine-CRP and ASDAS-quick-CRP – figure 1. Two patients were assigned to a higher and one to a lower disease activity category (DAC) according to ASDAS-quick-CRP as compared to ASDAS-routine-CRP. For ASDAS-ESR compared to ASDAS-routine-CRP, only 32/44 patients (73%) were assigned to the same DAC.

Conclusions: ASDAS-quick-CRP performed similarly well to ASDAS-routine-CRP with an agreement on the status score for disease activity of 94%, that was clearly better than the agreement of 73% between ASDAS-ESR and ASDAS-routine-CRP. With a duration of approximately 2 min the quick-CRP test is, therefore, feasible for immediate decision making as a part of clinical routine or clinical trials.

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FRI0195

CLINICAL CHARACTERISTICS OF 897 CHINESE ANKYLOSING SPONDYLITIS/SPONDYLOARTHRITIS REAL WORLD COHORT: DATA FROM A CHINESE COHORT WITH SMART MANAGEMENT SYSTEM FOR SPONDYLOARTHRITIS (SMSP)

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Background: With increasing global popularity of smartphone technology, there is a great opportunity for using mobile phone applications for disease management. Smart Management System for Spondyloarthritis (SpA) (SMSP) created a smart management system for SpA using eHealth technologies in China.

Objectives: The aim of this study was to report major characteristics of Chinese ankylosing spondylitis patients derived from a large, longitudinal and prospective database with SMSP.

Methods: SMSP was designated for multicenter, consecutive, and prospective cohorts, including patients' mobile terminal, the physician workstation system, and communication system. Patients' portal was used for self-assessment prior visiting clinics, short message consultation, monitoring symptoms between clinic visits as well as uploading/downloading medical records, while physician' portal was used for professional assessment at clinic, scheduled visits reminder, sending self-management strategies at intervals and making recommendations and delivering patient-specific guidance to the individual. In this preliminary analysis, all patients fulfilled the modified New York criteria. All data were collected online using SMSP.

Results: From April 2016 to June 2017, data were extracted online from the physician workstation system in 4 rheumatology centres across China. There was a total of 2790 times self-assessment of BASDAI, BASFI performed by patients (median times=3.1, from 1 to 14) and a total of 1960 evaluation performed by the physician at the clinic (median times=2.1, from 1 to 10).

A total of 897 AS patients (mean age: 30.8 ± 8.8 years, male 82.7%, HLA-B27 positive rate 88.0%) were recruited in this baseline analysis. The median disease duration was 7.1 (0.01 to 39.63) years. A history or current symptoms suggestive of acute anterior uveitis, psoriasis, and inflammatory bowel disease were observed in 17.2%, 2.6%, 7.1% of the patients, respectively. Differences in symptom duration (≤ 5 years, 5 years to 10 years and >10 years) were analysed. Acute anterior uveitis and inflammatory bowel disease were detected significantly more frequently in patients with symptom duration of >10 years (27.0%, 11.0%, respectively), shown in table 1.

According to the ASDAS, at the baseline visit, 20.1% of patients achieved inactive disease, 30.8% with moderate disease activity, 37.3% with high disease activity and 10.6% with very high disease activity. The most commonly used medication was NSAIDs (98.9%). The patients using biological DMARDs possessed a percentage of 15.5%. 12.8% of the patients used etanercept which was the most commonly used biological DMARDs. 64.7% of the patients used conventional synthetic DMARDs.

Abstract FRI0195 – Table 1. Demographics and baseline clinical characteristics of the total cohort

Characteristic	Durations ≤ 5 years (n=292)	5 years<Durations ≤ 10 years (n=322)	Duration >10 years (n=283)	P value
Age, mean $\pm$ SD months	27.4 $\pm$ 8.2	29.0 $\pm$ 7.2	36.2 $\pm$ 8.5	<0.001
Age at disease onset, mean $\pm$ SD months	24.8 $\pm$ 8.3	21.7 $\pm$ 7.1	20.9 $\pm$ 7.2	<0.001
Duration, mean $\pm$ SD years	2.7 $\pm$ 1.4	7.3 $\pm$ 1.4	15.3 $\pm$ 5.4	<0.001
Male sex (%)	235 (80.5%)	274 (85.1%)	233 (82.3%)	0.313
HLA-B27 positive (%)	241 (88.9%)	254 (89.1%)	210 (85.7%)	0.411
Family history positive (%)	67 (22.9%)	84 (26.3%)	75 (26.7%)	0.523
Peripheral arthritis (current, %)	32 (11.5%)	37 (11.9%)	29 (10.7%)	0.907
Enthesitis (current, %)	52 (18.7%)	50 (16.1%)	35 (13.0%)	0.185
BASDAI, median (Q1-Q3)	1.9 (1.0-3.3)	2.0 (1.0-3.4)	2.2 (1.3-3.8)	0.023
BASFI, median (Q1-Q3)	0.8 (0.1-2.1)	1.1 (0.2-2.2)	1.5 (0.5-3.0)	<0.001
ESR, median (Q1-Q3)	9.0 (3.0-19.0)	10.0 (3.0-24.5)	13.0 (6.0-26.0)	0.050
CRP, median (Q1-Q3)	5.4 (2.6-15.0)	6.0 (3.0-16.8)	8.2 (3.2-18.1)	0.713
ASDAS-CRP, median (Q1-Q3)	1.8 (1.3-2.7)	2.0 (1.5-2.8)	2.2 (1.5-2.9)	0.095
BASMI, median (Q1-Q3)	0.0 (0.0-1.0)	0.0 (0.0-2.0)	2.0 (0.0-4.0)	<0.001
Acute anterior uveitis (%)	32 (11.0%)	46 (14.4%)	76 (27.0%)	<0.001
Inflammatory bowel disease (%)	11 (3.8%)	22 (6.9%)	31 (11.0%)	0.003
Psoriasis (%)	5 (1.7%)	9 (2.8%)	10 (3.6%)	0.387
NSAIDs (current, %)	216 (98.6%)	250 (99.6%)	222 (98.2%)	0.349
DMARD (current, %)	135 (61.6%)	168 (66.9%)	147 (65.0%)	0.483
TNF- α inhibitors (current, %)	35 (16.0%)	40 (15.9%)	33 (14.6%)	0.898