with a peripheral arthritis. Rapid advances in the field of axSpA has led to faster detection, diagnosis and treatment of this disease. This improved management has led to improved level of function and quality of life for patients, despite this a proportion of patients are still requiring joint replacement surgery. The Ankylosing Spondylitis Registry of Ireland (ASRI) is a source of epidemiological data on patients with axSpA in Ireland. Given the large size of the ASRI to date, this is a prime opportunity to analyze patients with axSpA requiring joint replacement surgery.

Objectives: Detailed analysis of a large cohort of patients with axSpA with a focus on those who underwent joint replacement to determine trends in disease and baseline demographics.

Methods: The patient population registered in the ASRI was analysed using IBM SPSS version 26. Analysis was performed by comparing patients who underwent joint replacement surgery to the rest of the ASRI cohort. Mean age, disease duration, delay to diagnosis and scores of disease activity (BASDAI, BASFI, HAQ, ASQoL and BASMI) were compared between these two groups. Differences between the groups was tested for significance using an independent two tailed t-test. Further analysis on gender, HLA-B27 status, co-morbidities and medication exposure was done using a chi-squared test for independence. A p value of less than 0.05 was deemed significant.

Results: At present 860 patients are currently enrolled in the ASRI with 76.6% (659) males and 23.4% (201) females. Average age of patients is 45.8 years, mean disease duration of 19.4 years with 95.5% (821) of patients listed as Caucasian. Mean scores were BASDAI 4.02, BASFI 3.7, BASMI 4.02, HAQ 0.55, and ASQoL of 6.51. In total 33 (3.8%) of patients underwent joint replacement surgery. These patients were noted to be significantly older than the rest of the cohort (55.3 years old vs 45.1, $p<0.01$), with a longer disease duration (31.6 years vs 18.3, $p<0.01$) and higher rates of HLA-B27 positivity (94.7% vs 80.2%, $p<0.01$). No significant differences were noted between gender (table 1). No significant difference was found between medication exposure rates, although the joint replacement population did have higher rates of NSAID, sDMARD and biologic therapy usage than the rest of the population although this did not reach significance. These patients also scored worse in all measures of disease activity, although this only reached significance in the BASFI (5.67 vs 3.64, $p<0.01$), HAQ (0.9 vs 0.54, $p<0.01$) and the BASMI (6.07 vs 3.94, $p<0.01$).

Table 1.

	Joint replacement (n=33)	No Joint Replacement (n=827)	p value
Age	55.3	45.1	<0.01
Disease duration	31.6	18.31	<0.01
Delay to dx	6.97	7.97	0.51
HLA-B27+	94.7% (18)	71.9% (491)	<0.01
Males	78.8% (26)	64.7% (535)	0.76
Females	21.2% (7)	19.3% (160)	0.76
Mean Scores			
BASDAI	4.91	4.06	0.06
BASFI	5.67	3.64	<0.01
HAQ	0.9	0.54	<0.01
ASQoL	7.42	6.67	0.45
BASMI	6.07	3.94	<0.01
Medications			
NSAIDs	51.5% (17)	47% (389)	0.21
Bio tx	72.7% (24)	57.2% (473)	0.9
DMARDs	33.3% (11)	15.7% (130)	0.1

Conclusion: Patients requiring joint replacement surgery, although few in number, represent a cohort with significantly impaired function and quality of life. This is likely due to the fact that these patients were older with more established disease. It is therefore not surprising that this cohort had significantly worse spinal mobility. As registries continues to develop, it will be interesting to see if rates of joint replacement surgery will decline with increased use of biologic therapy at an earlier stage of disease. This will help to differentiate patients requiring joint replacement surgery due to underlying inflammatory arthritis and those with osteoarthritis.

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SAT0382

THE SAME BUT DIFFERENT? ANALYSIS OF A COHORT OF PATIENTS WITH LATE ONSET ANKYLOSING SPONDYLITIS

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Background: Ankylosing spondylitis(AS) has long been described as presenting in the third decade of life with the onset rarely occurring over the age of 45 years old. Previous research has shown there are small numbers of patients being

diagnosed with AS later in life. These studies have been limited to small numbers limiting the ability to detect patterns in disease. The Ankylosing Spondylitis Registry of Ireland (ASRI) is an epidemiological data source on patients with AS in Ireland. Large registries, such as this, are an opportunity to further study this subtype in large numbers with greater power to detect differences between late and typical onset.

Objectives: The purpose of this study was to examine late onset AS in a large, well characterized cohort.

Methods: Patient registered in ASRI were analysed on the basis of their age of symptom onset using IBM SPSS version 26. Patients were divided into two groups with an age over 45 years old at symptoms onset categorized as late onset. Mean BASMI, BASFI, BASDAI, HAQ, and ASQoL scores were compared between the two groups and tested for statistical significance using an independent two tailed t-test. Further analysis looking at differences in gender, HLA B27 status, sacroiliitis on MRI, medication use and extra-articular manifestations(EAMs) was also performed using a chi-squared test for independence.

Results: A total of 851 patients with AS were included in the analysis. Of these patients 659(77.4%) were males, with 192(22.6%) females, mean age of 45.8 years and mean disease duration of 19.4 years (means: ASQoL 6.52, HAQ 0.54, BASDAI 4.03, BASFI 3.7, BASMI 4.03). Patient population was made up of 797 patients(93.7%) categorized as typical onset, 54 patients(6.3%) categorized as late onset(table 1). Males had a higher rate of late onset AS than females, but this did not reach significance (6.8% vs 4.7%, $p=0.19$). Patients with late onset AS were noted to have higher BASFI (5.53 vs 3.58, $p<0.01$), HAQ (0.75 vs 0.53, $p<0.01$) and ASQoL scores (7.68 vs 6.44, $p<0.01$). Late onset patients also had lower rates of HLA-B27 positivity (76.5% vs 91.2%, $p<0.01$). No significant difference was detected in BASDAI or BASMI scores. No difference was detected between groups regarding rates EAMs. The late onset AS patients were noted to have lower rates of biologic therapy use (50% vs 72%, $p<0.01$). No significant difference was detected in rates of NSAID use.

Table 1.

	Onset < 45 years (n=797)	Late Onset (n=54)	p value
Males (n=659)	93.2% (614)	6.8% (83.3)	0.19
Females (n=192)	23% (183)	16.6% (9)	
HLA B27+ (n=580)	90.5% (554)	76.5% (26)	<0.01
Enthesitis (n=146)	16.9% (135)	20.4% (11)	0.45
Dactylitis (n=54)	6% (48)	11.1% (6)	0.21
Arthritis (n=256)	29.7% (237)	35.2% (19)	0.4
MRI Sacroiliitis (n=384)	45.3% (361)	42.6% (23)	0.69
Bilateral sacroiliitis (n=668)	79% (628)	74% (40)	0.07
BASDAI	4.02	4.19	0.6
BASFI	3.58	5.53	<0.01
BASMI	3.96	4.97	0.12
HAQ	0.53	0.75	<0.01
ASQoL	6.44	7.68	<0.01
Uveitis	28.5% (227)	24.1% (13)	0.07
IBD	9.9% (79)	14.8% (8)	0.32
Psoriasis	16.4% (131)	18.5% (10)	0.54
Smokers (ever)	57.3% (457)	64.8% (35)	0.01
Alcohol consumption (ever)	82% (654)	75.9% (41)	0.53
Biologic tx	69.1% (551)	48.1% (26)	<0.01
NSAID tx	54.2% (432)	61.1% (33)	0.2

Figure 1.

Conclusion: This analysis shows that late onset AS does occur in up to 6.3% of patients with AS. Patients with late onset disease were noted to have similar patterns of disease, EAMs and radiological findings consistent with current

classification criteria for AS. Less patients with late onset disease were HLA-B27 positive, the reason for this is unknown. These patients had worse functional outcomes, which could reflect the older age of symptom onset. It is notable that patients with late onset AS are being treated with less biologic agents, and have a slightly higher rate of NSAID usage. Additional registry studies into this subgroup would help to understand these variations in medication usage and prescribing practices.

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SAT0383

ENHANCED PERFORMANCE OF THE ASAS CLASSIFICATION CRITERIA BY DELETION OF NON-DISCRIMINATORY CLINICAL ITEMS: DATA FROM THE SCREENING IN AXIAL SPONDYLOARTHRITIS IN PSORIASIS, IRITIS, AND COLITIS COHORT

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Background: The ASAS classification criteria for axial spondyloarthritis (axSpA) have overall sensitivity/specificity of 82.9%/84.4% but component imaging and clinical arms differ in performance (66.2%/97.3% and 56.6%/83.3%, respectively)¹.

Objectives: We aimed to demonstrate that a data-driven elimination of SpA clinical features that were non-discriminatory in comparisons of patients diagnosed with and without axSpA in a prospective cohort of patients with undiagnosed back pain could enhance the performance of the criteria.

Methods: We used data from the prospective multicenter Screening for Axial Spondyloarthritis in Psoriasis, Iritis, and Colitis (SASPIC) Study. Consecutive patients ≤45 years of age with ≥3 months undiagnosed back pain with any one of psoriasis, AAU, or colitis undergo routine diagnostic evaluation by a rheumatologist for axial SpA, including imaging assessed by central readers. Univariable and multivariable logistic regression analysis was performed to determine which clinical SpA features were/were not discriminatory for the final diagnosis of axSpA. We then compared the sensitivity and specificity of the ASAS criteria with and without these features.

Results: A total of 246 patients were recruited, 47.6% being diagnosed with axSpA (61.5% male, age 33.7 years, symptom duration 7.6 years, B27 positive 52.1%). The following clinical SpA features were non-discriminatory between axSpA/not axSpA: NSAID response, family history of SpA, heel enthesitis, peripheral arthritis, dactylitis. Specificity of the clinical arm and the overall criteria increased from 82.2% to 86.8% without impacting sensitivity. This effect was particularly noteworthy in patients with lower degree of symptomatology (back pain severity <5/10, specificity increases from 76.7% to 90.7%), short symptom

duration (<5 years, specificity increases from 78% to 84.7%), and in females (specificity increases from 80.6% to 86.1%).

Conclusion: In a prospective cohort with a high pre-test probability of axSpA certain clinical SpA features were not helpful in discriminating a diagnosis of SpA from not-SpA. Deletion of these features from the list of SpA features used in the ASAS classification criteria enhanced the performance of the criteria, especially in female patients and those with early disease.

References:

[1] Rudwaleit et al. Ann Rheum Dis 2009;68: 777-83

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SAT0384

REPLACEMENT OF RADIOGRAPHIC SACROILIITIS BY MRI STRUCTURAL LESIONS: WHAT IS THE IMPACT ON CLASSIFICATION OF AXIAL SPONDYLOARTHRITIS IN THE ASAS CLASSIFICATION COHORT?

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Background: Classification of axial spondyloarthritis (axSpA) is based on either an imaging or clinical arm. Radiographic or MRI evidence of sacroiliitis can be applied for the imaging arm. However, it is well-established that reliability and sensitivity of radiographic sacroiliitis is inadequate.

Objectives: To assess the impact of replacing radiographic sacroiliitis with MRI structural lesions (MRI-S) typical of axSpA on the number of patients classified as having axSpA in patients with undiagnosed back pain recruited to the ASAS Classification Cohort (ASAS-CC).

Methods: MRI images of the sacroiliac joint (SIJ) were available from 217 cases in the ASAS-CC, which also had clinical, laboratory, and radiographic data. Seven central readers from the ASAS-MRI group recorded MRI lesions in an eCRF that included active (MRI-A) and structural (MRI-S) lesions typical of axSpA. MRI-A was deemed to be present according to majority agreement (≥4/7) of central readers. MRI-S was deemed to be present according to the majority (majority reader MRI-S) and also according to at least 2 central readers (≥2-reader MRI-S). We calculated the number of patients that were classified differently after replacement of radiographs by MRI-S for overall fulfillment of the ASAS criteria and for the imaging arm.

Results: In total, 119 (54.8%) cases fulfilled the axSpA criteria based on local reading of radiographic sacroiliitis and central reading of active inflammation on MRI. This changed to 125 (57.6%) and 118 (54.4%) of cases after replacement of radiographic sacroiliitis by ≥2-reader and majority reader MRI-S, respectively (Table). A total of 13 (6.0%) and 7 (3.2%) cases who were classified as not having axSpA were re-classified as having axSpA after replacing radiographic sacroiliitis with ≥2-reader and majority reader MRI-S, respectively. Conversely, 7 (3.2%) and 8 (3.7%) cases were re-classified as not having axSpA after substitution by ≥2-reader and majority reader MRI-S, respectively. When fulfillment of the imaging arm was the primary consideration (irrespective of the clinical arm), the number of patients reclassified from not axSpA to axSpA was 25 (11.5%) by ≥2-reader and 13 (6.0%) by majority reader MRI-S, while 8 (3.7%) and 11 (5.1%) were reclassified from axSpA to not axSpA.

Conclusion: The number of patients classified as having axSpA does not change substantially when MRI-S replaces radiographic sacroiliitis. However, it remains possible that MRI structural lesions can influence the final diagnosis, the gold standard for assessment of the performance of the ASAS criteria.

Patient Category	Number	ASAS criteria		Imaging arm		Clinical arm	
		Sen	Spec	Sen	Spec	Sens	Spec
All patients	246	65	82.2	36.8	97.7	50.4	82.2
High confidence in diagnosis	190	73.8	84.5	47.5	98.2	56.3	84.5
Patients with back pain ≥5/10	165	63.3	84.9	34.2	98.8	51.9	84.9
Patients with back pain <5	81	68.4	76.7	42.1	95.3	47.4	76.7
Patients with symptom duration ≥5 years	103	71.2	85.7	35.6	97.1	56.2	85.7
Patients with symptom duration <5 years	143	54.5	78	38.6	98.3	40.9	78
Males	129	68.1	84.2	47.2	98.2	48.6	84.2
Females	117	60	80.6	20	97.2	53.3	80.6
After deletion of 'NSAID response', 'Family Hx SpA', 'heel enthesitis', 'peripheral arthritis', 'dactylitis' SpA features							
All patients	246	65	86.8	36.8	97.7	50.4	86.8
High confidence in diagnosis	190	73.8	87.3	47.5	98.2	56.3	87.3
Patients with back pain ≥5/10	165	63.3	84.9	34.2	98.8	51.9	84.9
Patients with back pain <5	81	68.4	90.7	42.1	95.3	47.4	90.7
Patients with symptom duration ≥5 years	103	71.2	88.6	35.6	97.1	56.2	88.6
Patients with symptom duration <5 years	143	54.5	84.7	38.6	98.3	40.9	84.7
Males	129	68.1	87.7	47.2	98.2	48.6	87.7
Females	117	60	86.1	20	97.2	53.3	86.1