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Background: Axial spondyloarthritis (axSpA) is a chronic inflammatory disease predominantly involving the axial skeleton and sacroiliac joints. Although the exact aetiology remains largely unknown, there is thought to be an immune-driven element. Vitamin D deficiency has been associated with a number of autoimmune diseases and is thought to play an important role in modulating the immune system. Low vitamin D levels may contribute to the development and progression of axSpA¹.

Objectives: To study the possible associations between low vitamin D and disease activity in axSpA.

Methods: A systematic literature search using Medline, Embase and Cochrane was performed using MESH search terms "ankylosing spondylitis", "axial spondyloarthritis" and "vitamin D". Articles examining disease activity measured by BASDAI, ASDAS-CRP, ESR and CRP identified through title/abstract screening, were included in the study, with relevant information extracted.

Results: Out of 495 articles identified from the initial search, 19 observational studies which were mostly (89%) cross-sectional studies were identified. There was considerable heterogeneity between studies, including in the definition of vitamin D deficiency, latitude where study took place and seasonal variation. Vitamin D levels were often lower in patients with axSpA compared to controls. Seventeen studies found no association with vitamin D deficiency and disease activity. The exceptions included one study which measured serum vitamin D receptor levels as opposed to serum 25 (OH) D or 1,25 (OH)₂ D concentrations, and another study whose recruitment occurred over four years and therefore seasonal variation may conflict results. Patients taking NSAIDs or anti-TNF had no difference in vitamin D levels.

Conclusion: Vitamin D deficiency is more prevalent in axSpA but does not seem to associate with increased disease activity. Longitudinal studies are required to better define these links.

References:

- [1] Sizheng Z, et al. Systematic review of association between vitamin D levels and susceptibility and disease activity of ankylosing spondylitis. *Rheumatology* 2014; 53:1595-1603.

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AB0674

CLINICAL AND IMAGING FEATURES IN SPONDYLOARTHRITIS PATIENTS WITH AND WITHOUT HLA-B27 AND HLA-B51

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Background: Despite being commonly expressed in the general population, the human leucocyte antigen (HLA)-B27 allele strongly increases the susceptibility to develop spondyloarthritis (SpA). Likewise, the association between the HLA-B51 allele and the development of Behçet's disease is well documented. However, the exact mechanisms responsible for their pathologic role are still a matter of debate. Moreover, anecdotal reports show an association between HLA-B51 and the clinical spectrum of SpA.

Objectives: To investigate the clinical and imaging findings of SpA patients according to the absence or presence of HLA-B27 or HLA-B51.

Methods: We retrospectively analyzed 236 patients with axial or peripheral SpA, according to the ASAS criteria, referring to two tertiary Rheumatology Clinics between 2017 and 2019. All patients had been tested for HLA-B alleles. Patients with HLA-B51 haplotype and fulfilling the criteria for Behçet's disease were excluded.

Results: Table 1 shows demographic and clinical features of patients, according with the HLA-B haplotype (neither HLA-B27 nor -B51, double negative; positive for HLA-B27 only, positive for HLA-B51 only). Inflammatory low back pain and sacroiliitis, assessed by X-ray or magnetic resonance imaging (MRI), were more prevalent in double negative and HLA-B27 patients, compared to HLA-B51 patients. In this regard, the presence of HLA-B51 was negatively associated with axial manifestations at onset (OR 0.347, 95% CI 0.200-0.604, p<0.0001) and in the course of the disease (low back pain: OR 0.395, 95% CI 0.225-0.689 p<0.0001; sacroiliitis on imaging: OR 0.342 CI 0.189-0.619 p<0.0005). When considering extra-articular manifestation, aphtous lesions were more prevalent in patients with HLA-B51 (p<0.0001), inflammatory bowel diseases in the double negative group

(p=0.0006), and increased C-reactive protein in double negative and HLA-B27 patients (p=0.02).

Table 1.

	All (236 patients)	Double-negative (101 patients)	HLA-B27 (53 patients)	HLA-B51 (82 patients)	p value
Female (%)	167 (71)	73 (72)	28 (53)	66 (60)	0.0024 (cumulative)
Age, years (mean±SD)	53.7±13.3	56.4±12.7 [#]	48.2±14.4 ^{\$}	54±12.7	[#] <0.01 vs HLA-B27 ^{\$} <0.05 vs HLA-B51
Age at diagnosis, years (mean±SD)	48±14.5	50.3±13 [*]	40.8±15.5 ^{\$}	50.2±14.3	[*] <0.001 vs HLA-B27 ^{\$} <0.001 vs HLA-B51
Time from symptoms to diagnosis, years (mean±SD)	3.8±5.7	3.6±4.8	3.2±3.7	4.4±7.5	ns
Type of onset:					0.0031 (cumulative)
-Axial (%)	129 (55)	67 (66)	31 (59)	31 (38)	
-Peripheral (%)	63 (27)	19 (19)	12 (23)	32 (39)	
-Axial and peripheral (%)	44 (19)	15 (15)	10 (19)	19 (23)	

Conclusion: The presence of HLA-B51 identifies a subgroup of SpA patients with peculiar features compared to double-negative or HLA-B27 SpA patients. HLA-B51-related SpA may be an additional condition to be included in the SpA spectrum.

References:

- [1] Bodis G, et al. Role of Human Leukocyte Antigens (HLA) in Autoimmune Diseases. *Rheumatol Ther* 2018;5:5–20.
- [2] Rudwaleit M, et al. The development of Assessment of SpondyloArthritis international Society classification criteria for axial spondyloarthritis (part II): validation and final selection. *Ann Rheum Dis* 2009;68:777–83.
- [3] Rudwaleit M, et al. The Assessment of SpondyloArthritis International Society classification criteria for peripheral spondyloarthritis and for spondyloarthritis in general. *Ann Rheum Dis* 2011;70:25–31.
- [4] Maksymowych WP, et al. MRI lesions in the sacroiliac joints of patients with spondyloarthritis: an update of definitions and validation by the ASAS MRI working group. *Ann Rheum Dis*. 2019;78:1550-1558.

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AB0675

RED CELL DISTRIBUTION WIDTH AND FATIGUE IN AXIAL SPONDYLOARTHRITIS: A SLEEPER SIGNAL

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Background: Fatigue is a ubiquitous feature of autoimmune conditions, and axial Spondyloarthritis (axSpA) is no exception, with over 50% of patients reporting some degree of fatigue¹. Erythrocyte size variability (as measured by red cell distribution width (RDW)) has been found to correlate with fatigue in a cohort of systemic lupus erythematosus (SLE) patients and may reflect early iron deficiency². We investigate whether this finding holds true in axSpA.

Objectives: To investigate the relationships between fatigue, disease activity, and RDW (as a proxy for functional iron deficiency) in patients with axSpA.

Methods: Cross-sectional analysis performed on patients with axSpA, as defined by the Assessment of SpondyloArthritis international Society (ASAS) criteria, enrolled in a longitudinal data collection study from October 2017 until January 2020 in a single outpatient setting. Patients required a minimum of 1 set of patient-reported outcome measures (PROMs), including the completion of a Functional Assessment of Chronic Illness Therapy (FACIT) Fatigue Scale v4 (numerical score between 0–52 with a lower score indicating greater fatigue), and Bath Ankylosing Spondylitis Disease Activity Index (BASDAI). C-reactive protein (CRP) as a biochemical marker of disease activity, as well as Haemoglobin (Hb) and RDW performed within 3 months either side of a PROMs set were extracted and matched. Only one pair of matched data was selected per patient according to the least timeframe between a set of PROMs and bloods of interest (if multiple were available). Anaemia was defined according to World Health Organisation criteria, i.e., Hb <120g/L in