operation characteristic (ROC) curves were performed to evaluate the discriminative utility of these parameters for disease activity of axSpA. Furthermore, the evaluation of the risk factors of axSpA was conducted using binary logistic regression analysis.

Results: CAR, ESR, CRP, NLR, PLR and MLR in axSpA patients were significantly higher than those in the control group ($p < 0.05$ for each), while ALB was significantly lower ($p < 0.001$). Similarly, CAR in remission group was higher than that in control group ($p < 0.001$) and was lower than that in active group ($p < 0.001$). Besides, there were significantly positive correlations between CAR and ESR ($r = 0.702$, $P < 0.001$), CRP ($r = 0.996$, $P < 0.001$), BASDAI ($r = 0.329$, $p < 0.001$) and BASFI ($r = 0.328$, $P < 0.001$). Furthermore, ROC suggested that the area under the curve (AUC) of CAR was 0.701, which was the highest. The optimal cutoff point of CAR was 0.3644, with sensitivity and specificity of 58.5% and 79.0%. Logistic analysis results revealed that elevated CAR and MLR were independent risk factors for axSpA (EXP (B) = 15.546, 95%CI: 5.898-40.979, $P < 0.001$; EXP (B) = 2.206, 95%CI: 1.077-4.519, $P = 0.031$, respectively).

Conclusion: CAR was increased in axSpA patients especially in active group, and significantly correlated with disease activity. CAR may serve as a novel inflammatory marker of monitoring disease activity in patients with axSpA.

References:

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Fig 1. ROC curve analysis of the discriminative values of the parameters for disease activity of axSpA

Table 1. Discriminative values of the parameters for disease activity of axSpA

	AUC	95% CI	Optimal cutoff point	Specificity	Sensitivity
CAR	0.701	0.623-0.778	0.3644	79.0%	58.5%
NLR	0.450	0.365-0.534	3.165	84.1%	18.5%
PLR	0.528	0.448-0.608	127.385	42.6%	69.2%
MLR	0.468	0.384-0.553	0.385	92.6%	16.9%
ESR	0.685	0.612-0.758	15.5	52.3%	76.9%
CRP	0.691	0.614-0.769	10.85	71.6%	63.1%

CAR, C-reactive protein to albumin ratio; NLR, neutrophil-lymphocyte ratio; PLR, platelet-lymphocyte ratio; MLR, monocyte-lymphocyte ratio; CRP, C reactive protein; ESR, erythrocyte sedimentation rate; AUC, areas under the ROC curve

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SAT0380

ENHANCING RHEUMATOLOGY REFERRALS AMONG INFLAMMATORY BOWEL DISEASE PATIENTS WITH SUSPECTED AXIAL SPONDYLOARTHRITIS

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Background: Axial spondyloarthritis (axSpA) is associated with inflammatory bowel disease (IBD). In IBD patients, the clinical probability of axSpA increases in those with chronic back pain (CBP) whose symptoms started before the age of forty-five years old. In practice, this should trigger a rheumatology review especially if accompanied by other symptoms suspicious of inflammatory disease. However, in any health system, the goal of identifying all possible cases need to be balanced with the practical realisation of the finite resources available.

Objectives: The study aimed to define the clinical characteristics of a subgroup of IBD patients who are routinely managed in secondary care who have an increased clinical probability for axSpA. Identification of these characteristics may help improve the quality and specificity of referrals to Rheumatology from Gastroenterology clinics.

Methods: An analytical cross-sectional study was undertaken. Consecutive IBD patients attending routine Gastroenterology clinics were sent a modified validated back pain questionnaire. The questionnaire included the presence or absence of a previous diagnosis of axSpA; components of validated inflammatory back pain criteria; diagrams to indicate the location of back pain and other musculoskeletal pain; personal and family history of known axSpA manifestations; and details of their IBD course, activity and treatment.

IBD patients, with back pain duration > 3 months with onset before 45 years were considered to have a medium diagnostic probability (MDP) for axSpA. MDP-positive IBD patients were compared with MDP-negative IBD patients and logistic regression was used to model the association with clinical features.

Results: Four hundred and seventy consecutive IBD patients (mean age 54 years; 46% male) were surveyed. Two hundred and nine patients (59%) replied, of whom 191 patients (69%) consented to participate. One hundred and seventy-three (91%) of those who consented had a valid completed questionnaire and were included for data analysis. Of these, 74% had Ulcerative Colitis and 26% had Crohn's disease. Their mean age was 58 years, 39% male. Mean age at IBD diagnosis was 39 years, mean IBD disease duration 19 yrs. CBP (back pain greater than three months) was reported by 76%. Inflammatory back pain fulfilling Calin, Berlin, ASAS criteria was seen in 23%, 29%, and 15% respectively. In addition, 80% reported peripheral musculoskeletal pain. Self-reported personal history of enthesitis, reactive arthritis (ReA), acute anterior uveitis (AAU), skin psoriasis (PSO) and dactylitis were 50%, 30%, 24%, 15% and 0% respectively. Self-reported family history of IBD, ReA, PSO, axSpA and AAU were 60%, 36%, 22%, 11%, and 1% respectively. Ninety-one (53%) patients were MDP-positive and 82 (47%) patients were MDP-negative. The clinical characteristics associated with MDP (adjusted for age at invitation) were: the presence of inflammatory back pain using ASAS criteria [OR 8.84 (1.61,48.67); $p = 0.01$], longer interval between symptom onset and gastroenterologist diagnosis of IBD [OR 1.09 (1.03,1.16); $p = 0.005$], and use of rectal topical 5-aminosalicylic acid [OR 3.27 (1.11,9.68); $p = 0.03$].

Conclusion: Chronic back pain and peripheral musculoskeletal pain are common in a secondary care IBD population. In IBD patients, with back pain duration > 3 months and onset before 45 years, the presence of inflammatory back pain, longer diagnostic delay of IBD and the use of rectal topical 5-aminosalicylic acid were associated with a higher clinical probability of axSpA. The identification of these clinical features may not only improve the quality and specificity of Rheumatology referrals from Gastroenterology in this subgroup of patients but also lends real world evidence to current ASAS-endorsed recommendations for early referral of patients with a suspicion of axial spondyloarthritis.

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SAT0381

UNDERSTANDING JOINT REPLACEMENT SURGERY IN AXIAL SPONDYLOARTHRITIS

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Background: Axial spondyloarthritis(axSpA) is a form of inflammatory arthritis that primarily affects the axial skeleton and sacroiliac joint, but can be associated

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