and little has been explored in the alterations at the level of the jejunum. The tests for its detection are expensive, unavailable and invasive. The breath test is used to detect small intestine bacterial overgrowth (SIBO), being a non-invasive, simple and inexpensive test.

Objectives: To determine the frequency of SIBO and the relation to the clinical activity of SpA.

Methods: An analytical cross-sectional study was conducted in the period March 2018–October 2018. Patients older than 18 years, who signed informed consent, who met modified New York criteria and Caspar criteria were included. Patients were excluded who were diagnosed with active lung infection, active oral infections, interstitial lung disease, chronic obstructive pulmonary disease, acute diarrheal disease, short bowel syndrome, abdominal surgery in less than 6 months, and oral or IV antibiotics used one month before the test.

Patients who fulfilled the inclusion criteria were collected demographic and clinical data, gastrointestinal manifestations were interrogated and ASDAS pcr, BASMI, BASDAI, BASFI activity scales were measured. The breath test was performed by a gastroenterologist. The concentrations of hydrogen produced by bacteria were measured by GASTROLYZER® according to the recommendations of the consensus of the American Gastroenterology Association. It was considered a positive test to change the concentrations of more than 20 ppm with respect to the basal test. To compare the frequency of SIBO, a historical cohort of patients without rheumatic diseases matched by age was taken. The data were presented in means and percentages. Student's T and Mann-Whitney U were performed for numerical variables. Groups with chi square were compared.

Results: We studied 20 patients with ankylosing spondylitis (M/F 9/11) and 11 psoriatic arthritis (M/F 1/12), mean age 54.45 ±13.52, 33 healthy controls matched by age. Positive test was found in 11 (33%) patients (8/3 EA/APs) vs 1 (3%) in controls. When comparing groups with positive test versus negative test groups, patients with SIBO consumed less SSZ (72.7 vs 90.9, p 0.008), had higher frequency of irritable bowel (54 vs 5 vs 9.1, p 0.004), antecedent of cholecystectomy (27.3 vs 9.1 p 0.01), steatorrhea (18.2 vs 0, p 0.001), and higher activity: ASDAS > 2.1 (100% vs 86.4%, p 0.199), BASMI > 4 (36.4% vs 31.8% p 0.79), BASFI > 4 (72.7% vs 50%, p 0.21), enthesitis > 1 (45.5% vs 13.6%, p 0.61).

Conclusion: We found a higher frequency of SIBO in patients with SpA compared to healthy controls, but not related to disease activity. This is the first study to investigate SIBO by breath test in patients with SpA

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THU0397

CLINICAL CHARACTERISTICS AND TREATMENT PROFILES OF PATIENTS WITH ANKYLOSING SPONDYLITIS WHO INITIATED SECUKINUMAB AND OTHER BIOLOGICS: RESULTS FROM THE CORRONA PSORIATIC ARTHRITIS/SPONDYLOARTHRITIS (PSA/SPA) REGISTRY

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Background: Secukinumab is the first non-tumor necrosis factor inhibitor biologic therapy approved for the treatment of ankylosing spondylitis (AS) in the United States. Patients with AS in clinical trials who receive biologics, including secukinumab, may not be representative of those treated in real-world clinical practice due to differences in patient characteristics, practice patterns, physician experience, and insurance coverage (ie, access). Few real-world studies have characterized patients with AS who initiate secukinumab. The Corrona PsA/SpA Registry collects data on a robust list of outcome measures, many of which overlap with those used in clinical trials.

Objectives: To describe the characteristics of patients who initiated secukinumab and other biologics for the treatment of AS in the Corrona PsA/SpA Registry.

Methods: This study included patients aged ≥ 18 years with AS (and without concurrent PsA diagnosis) enrolled in the Corrona PsA/SpA Registry who initiated secukinumab or other biologics (adalimumab, etanercept, certolizumab pegol, infliximab, and golimumab) between April 2017 and December 2018. Patient demographics, clinical characteristics, treatment profiles, disease activity, quality of life, and work productivity were assessed at the time of biologic initiation (baseline) and compared between patients who initiated secukinumab and other biologics using t tests or Wilcoxon rank-sum tests for continuous variables and χ^2 or Fisher's exact tests for categorical variables.

Results: Of the 106 patients with AS who initiated a biologic 26 (24.5%) initiated secukinumab and 80 (75.5%) initiated other biologics. Secukinumab initiators were similar to patients who initiated other biologics in terms of demographics and clinical characteristics except that a higher proportion of secukinumab initiators had a history of prior biologic use (69.2% vs 45.0%; $P = 0.03$) and were more likely to have used a higher number of prior biologics compared with other biologic initiators ($P < 0.01$; **Table 1**). No significant differences were observed between patients who initiated secukinumab and other biologics in terms of measures of disease activity, quality of life, and work productivity (**Table 2**).

Abstract THU0397 –Table 1.

Table 1. Demographic and Clinical Characteristics and Treatment Profiles Among Patients With AS Who Initiated Secukinumab or Other Biologics*

Characteristic	Secukinumab Initiators (n = 26)	Other Biologic Initiators (n = 80)	P Value
Age, mean (SD), years	47.7 (12.5)	47.3 (14.7)	0.88
Female, n (%)	14 (53.8)	40 (50.0)	0.73
White, n (%)	26 (100.0)	72 (90.0)	0.37
Work status, n (%)			
Full time	18 (69.2)	36 (45.0)	0.26
Part time	0	6 (7.5)	
Disabled	3 (11.5)	14 (17.5)	
Retired	2 (7.7)	14 (17.5)	
Other	3 (11.5)	10 (12.5)	
BMI, mean (SD), kg/m ²	28.7 (7.9)	31.3 (7.7)	0.06
Symptom duration, mean (SD), years	14.8 (8.9)	13.9 (12.1)	0.35
Disease duration, mean (SD), years	6.8 (6.5)	5.5 (8.8)	0.06
HLA-B27 positive test result, n (%)	16 (61.5)	43 (53.8)	0.49
Comorbidities, n (%)			
Hypertension	10 (38.5)	28 (35.0)	0.75
Depression	3 (11.5)	18 (22.5)	0.22
Hyperlipidemia	4 (15.4)	13 (16.3)	1.00
Anxiety	1 (3.8)	5 (6.3)	0.11
Cardiovascular disease	3 (11.5)	11 (13.8)	1.00
Serious infections	5 (19.2)	6 (7.5)	0.13
Uveitis	1 (3.8)	9 (11.3)	0.45
Diabetes mellitus	2 (7.7)	6 (7.5)	1.00
Fibromyalgia	2 (7.7)	5 (6.3)	1.00
Metabolic syndrome	2 (7.7)	5 (6.3)	1.00
Psoriasis	2 (7.7)	4 (5.0)	0.63
Nail psoriasis	1 (3.8)	2 (2.5)	1.00
Crohn disease	0	3 (3.8)	1.00
Ulcerative colitis	1 (3.8)	1 (1.3)	0.43
Any cancer (excluding NMSC)	1 (3.8)	1 (1.3)	0.43
Prior csDMARD use, n (%)	7 (26.9)	16 (20.0)	0.46
Prior biologic use, n (%)	18 (69.2)	36 (45.0)	0.03
Number of prior biologics, n (%)			< 0.01
0	8 (30.8)	44 (55.0)	
1	6 (23.1)	25 (31.3)	
≥ 2	12 (46.2)	11 (13.8)	
Current csDMARD use, n (%)	2 (7.7)	11 (13.8)	0.51

BMI, body mass index; csDMARD, conventional synthetic disease-modifying antirheumatic drug; HLA-B27, human leukocyte antigen B27; NMSC, non-melanoma skin cancer.

* Other biologics included adalimumab, certolizumab pegol, etanercept, golimumab, and infliximab.

Abstract THU0397 –Table 2.

Table 2. Disease Activity, Quality of Life, and Work Productivity Among Patients With AS Who Initiated Secukinumab or Other Biologics*

Characteristic	Secukinumab Initiators (n = 26)	Other Biologic Initiators (n = 80)	P Value
ASDAS, mean (SD) [n]	3.1 (0.9) [23]	3.2 (0.9) [67]	0.84
BASDAI (0-10), mean (SD) [n]	5.7 (1.7) [26]	5.4 (2.1) [80]	0.52
BASFI (0-10), mean (SD) [n]	4.7 (2.5) [26]	4.2 (2.4) [75]	0.30
Lateral lumbar flexion (average of left and right), mean (SD) [n], cm	30.2 (20.1) [23]	28.4 (21.3) [70]	0.69
Enthesitis, n/m (%)	12/26 (46.2)	31/80 (38.8)	0.50
SPARCC Enthesitis Index (1-16), mean (SD) [n]	5.6 (3.1) [12]	4.6 (2.9) [31]	0.24
Dactylitis, n/m (%)	2/26 (7.7)	2/80 (2.5)	0.25
Dactylitis count (1-20), mean (SD) [n]	1.5 (0.7) [2]	1.5 (0.7) [2]	1.00
Tender joint count (0-68), mean (SD) [n]	3.3 (5.0) [26]	3.7 (7.0) [80]	0.39
Swollen joint count (0-66), mean (SD) [n]	0.4 (1.0) [26]	0.9 (2.0) [80]	0.61
Physician global assessment (VAS 0-100), mean (SD) [n]	40.7 (20.3) [26]	41.2 (20.9) [80]	0.92
Physician global assessment of psoriasis (VAS 0-100), mean (SD) [n]	36.2 (19.3) [6]	29.1 (22.6) [18]	0.61
Patient pain (VAS 0-100), mean (SD) [n]	66.6 (22.5) [26]	58.9 (25.5) [79]	0.21
Patient fatigue (VAS 0-100), mean (SD) [n]	54.3 (26.3) [26]	53.1 (25.9) [80]	0.81
Morning stiffness, n/m (%)			0.77
< 30 minutes	5/26 (19.2)	13/80 (16.3)	
≥ 30 minutes	21/26 (80.8)	67/80 (83.8)	
HAQ-S (0-3), mean (SD) [n]	0.78 (0.63) [4]	0.99 (0.73) [18]	0.61
EQ VAS (0-100), mean (SD) [n]	55.8 (21.3) [26]	55.2 (21.6) [80]	0.82
WPAI domains, mean (SD) [n]			
Current employment, n/m (%)	19/26 (73.1)	42/80 (52.5)	0.07
% Work time missed	10.7 (14.3) [17]	11.9 (25.3) [42]	0.32
% Impairment while working	43.3 (24.4) [19]	36.1 (23.8) [42]	0.28
% Overall work impairment	46.9 (26.4) [17]	41.7 (28.8) [42]	0.52
% Activity impairment	51.0 (28.7) [26]	48.5 (28.1) [79]	0.69

ASDAS, Ankylosing Spondylitis Disease Activity Score; BASDAI, Bath Ankylosing Spondylitis Disease Activity Index; BASFI, Bath Ankylosing Spondylitis Functional Index; EQ, EuroQol questionnaire; HAQ-S, Health Assessment Questionnaire for the Spondyloarthritis; SPARCC, Spondyloarthritis Research Consortium of Canada; VAS, visual analog scale; WPAI, Work Productivity and Activity Impairment Questionnaire.

* Other biologics included adalimumab, certolizumab pegol, etanercept, golimumab, and infliximab.

Conclusion: In this real-world study of US patients with AS, secukinumab initiators had similar demographics, clinical outcomes, disease burden and patient reported outcomes compared with other biologic initiators, with the exception of higher prior biologic use.

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THU0398 GAIT 3D KINEMATICS UNVEILS A SPECIFIC PATTERN IN PATIENTS IN EARLY YEARS OF AXIAL SPONDYLOARTHRITIS INDEPENDENT OF THEIR BODY COMPOSITION AND MUSCLE PERFORMANCE VARIABLES

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Background: Axial spondyloarthritis (axSpA) is a chronic inflammatory rheumatic disease characterized by a progressive mobility reduction of the rachis. The postural changes may cause balance problems with gait repercussions. However, we lack information during the early years of the disease regarding gait pattern and the possible variables that may influence gait parameters.

Objectives: In order to gain insight into the gait patterns in patients at early stages of axSpA and the potential influence of some patient-specific features, the aim of this study was therefore to evaluate: (i) the 3D gait signature in patients at early years of axSpA; and (ii) the relation between gait parameters, and body composition and muscle performance variables.

Methods: A cross-sectional study was conducted on 46 participants (18-50 years old), 23 patients with axSpA (according to ASAS criteria, with less than 10 years since symptoms onset) and 23 healthy controls, matched by gender and age, with a mean age of 37±7.5 years, predominantly males (60%). The patients with axSpA had 5±3.2 years of disease duration, with BASDAI and BASFI of 3±2.2 and 2±2.9, respectively. Subjects' movement was reconstructed using a 3D full-body kinematic model (KinEtkos, Coimbra, Portugal) fed by 15 inertial sensors placed in the head, arms, trunk, pelvis, thighs, shanks and feet. The primary outcomes comprise the general gait parameters such as gait deviation index, speed, cadence, stance duration, body vertical regularity (sample entropy), step length, range of movement and peak velocity of the different joints. Body composition was assessed by performing octapolar multifrequency bioelectrical impedance analysis (BIA; InBody 770). Muscle performance was assessed with a 60 second sit-to-stand test (STS60), while physical activity was controlled by the international physical activity questionnaire (IPAQ).

Variables (except age, disease duration, BASDAI, BASFI) are presented as median. Non-parametric tests were used to compare groups. Correlations between gait, body composition and skeletal muscle function parameters, were performed.

Results: Gait analysis showed statistically significant differences between axSpA and healthy control groups on gait deviation index (median 83 vs 87%, p=0.022, with higher score values representing similar performance to normal movement), speed (median 0.79 vs 0.85m/s, p=0.015), stance duration at the left side (median 68 vs 67s, p=0.027), left step length (median 0.47 vs 0.49m, p=0.008), and vertical regularity (median 0.39 vs 0.33, p=0.029, with higher values representing a less regular and predictable movement pattern). At the sagittal plane, patients showed higher values of left arm maximum flexion (median 14 vs 10°, p=0.011), lower lumbar extension peak velocity (median 45 vs 60°/s, p=0.016) and higher ankle angular peak velocity on right side (median 330 vs 299°/s, p=0.020). However, no statistically significant differences between groups were found for physical activity. In addition, no statistically significant correlation was found between the gait parameters and weight, body fat, torso fat, visceral fat, body mass index, total body water, extracellular water, fat free mass, lean mass, bone mineral content and STS60.

Conclusion: These results provide evidence that although young axSpA patients at early years of the disease display a particular gait pattern

and this behavior does not seem to be influenced by the body composition and muscle performance. The main determinant for this gait pattern remains an open question.

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THU0399

DEVELOPMENT OF AN OPTIMIZED ONLINE SELF-REFERRAL TOOL FOR EARLY RECOGNITION OF PATIENTS WITH AXIAL SPONDYLOARTHRITIS (AXSPA) – DATA FROM THE 'OPTIREF'-STUDY

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Background: One of the major reasons for a long diagnostic delay in axial spondyloarthritis (axSpA) is the late referral of patients by primary care physicians dealing with patients with chronic back pain. We developed and implemented an online self-referral tool (www.bechterew-check.de), which gave access to a rheumatological consultation if patients declared suffering from chronic back pain (≥ 3 months) with a symptom onset ≤ 45 years of age, and at least one feature indicative of SpA. In the prospective "Identification of the Optimal Referral Strategy for Early Diagnosis of Axial Spondyloarthritis (OptiRef) Study" we could diagnose axSpA in 19% of the self-referred patients [1].

Objectives: To optimize the online-self-referral tool for recognition of patients with high suspicion of axSpA in order to increase the specificity by keeping the high level of sensitivity.

Methods: 181 patients who had fulfilled the online self-referral strategy were included and underwent a standardized rheumatology examination. The final diagnosis of axial SpA/no axial SpA by the rheumatologist served as the gold standard. The performance of all possible combinations of the referral parameters (13 parameters in total including 5 features of inflammatory back pain (IBP) and 8 other SpA features) added to both stem parameters (chronic back pain starting at age of ≤ 45 years) was tested. In addition, the following pre-specified combinations were evaluated: 1) ≥ 1 IBP parameter AND ≥ 1 other SpA parameter, 2) ≥ 1 IBP parameter OR ≥ 1 other SpA parameter. For all combinations, a sensitivity, a specificity, positive and negative predictive values (PPV and NPV), as well as a positive and negative likelihood ratio (LR+ and LR-) were calculated. We targeted the maximal specificity by acceptable sensitivity (defined as $\geq 90\%$ of the original strategy).

Results: For 163 of the included patients, full data of the online questionnaire as well as of rheumatology examination including the final diagnosis was available. 31 (19%) of them were diagnosed with axial SpA. Raising the threshold of the number of positive parameters (table 1) resulted in a quick drop of the sensitivity. According to the pre-defined selection criterion, only a strategy with any four positive parameters would be acceptable. An analysis of combined strategies (IBP parameters and/or other SpA parameters) resulted into identification of a strategy with an improved performance: a combination of ≥ 2 IBP parameters with ≥ 1 other SpA parameters (in addition to both stem parameters) showed a sensitivity of 90% (28/31), a specificity of 27% (35/132), a PPV of 22% (28/125), a NPV of 92% (35/38), LR+ of 1.23 and LR- of 0.36. Thus, identifying 28 of 31 patients with axSpA would have been possible after the assessment of 125 patients instead of 163.

Conclusion: The data-driven optimized online self-referral tool (figure 1) requires the following parameters to be positive: chronic back pain (≥ 3 months) plus back pain onset before 45 years of age plus ≥ 2 IBP parameters plus ≥ 1 other SpA feature. The performance of this tool should be confirmed in a prospective study.

Abstract THU0399 – Table 1.

Table 1: Performance of self-referral strategies based on combinations of SpA parameters in addition to the stem parameters (chronic back pain starting at age of ≤ 45 years).

Number of fulfilled criteria* (2)	Number of patients	PPV	NPV	Sensitivity	Specificity	LR+	LR-
1**	163	0.19 (31/163)		1.00 (31/31)			
2	158	0.20 (31/158)	1.00 (5/5)	1.00 (31/31)	0.04 (5/132)	1.04	0.00
3	147	0.21 (31/147)	1.00 (16/16)	1.00 (31/31)	0.12 (16/132)	1.14	0.00
4	128	0.22 (28/128)	0.91 (32/35)	0.90 (28/31)	0.24 (32/132)	1.19	0.40
5	114	0.23 (26/114)	0.90 (44/49)	0.84 (26/31)	0.33 (44/132)	1.26	0.48
6	74	0.31 (23/74)	0.91 (81/89)	0.74 (23/31)	0.61 (81/132)	1.92	0.42
7	48	0.38 (18/48)	0.89 (102/115)	0.58 (18/31)	0.77 (102/132)	2.55	0.54
8	27	0.48 (13/27)	0.87 (110/136)	0.42 (13/31)	0.89 (110/132)	3.95	0.65
9	17	0.59 (10/17)	0.86 (125/146)	0.32 (10/31)	0.95 (125/132)	6.08	0.72
10	7	0.43 (3/7)	0.82 (120/156)	0.10 (3/31)	0.97 (120/132)	3.19	0.93
11	1	1.00 (1/1)	0.81 (132/162)	0.03 (1/31)	1.00 (132/132)	-	0.97
12	1	1.00 (1/1)	0.81 (132/162)	0.03 (1/31)	1.00 (132/132)	-	0.97
13	1	1.00 (1/1)	0.81 (132/162)	0.03 (1/31)	1.00 (132/132)	-	0.97

*Criteria: insidious onset; improving with exercise, no improvement with rest; waking up in the second half of the night; morning stiffness ≥ 30 minutes; alternating buttock pain; good response to NSAIDs; arthritis/enthesitis ever; HLA-B27 positive; uveitis; psoriasis; inflammatory bowel disease; SpA family history; elevated acute phase reactants.

**The original strategy, reference for the calculation of the performance of all other strategies

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- Proft F, et al. EULAR 2018, Abstract THU0230.

1	Does your back pain last 3 months or longer?	No ☐ Yes ☐
2	Did your back pain start prior to 45 years of age?	No ☐ Yes ☐
3	What are the characteristics of your back pain?	
	• The back pain onset was rather slow and was not related to a trauma	No ☐ Yes ☐
	• I suffer from stiffness in my back of 30 minutes or longer upon getting up in the morning	No ☐ Yes ☐
	• Movement or exercises (but not rest) improve my back pain	No ☐ Yes ☐
	• I wake up sometimes in the night (especially 2nd half) because of back pain	No ☐ Yes ☐
	• I have or I had alternating (flipping from side to side) pain in my buttocks	No ☐ Yes ☐
4	Other signs and symptoms which might indicate an inflammatory nature of the back pain:	
	• I took a nonsteroidal anti-inflammatory drug (such as Diclofenac or Ibuprofen) because of back pain, and pain was completely relieved or was much better after the drug intake	No ☐ Yes ☐
	• I have / had joint pain with swelling and/or inflammation in the areas of tendons insertion to the bone (e.g., heels).	No ☐ Yes ☐
	• The genetic marker HLA-B27 has been tested in my blood already and the result was „positive“	No ☐ Yes ☐
	• I have / had elevated markers of inflammation in the blood (C-reactive protein or erythrocyte sedimentation rate), which are unlikely to be explained by other reasons (such as infections)	No ☐ Yes ☐
	• I suffer from psoriasis	No ☐ Yes ☐
	• I suffer from inflammatory bowel disease (Crohn's disease or ulcerative colitis)	No ☐ Yes ☐
	• I suffer / suffered from (iritis)	No ☐ Yes ☐
	• One or several of my direct relatives suffer / suffered from ankylosing spondylitis, psoriasis or inflammatory bowel disease (Crohn's disease or ulcerative colitis)	No ☐ Yes ☐

The strategy is fulfilled if 1 + 2 + ≥ 2 questions in the 3 + ≥ 1 question in the 4 are answered with yes.

Abstract THU0399 – Figure 1. The data-driven optimized self-referral strategy.

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THU0400

COMPLICATIONS OF ANTERIOR UVEITIS ASSOCIATED WITH HLA-B27 ANTIGEN IN PATIENTS WITH AND WITHOUT SPONDYLOARTHRITIS

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Background: HLA-B27- associated anterior uveitis (AU) can be an isolated disease or part of a systemic inflammatory process, such as spondyloarthritis. Differences in the outcome of uveitis with and without spondyloarthritis are still under research.