Background: Ankylosing Spondylitis (AS) is an inflammatory rheumatic disease that affects the spine and sacroiliac joints (SIJ). Non-steroidal anti-inflammatory drugs (NSAIDs), modifying antirheumatic drugs (DMARDs), and recently anti-TNF blockers, which are more costly than NSAIDs but used in resistant cases, are generally used in its treatment (1).

Objectives: While SIJ-MRI is one of the imaging methods in the diagnosis of the disease, it is not yet used in its follow-up (2). We wanted to define when the activated SIJ-MRI findings, which showed early sacroiliitis, regressed according to the treatment option.

Methods: Among the 8100 SIJ-MRIs taken in our hospital in the last 5 years, those that were reported normally were excluded from the study. Among the remaining 1150 patients with active or chronic SIJ findings, a total of 87 patients who were diagnosed with AS and had active SIJ findings in the first imaging and had a second SIJ-MRI examination for any reason were included in our retrospective, cross-sectional and observational study. According to the treatment option, how long the active SIJ-MRI findings disappeared was calculated in months using the Kaplan-Meier method.

Results: Of the 87 patients examined in the study, 41 were women and 46 were men. The average age is 32.7. Active SIJ-MRI findings disappeared in a mean of 30.6 months for 11 of 24 patients who did not use any medication, in a mean of 33.9 months for 6 of 16 patients using NSAIDs, in a mean of 40.7 months for 14 of 34 patients using sulfasalazine, in a mean of 28.2 months for 3 of 6 patients using adalimumab, in a mean of 24.4 months for 3 of 5 patients using methotrexate, 11.9 month for 2 of 1 patient using certolizumab. There was no statistically significant difference between the groups.

Conclusion: The signs of active sacroiliitis disappeared in less time in patients who did not receive any treatment than those using NSAIDs and sulfasalazine. Patients using anti-TNF blockers had earlier results than those using no medication. The reason for this may be the progressive course of patients who are switched to the next level of treatment and their late response to treatment, as well as the mechanism of the disease (2-3). This situation brings to the agenda the tendency of physicians to over-treat the disease. More randomized controlled studies are needed regarding new treatment options.

REFERENCES:

- Braun J. Axial spondyloarthritis including ankylosing spondylitis' Rheumatology (Oxford). 2018 1;57(suppl_6):vi1-vi3.
- Braun J, Baraliakos X, Golder W, Brandt J, Rudwaleit M, Listing J, Bollow M, Sieper J, van der Heijde D. Magnetic resonance imaging examinations of the spine in patients with ankylosing spondylitis, before and after successful therapy with infliximab. *Arthritis & Rheumatism* Vol. 48, No. 4, April 2003, pp 1126-1136.
- Jee WH, McCauley TR, Lee SH, Kima SH, Ima SA, Had KY. Sacroiliitis in patients with ankylosing spondylitis: association of MR findings with disease activity. *Magnetic resonance imaging* 2004;22;245-250.

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POS0940

THE IMPACT OF TUMOUR NECROSIS FACTOR-ALPHA INHIBITOR TREATMENT ON WNT SIGNALING INHIBITORS, NOGGIN AND CYTOKINE LEVELS IN AXIAL SPONDYLOARTHRITIS

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Background: Axial spondyloarthritis (axSpA) is a common chronic inflammatory disease of the axial skeleton. Some cytokines have important roles in initiation and progression of disease and are elevated in active disease. Additionally, Wnt signaling pathway inhibitors and noggin also appear to be involved in pathogenesis of ankylosing spondylitis. Anti-tumor necrosis factor- α (TNF) agents have dramatically improved the clinical outcome of axSpA; however, acceptable clinical improvement is not achieved in all patients and capacity of anti-TNF to slow or prevent structural damage still remains controversial.

Objectives: To evaluate the effect of anti-TNF on inflammatory and noninflammatory milieu in patients with axSpA.

Methods: In this prospective study we included 30 biologic treatment naive adult patients with axSpA and 30 healthy controls. All patients with high disease activity were treated with anti-TNF therapy for 6 months. Laboratory and clinical evaluation of all patients were performed at baseline and after 6 months of anti-TNF treatment. Following cytokines and wnt/BMP antagonists were measured; TNF- α , COX-2, IL-6, IL-17, IL-22, IL-23, IL-33, dickkopf-1, sclerostin, noggin.

Results: The mean age of patients with axSpA and healthy controls were 38.1 $\pm$ 13.3 and 37.7 $\pm$ 7.7 years, respectively ($p > 0.005$). At baseline, the median (IQR) TNF- α was higher in axSpA patients when compared to healthy controls, 34.4 pg/ml (31.4-37.03) vs 18.1 pg/ml (12.1-28.4), ($p < 0.001$), while the median (IQR) dickkopf-1 and sclerostin were lower in axSpA patients, 446.7 pg/ml (356.9-529.3) vs 1088.7 pg/ml (951.7-1244.4), ($p < 0.001$) and 312.4 pg/ml (140.8-412.7) vs 412.3 pg/ml (295.4-512.8), ($p < 0.001$), respectively. IL-17, IL-22, IL-33, dickkopf-1 and sclerostin increased with anti-TNF treatment (table 1).

Conclusion: Elevation of some cytokines which are important in pathogenesis of axSpA and nonincrease in noggin with anti-TNF drugs may affect effectiveness of anti-TNF treatment.

Table 1. Changes of cytokines, dickkopf-1, sclerostin and noggin with anti-TNF treatment.

	Pre-Anti-TNF	Post-Anti-TNF	P value
IL-6	45(39.1-68.8)	476(273-61.1)	0.750
IL-17	93.3 (85.1-104.8)	102.1(86.6-114.6)	0.026
IL-22	159.2 (151.9-178.4)	183.5(156.3-304.6)	0.033
IL-23	36.5 (26.1-52.9)	41.3(28.4-55.5)	0.658
IL-33	127.8 (106.6-186.1)	147.06(128.5-213.4)	0.016
COX2	0.176 (0-0.374)	0.202(0.051-1.151)	0.469
TNF α	34.4(31.4-37.03)	30.7(12.8-35.6)	0.004
Dickkopf-1	446.7(356.9-529.3)	881.3(663.1-972.2)	<0.001
Sclerostin	312.4 (140.8-412.7)	405.1(276.3-452.5)	0.018
Noggin	48.3(17.04-153.9)	31.2(11.3-103.7)	0.264

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POS0941

IN SPONDYLOARTHRITIS PATIENTS THE PRESENCE OF COMORBIDITIES IS AN INDEPENDENT PREDICTOR OF INSUFFICIENT RESPONSE TO THERAPY WITH BIOLOGIC AGENTS AND TREATMENT DISCONTINUATION

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Background: Long-term observational studies of patients under biologic disease-modifying anti-rheumatic drug (bDMARD) therapies in routine clinical practice can provide us with important data regarding patients with comorbidities, who are usually excluded from randomized controlled studies.

Objectives: To study the impact of comorbidities in the outcome (response and persistence to therapy) of patients with spondyloarthritis (SpA) receiving bDMARDs in real-world clinical practice.

Methods: Prospective study of all patients who start a bDMARD in a tertiary centre University Hospital after their consent. All patient comorbidities [among a list of approximately 100 pre-specified major comorbidities] are registered by treating physicians at baseline and during follow-up.

Comorbidities were studied as total Comorbidities Count (CC) and rheumatic disease comorbidity index (RDCI). Statistical analyses were performed using logistic and Cox regression models, adjusting for the potential confounding of age, sex, disease duration, diagnosis (axial vs. peripheral SpA), number of previous conventional synthetic and biologic DMARDs, year of therapy start, and co-administered methotrexate and corticosteroids (yes/no). Analyses of response to therapy also included baseline BASDAI or ASDAS indices as confounding variables.

Results: A total of 603 biologic treatments (1st: 298, 2nd: 157, $\geq$ 3rd: 148) were analyzed. Half (51%) of the patients were female, 413 patients had axial SpA (AxSpA) and 190 peripheral SpA (perSpA). At baseline, median (IQR) age: 48 (38-57) years, disease duration: 11 (4-19) years, CC: 2 (1-4) and RDCI: 1 (0-2). Both comorbidity indices were significantly higher in perSpA compared to AxSpA ($p < 0.001$).

At 6 months of therapy, 31% of patients with AxSpA achieved BASDAI50 and 39% had ASDAS-ESR < 2.1. Higher CC was an independent predictor of insufficient response according to BASDAI50 [OR (95%) = 0.70 (0.52-0.94), $p = 0.019$] and higher RDCI was predicting failure to achieve ASDAS-ESR < 2.1 [OR (95%) = 0.59 (0.37-0.94), $p = 0.027$]. Other independent predictors of non-response were age, longer disease duration and (for ASDAS-ESR < 2.1) higher baseline disease activity.

During 1405 patient-years of follow-up, 349 (58%) treatments were discontinued. The adjusted hazard ratio for bDMARD discontinuation within the first 2 years of treatment due to insufficient response was doubled in patients with CC $\geq$ 2 versus those with CC $\leq$ 1 [HR = 2.27 (1.14-4.53), $p = 0.020$] or with RDCI $\geq$ 1 (vs. RDCI =

0) [HR = 2.23 (1.22-4.07), $p=0.009$]. Comorbidities' indices were not significant predictors of treatment discontinuations due to adverse events.

Conclusion: The presence of comorbidities in patients with SpA is an independent predictor for insufficient 6-month response to bDMARDs and resultant treatment discontinuation due to failure.

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Spondyloarthritis - clinical aspects (other than treatment)

POS0942

THE NEGATIVE IMPACT OF UNDIAGNOSED DEPRESSION IN AXIAL SPONDYLOARTHROPATHY: RESULTS OF A SCREENING STUDY

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Background: Previous research in axial spondyloarthropathy (axSpA) has shown this population to have a high prevalence of depression. This co-morbidity has been previously shown to impact disease activity in patients with rheumatic disease.

Objectives: The purpose of this study was to screen for early signs of depression using two validated tools, the Patient Health Questionnaire-9 (PHQ-9) and the Hospital Anxiety and Depression Scale for depression (HADS-D) in patients with known axSpA.

Methods: AxSpA patients attending the Rheumatology department in St James' Hospital between February and October 2020 were invited to take a self-administered survey which included the PHQ-9 and the HADS-D. Scores from the HADS-D yielded a numerical result which was then categorised as normal, borderline or abnormal. PHQ-9 numerical results were categorised as normal, mild, moderate, moderate/severe or severe. Patients with a known diagnosis of depression were excluded. In addition to baseline demographics, patient reported outcomes from the clinic visit were also recorded.

Data analysis was performed using IBM SPSS version 26. Continuous variables were recorded as means, categorical variables as frequencies with percentages. A one-way analysis of variance analysis (ANOVA) was used to determine significance of variation in outcomes between patient outcomes as determined by the HADS-D and PHQ-9. A p -value of <0.05 was deemed significant. Consent was obtained prior to participation. Approval was received from the St James'/Tallaght Hospital Joint Ethics Committee.

Results: In total 71 axSpA patients took part in the survey. The population was 70.4%(50) males and 29.5%(21) female, with an average age 47.9 years and mean disease duration 19.7 years (mean outcomes: BASDAI 4.08, BASFI 3.62, BASMI 3.54, ASQoL 6.79). Overall, 7 (9.9%) participants recorded abnormal HADS-D scores, while 17 (23.9%) recorded moderate to severe PHQ-9 scores indicative of underlying depression. AxSpA females had higher mean HADS-D scores (7.5 vs 4.8, $p=0.01$) than males, with abnormal scores in 19%(4) of females and 6% (3) of males. No significant differences were found in PHQ-9 scores between genders.

Analysis revealed significantly worse BASDAI (6.27 vs 3.42, $p<0.01$) and AqoL scores (12.57 vs 5.26, $p<0.01$) in axSpA patients with abnormal compared to normal HADS-D scores. No significant differences were noted in BASFI, BASMI or baseline demographics. A similar pattern was noted on analysis of PHQ-9 scores, with significantly worse BASDAI (7.9 vs 2.55, $p<0.01$), BASFI (8.05 vs 2.33, $p<0.01$) and ASQoL (19.5 vs 2.62, $p<0.01$) noted in those scoring as severe compared to normal. No significant differences were detected in BASMI scores or baseline demographics.

Conclusion: A high percentage of axSpA patients recorded high HADS-D and PHQ-9 scores concerning for undiagnosed depression. These patients were noted to have significantly worse disease activity and quality of life as compared to patients with normal scores. Clinicians treating axSpA should consider screening for depression in this population.

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POS0943

GEOGRAPHIC VARIATION OF ANKYLOSING SPONDYLITIS (AS) DIAGNOSIS AND TREATMENT IN THE UNITED STATES: A REAL-WORLD EVIDENCE STUDY

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Background: AS is a chronic inflammatory immune-mediated disease primarily affecting the sacroiliac joints and spine, with a prevalence of 0.2%–0.5% in the United States.¹ Because radiographic features of the disease can take years to develop, diagnosis may be delayed by up to 10 years², which can negatively affect patients' function, ability to work, and overall quality of life.

Objectives: To describe geographic variations in AS diagnostic prevalence and treatment in the United States.

Methods: This study utilized the IBM® MarketScan® Administrative Claims Database from 2014–2019. Patients (pts) ≥ 18 years of age with AS, continuous medical and pharmacy enrollment during the calendar year, and complete geographic information during the study period were included. Pts were identified by having ≥ 1 claim with ICD-9-CM or ICD-10-CM codes for AS (720.0 or M45.x, respectively). Two AS diagnosis definitions were used; Definition 1 (D1): Pts with ≥ 1 claim for an AS diagnosis in the year by any provider and Definition 2 (D2): Pts with ≥ 2 claims for an AS diagnosis within 18 months by rheumatologists. Annual AS diagnostic prevalence rates were calculated for both groups; treatment was evaluated among pts with D2. Diagnosis and treatment rates were assessed from 2014–2019 at the national and state levels and reported for states where >20 pts received an AS diagnosis (D1 or D2) or respective treatment (D2). The effect of age, sex, race (surrogate for HLA-B27), and rheumatologist per capita on geographic variation was assessed.

Results: The number of pts included per year ranged between 10,811–13,077 (D1) and 3,775–4,901 (D2). AS diagnostic prevalence increased over time for both groups, with the annual prevalence rate per 10,000 persons for D2 pts increasing from 2.5 in 2014 to 3.5 in 2019 (Table 1). The AS diagnostic prevalence by D2 in 2019 was highest for Idaho (13) and Colorado (6), and lowest for Michigan (2). The state variations in prevalence did not appear to be explained by age, sex, racial distribution, or rheumatologists per capita. The percentage of D2 pts receiving advanced therapies (all FDA-approved indicated biologic disease-modifying antirheumatic drugs [bDMARDs] for AS) were $>70\%$ and increased each year, whereas the use of conventional synthetic DMARDs (csDMARDs) decreased (Figure 1, next page). While opioid use decreased, 37% of D2 pts were prescribed such treatment in 2019. Percentage of D2 pts receiving advanced therapy in 2019 was highest (91) in Minnesota and South Carolina and lowest in Idaho (69) and Indiana (70). In 2019, the percentage of D2 pts using csDMARDs in 2019 was highest in Oklahoma (33) and lowest (16) in North Carolina and New York, while for opioids it was highest in Idaho (69) and lowest in Wisconsin (28).

Conclusion: The prevalence of AS is increasing each year nationally, with significant variability observed across states that is not explained by differences in age, sex, race, or rheumatologists per capita. Among pts with confirmed AS diagnosis (D2), national rates of csDMARDs and opioids are decreasing although opioid use is still high, and high treatment rates exist for advanced therapies. Rates of all treatments also vary substantially across states. Observed variations may indicate the opportunity for further education that can be targeted based on regional need to improve diagnosis and treatment.

REFERENCES:

[1] Reveille JD. *Am J Med Sci*. 2011. 2. Deodhar A, et al. *Arthritis Rheumatol*. 2016.

Table 1. AS diagnostic prevalence by calendar year, 2014–2019

Year	Patients with ≥ 1 AS diagnosis (D1)			Patients with ≥ 2 AS diagnoses by rheumatologists (D2)	
	Number of annual enrollees	Number of patients with AS	Prevalence rate/10,000	Number of patients with AS	Prevalence rate/10,000
2014	19,470,780	13,077	6.7	4,901	2.5
2015	15,159,118	11,863	7.8	4,278	2.8
2016	14,836,594	12,801	8.6	4,473	3.0
2017	12,618,301	10,811	8.6	3,775	3.0
2018	13,460,224	12,259	9.1	4,302	3.2
2019	12,105,049	11,646	9.6	4,294	3.5