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Low Frequency of HLA-B27 in Ankylosing Spondylitis Patients from Turkey: Insights from the Thrace Region

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Background: This study aimed to evaluate the frequency of human leukocyte antigen (HLA)-B27 in 488 patients with ankylosing spondylitis (AS) from the Thrace region of Turkey and to assess its association with clinical and radiological features.

Material/Methods: A retrospective analysis was conducted on patients diagnosed with AS according to the modified New York criteria and/or Assessment of Spondyloarthritis International Society (ASAS) classification criteria. HLA-B27 status was determined using real-time polymerase chain reaction (PCR). Clinical data, including disease activity indices such as Bath AS disease activity index (BASDAI), Bath AS functional index (BASFI), C-reactive protein (CRP), erythrocyte sedimentation rate (ESR), and radiological findings were analyzed. Statistical comparisons were performed using chi-square, Mann-Whitney U, Spearman's correlation, and logistic regression models.

Results: Among 488 AS patients, 59.43% were HLA-B27 positive. HLA-B27 positivity was significantly associated with male sex (p=0.020), earlier disease onset (p=0.021), higher CRP (p=0.020) and ESR (p=0.04) levels, and the initial BASDAI and initial BASFI scores (p=0.042 and p=0.044). A strong correlation was found between HLA-B27 positivity and sacroiliitis severity on X-ray (p=0.016, OR: 1.518) and magnetic resonance imaging (MRI) (p=0.001, OR: 1.199). No significant associations were observed between HLA-B27 status and extra-articular manifestations.

Conclusions: The HLA-B27 frequency in Thracian AS patients (59.43%) was lower than reported in Western populations but consistent with some Turkish studies. HLA-B27 positivity was associated with earlier disease onset, male predominance, and more severe sacroiliitis. These findings highlight regional variations in AS presentation and the role of HLA-B27 in disease severity.

Keywords: Rheumatic Diseases • Spondylitis • Spondylitis, Ankylosing

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Introduction

Ankylosing spondylitis is a chronic, systemic, and progressive inflammatory condition that primarily affects the spine and sacroiliac joints (SIJ) [1]. The disease typically presents before the age of 40, with a higher prevalence in males, although its exact pathogenesis remains unclear [2]. The condition is distinguished by chronic back pain and gradually increasing spinal stiffness [3]. It affects peripheral joints, digits, and entheses, in addition to inflaming the spine, and causes extra-articular symptoms such as anterior uveitis, psoriasis, and inflammatory bowel disease (IBD) [2]. Ankylosing spondylitis (AS) is a subtype of axial spondyloarthritis (AxSpA), referred to as radiographic AxSpA (with radiographic changes in SIJ) [4]. The estimated incidence and prevalence of AS range from 0.05 to 1.4 per 10 000 person-years and 0.1% to 1.4%, respectively [5]. While AS has traditionally been reported to be nearly twice as common in men as in women, recent studies indicate a more balanced distribution between the sexes [6]. Diagnosis is based on a combination of clinical findings, imaging techniques, and laboratory markers, with magnetic resonance imaging (MRI) being particularly valuable in detecting early SIJ inflammation. Treatment aims to relieve symptoms and slow disease progression, with non-steroidal anti-inflammatory drugs (NSAIDs) and biologic therapies playing a central role. Physical therapy and structured exercise programs are critical in maintaining flexibility and function [2].

The association of human leukocyte antigen (HLA)-B27 with AS, a common disease, was independently first identified in 1973 by Schlosstein et al and Brewerton et al [7,8], and over the past 50 years, it has been recognized as a crucial genetic marker, playing a significant role in the 2009 classification criteria for axSpA [9]. Several laboratory techniques are available for HLA-B27 evaluation, including flow cytometry, polymerase chain reaction (PCR)-based genotyping, and serological assays [10]. Among these, real-time PCR (qPCR) has emerged as a highly sensitive and specific method, enabling the direct identification of HLA-B*27 alleles from genomic DNA [11]. This technique is widely preferred due to its rapid turnaround time, high accuracy, and ability to differentiate between various HLA-B27 subtypes [12]. The vast majority of patients with AS express HLA-B27, despite its relatively low frequency in the general population, where it occurs in approximately 6-8% [13]. HLA-B27 positivity is strongly linked to an earlier onset of AS and significantly influences the incidence and severity of extra-articular and musculoskeletal manifestations [14]. It is particularly prevalent among AS patients in northern European countries, with rates reaching 90-95% [13]. The prevalence of HLA-B27 varies significantly across different races and ethnicities. For instance, HLA-B27 positivity reaches 50% among Canadian Haida Indians, with an AS prevalence of 4.2%, whereas both HLA-B27 and AS are rare in Black populations [15].

The association between AS and HLA-B27 has been recognized, yet its role in the pathogenesis of AS remains unclear. Some studies have suggested that genetic factors also influence disease severity [16]. Several studies have investigated the prevalence of HLA-B27 among Turkish AS patients, revealing regional variations. Gunal et al reported a lower frequency of HLA-B27 in AS patients from Turkey, suggesting genetic and environmental factors influence its distribution [17]. More recently, Oral et al examined HLA-B27 prevalence in AS patients from the Diyarbakir region of southeastern Turkey, providing additional insight into regional differences [18]. Given Turkey's unique geographical position as a bridge between Europe and Asia, and the Thrace region's location at the intersection of these continents, the disease characteristics and allele frequencies of AS patients may differ from those reported in previous studies. Understanding these regional variations is crucial for improving diagnostic accuracy and optimizing disease management, ultimately contributing to more personalized treatment approaches in AS patients. Therefore, this study aimed to investigate the frequency of HLA-B27 positivity in 488 patients with AS from the Thrace region of Turkey.

Material and Methods

This retrospective study analyzed patients diagnosed with AS who attended the rheumatology outpatient clinic between 2022 and 2025, using data from hospital electronic medical records and clinical databases. The study was approved by the local clinical research ethics committee (approval number: 2024.324.12.08), and written informed consent was obtained from all participants in accordance with the Declaration of Helsinki.

Patient Selection and Clinical Assessment

A total of 488 patients were enrolled in the study. Patients were included if they met the modified New York criteria and/or the Assessment of Spondyloarthritis International Society (ASAS) classification criteria [19,20]. According to the modified New York criteria, a definitive diagnosis of AS requires the presence of bilateral sacroiliitis of at least grade 2 or unilateral sacroiliitis of grade 3 or 4, along with at least 1 of the following clinical features: inflammatory low back pain (iLBP), persisting for at least 3 months, limited mobility of the lumbar spine, or reduced chest expansion. The ASAS classification criteria for axial spondyloarthritis include either sacroiliitis on imaging plus at least 1 clinical feature of spondyloarthritis, or HLA-B27 positivity in combination with at least 2 clinical features such as arthritis, enthesitis, dactylitis, uveitis, IBD, a positive family history, good response to NSAIDs, or elevated C-reactive protein (CRP) levels. All patients included in this study met at least 1 of these classification criteria. Diagnosis

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was confirmed based on clinical history, physical examination, imaging findings, and HLA-B27 testing. Demographic data, including age and sex, were recorded along with disease duration, symptom onset, time to diagnosis, family history, use of biological agents, and response to NSAIDs. Clinical manifestations such as iLBP, peripheral arthritis, enthesitis, dactylitis, uveitis, psoriasis, IBD, and familial Mediterranean fever (FMF) were assessed and documented.

Disease activity and functional impairment were evaluated using the Bath Ankylosing Spondylitis Disease Activity Index (BASDAI) and the Bath Ankylosing Spondylitis Functional Index (BASFI) at the time of diagnosis. Laboratory tests, including CRP levels and erythrocyte sedimentation rate (ESR), were measured as part of routine clinical evaluation. The relationship between these recorded parameters and HLA-B27 positivity was analyzed. Patients with significant missing data on key variables (eg, HLA-B27 status, clinical or radiological findings) were excluded from the analysis. For cases with minor missing data, missing values were not imputed to avoid introducing bias.

HLA-B27 Genotyping

HLA-B27 allele detection and genotyping were performed using the Genvinset® HLA B27v5 kit (Blackhills Diagnostic Resources, Spain), a real-time PCR-based assay utilizing TaqMan® hydrolysis probes. This kit includes a Primer Mix specific for HLA-B27 and an internal control gene (HBB), a Master Mix containing polymerase, buffer, and dNTPs, a Positive Control (C+) consisting of HLA-B27-positive DNA, and a Reaction Blank (RB) as a negative control. Genomic DNA was extracted from whole blood using the QIAamp DNA Blood Mini Kit (Qiagen, Germany) with QIAcube (Qiagen, Germany), an automated sample preparation system ensuring high reproducibility and minimal contamination risk [21]. DNA purity and concentration were assessed using QIAxpert (Qiagen, Germany), with an optimal A260/280 absorbance ratio between 1.8 and 2.0 and a concentration range of 10-200 ng/µL [22]. The PCR assay was performed on a Rotor-Gene Q (Qiagen, Germany) real-time PCR system. HLA-B27 genotyping was conducted using real-time PCR with TaqMan® hydrolysis probes. The primers and probes were specifically designed for the detection of HLA-B27 alleles and the internal control gene (HBB), as provided in the Genvinset® HLA B27v5 kit. Fluorescent detection was performed using FAM-labeled probes for HLA-B27 and HEX/VIC-labeled probes for the internal control (HBB). The PCR reaction mix was prepared by combining 10 µL of Master Mix, 8 µL of Primer Mix, and 2 µL of sample DNA or control, resulting in a total volume of 20 µL per reaction. A volume of 18 µL of the reaction mix was aliquoted into each PCR well, followed by the addition of 2 µL of either sample DNA, Positive Control (C+), or Reaction Blank (RB). The plate was sealed, vortexed briefly, centrifuged to eliminate bubbles, and loaded into the Rotor-Gene Q thermal cycler for amplification. PCR amplification was performed under the following thermal cycling conditions: an initial denaturation step at 95°C for 5 minutes, followed by 40 cycles of denaturation at 95°C for 10 seconds and annealing/extension at 64°C for 30 seconds, during which fluorescence signals were recorded. The final hold step was set at 15°C indefinitely. Fluorescence was measured in the FAM (HLA-B*27 detection) and HEX/VIC (HBB internal control) channels. Samples were classified based on their amplification patterns. HLA-B27 positivity was determined by exponential amplification in both the FAM and HEX channels with a Ct value <35. Samples with no FAM signal or a Ct >35 in the FAM channel but a strong HEX signal were classified as HLA-B27 negative. If no amplification was observed in the HEX channel, the sample was considered invalid due to possible PCR inhibition or DNA extraction failure, necessitating a repeat analysis. Quality control was ensured by including a Positive Control (C+), which confirmed assay sensitivity, and a Reaction Blank (RB) to verify the absence of contamination. If control samples failed to meet expected amplification patterns, the entire run was repeated. For statistical analysis, data were processed using Rotor-Gene Q Software (Qiagen, Germany). Ct values of ≤35 were considered valid, and borderline amplification cases were reanalyzed. Samples showing inconsistent results were retested to confirm their classification.

Radiologic Evaluation

All patients underwent radiographic assessment of the SIJ using pelvic X-rays and magnetic resonance imaging (MRI). The grading of sacroiliitis on X-ray was determined according to the modified New York criteria, with classification into grade 2 (minimal sclerosis and erosions), grade 3 (definite erosions with widening of joint space), or grade 4 (ankylosis). MRI scans were evaluated for bone marrow edema and structural damage, as per ASAS recommendations. Imaging results were independently reviewed by an experienced radiologist and confirmed by a rheumatologist to minimize interobserver variability.

Statistical Analysis

Statistical analyses were conducted using SPSS Statistics 27.0. Categorical variables, such as sex, ILBP, sacroiliitis grade, and comorbidities (arthritis, psoriasis, enthesitis, dactylitis, uveitis, IBD, FMF), were analyzed using the chi-square test or Fisher's exact test, depending on expected frequencies. Continuous variables, including CRP, ESR, BASDAI, BASFI, and age of disease onset, were tested for normality using the Shapiro-Wilk test. Non-normally distributed data were analyzed using the Mann-Whitney U test. Correlations between continuous variables and HLA-B27 positivity were assessed using Spearman's rank correlation coefficient. To evaluate the association between HLA-B27 positivity and sacroiliitis (X-ray and MRI findings), logistic regression analysis was performed, adjusting for

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Table 1. Association between HLA-B27 positivity and clinical parameters in patients with ankylosing spondylitis.

Variable	HLAB27 positive	HLAB27 negative	*P*-value
Gender (Male)	194 (62.27%)	118 (37.73%)	**0.020**
Inflammatory low back pain	199 (59.2%)	137 (40.8%)	0.97
Sacroiliitis in X-ray (grade 2)	65 (50.0%)	65 (50.0%)	**0.014**
Sacroiliitis in X-ray (grade 3)	92 (57.1%)	69 (42.8%)	**0.014**
Sacroiliitis in X-ray (grade 4)	129 (65.4%)	68 (34.5%)	**0.014**
Sacroiliitis in MRI	232 (56.3%)	180 (43.7%)	**0.001**
Arthritis	73 (58.9%)	51 (41.1%)	0.96
Psoriasis	20 (62.5%)	12 (37.5%)	0.85
Enthesitis	85 (60.7%)	55 (39.3%)	0.81
Dactylitis	10 (41.7%)	14 (58.3%)	0.108
Family history	72 (66.1%)	37 (33.9%)	0.13
Uveitis	51 (67.1%)	25 (32.9%)	0.17
IBD	12 (57.1%)	9 (42.9%)	1.00
FMF	8 (53.3%)	7 (46.7%)	0.82

HLA-B27 – human leukocyte antigen-B27; MRI – magnetic resonance imaging; IBD – inflammatory bowel disease; FMF – Familial Mediterranean fever; p<0.05 was shown as bold.

potential confounders identified based on previous literature and clinical relevance, including age, sex, disease duration, and inflammatory markers (CRP, ESR). These variables were included in the multivariable model if their p-value was <0.1 in univariate analysis. Results were expressed as odds ratios (OR) with 95% confidence intervals (CI), estimating the likelihood of sacroiliitis in HLA-B27 positive versus negative individuals. Additionally, ordinal regression analysis was applied to assess the relationship between HLA-B27 positivity and sacroiliitis grade, providing a more detailed evaluation of disease severity while adjusting for age, gender, and disease duration. A p-value <0.05 was considered statistically significant in all analyses.

Results

Demographic and Clinical Characteristics

Among the 488 AS patients included in the study, 63.93% were male and 36.07% were female. HLA-B27 positivity was observed in 59.43% (290 patients), while 40.57% (198 patients) were HLA-B27 negative. The mean age of the cohort was 45.70±11.19 years (range: 18-70 years). The mean age at disease onset was 26.5±7.5 years, while the mean age at diagnosis was 30.8±9.5 years, with a mean diagnostic delay of 4.3±3.8 years. The mean age at disease onset differed significantly between HLA-B27 groups, being 25.3±7.2 years for HLA-B27 negative individuals and 27.7±7.8 years for HLA-B27 positive individuals (p=0.021). A significant association was also observed between HLA-B27 positivity and sex (p=0.0202), with 54.55% of women (96 patients) and 62.27% of men (194 patients) being HLA-B27 positive.

Extra-Articular Manifestations and Family History

Peripheral arthritis was present in 25.4% of patients, psoriasis in 6.55%, enthesitis in 28.6%, dactylitis in 4.91%, uveitis in 15.5%, IBD in 4.3%, and familial FMF in 3.07%. A family history of AS was noted in 22.34% of patients. ILBP was observed in 90.85% of patients, with 59.2% of these being HLA-B27 positive. No significant association was found between HLA-B27 positivity and iLBP, arthritis, enthesitis, dactylitis, psoriasis, uveitis, IBD, FMF, or family history of AS (**Table 1**).

Laboratory Findings

The mean initial CRP level was 15.08±21.38 mg/L, with an interquartile range (IQR) of 14.55 (0.4-172). The mean initial ESR was 22.24±25.78 mm/h, with an IQR of 20. A significant relationship was found between HLA-B27 positivity and both CRP levels (p=0.020) and ESR (p=0.04).

Outcome Measures and Treatment Response

The response rate to NSAIDs among the patients was 63.3%, while the rate of biologic DMARD use in the cohort was 59.8%.

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No significant association was found between HLA-B27 positivity and clinical response to NSAIDs or biologic DMARD use.

The mean initial BASDAI score was 5.53±3.49, and the mean initial BASFI score was 5.05±3.50. A statistically significant association was observed between HLA-B27 positivity and BASDAI and BASFI scores (p=0.042 and p=0.044), indicating higher disease activity and functional impairment in HLA-B27 positive individuals.

Radiologic Evaluation

Regarding X-ray findings, 40.3% of patients had grade 4 sacroiliitis, 32.99% had grade 3 sacroiliitis, and 26.6% had bilateral grade 2 sacroiliitis. Among those with grade 4 sacroiliitis, 65.4% were HLA-B27 positive, while 56.3% of patients with sacroiliitis on MRI were also HLA-B27 positive.

A significant relationship was observed between HLA-B27 positivity and the grade of sacroiliitis on X-ray (p=0.016, OR: 1.518) as well as the presence of sacroiliitis on MRI (p=0.001, OR: 1.199).

Discussion

This study evaluated the frequency of HLA-B27 positivity in patients with AS from the Thrace region of Turkey and its association with clinical, laboratory, and radiological features. Among 488 AS patients, 59.43% were HLA-B27 positive, a rate lower than those reported in Western populations but comparable to findings from other Turkish cohorts. HLA-B27 positivity was significantly associated with earlier disease onset, male predominance, higher CRP and ESR levels, and more severe sacroiliitis on both X-ray and MRI, while no significant relationship was observed between HLA-B27 positivity and extra-articular manifestations. Similar to previous studies, HLA-B27 positivity correlated with younger age at disease onset and increased inflammatory burden, as indicated by elevated CRP and ESR levels. The association between HLA-B27 and sacroiliitis severity aligns with prior findings, reinforcing the role of HLA-B27 in radiographic disease progression. However, while some studies have reported a higher prevalence of extra-articular manifestations in HLA-B27 positive individuals, this findings did not support this association.

To the best of our knowledge, this is the first report examining HLA-B27 frequency in AS patients from Thrace region in Turkey. While the key clinical characteristics of Turkish AS patients were consistent with previous studies, some differences were observed in this cohort. The prevalence of HLA-B27 in this cohort was 59.43%, which is lower than rates reported in many Western populations but aligns with some prior studies conducted in Turkey.

There are varying opinions regarding the frequency of HLA-B27 in AS patients in studies conducted worldwide. In several previous studies conducted abroad, the rate of HLA-B27 positivity in AS patients was found to be over 81.5% [23,24]. Alamanos et al previously reported an HLA-B27 positivity rate of 80.5% in AS patients from northwest Greece [25]. In a recent study from Lebanon, Ziade et al assessed the prevalence of HLA-B27 in AS patients. Their findings, indicated a low HLA-B27 prevalence (41.1%) [26]. When looking at studies conducted in Turkey on this subject, Acar et al reported an HLA-B27 positivity rate of 90% in AS patients [27]. However, studies by Gunal et al and Fırat et al reported a rate of 70% [17,28], which is higher than the findings of the current study. Conversely, a recent study by Karakılıç et al reported an HLA-B27 positivity rate of 37.5% in AS patients [29]. Oral et al examined AS patients from Diyarbakir in Turkey recently and reported an HLA-B27 positivity rate of 92% [18]. These studies represent different regions of the country. The variability in HLA-B27 prevalence across studies, even within the same country, can be attributed to environmental and genetic differences among subregional populations. To gain clearer insights on this subject, it is thought that nationwide studies encompassing a larger population are needed. This variability underscores the importance of considering population genetics when evaluating disease prevalence. While HLA-B27 is strongly associated with AS globally, its frequency does not always correlate directly with disease susceptibility in different ethnic groups.

Studies in the literature on AS have indicated that it is 2-5 times more commonly diagnosed in men than in women[30]. The latest study highlights a gradual decrease in the male-to-female ratio in AS patients in Switzerland, from 2.57: 1 in 1980 to 1.03: 1 by the end of 2016 [31]. Similarly, in the current study, this ratio was 1.7 in the patient population. When examining the characteristics of AS in terms of sex, the literature reports that women with AS have lower HLA-B27 positivity than men, and that this positivity is associated with differences in AS presentation, such as radiological progression [32]. Existing data on the impact of HLA-B27 on the progression and extent of radiographic axial damage in AS patients remain inconclusive, primarily due to the variability in study designs and the different methods used to evaluate structural damage [33]. Additionally, studies in the literature have reported varying views on the relationship between HLA-B27 positivity and sacroiliitis on MRI. Recent research has indicated that HLA-B27 status influences the positivity of MRI at the SIJ, particularly in men [34,35]. However, a study from Berlin found a negative association between sacroiliitis and HLA-B27 in men, while no such association was observed in women [36]. In the current study, a significant relationship was observed between HLA-B27 positivity and sex, and a significant association was also found between radiological grading in the overall group and the detection of sacroiliitis on MRI in this cohort.

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Although no precise explanation can be provided for these observed differences, the potential role of unknown variables related to genetic and/or environmental factors, especially when comparing different genetic populations, cannot be ruled out.

Consistent with the onset age in the current study, a study by Feldtkeller et al reported an onset age of 25.1±8.5 years in AS patients [37], while another study conducted in Turkey defined the onset age as 23.5±8.9 years [17]. There are differing opinions in the literature regarding the relationship between HLA-B27 positivity and onset. While some studies have reported that individuals with HLA-B27 positivity have an earlier onset [38], others have described a negative relationship [39,40], and some studies have found no association between onset and HLA-B27 [28], the current study observed an earlier onset in HLA-B27 positive patients.

In terms of extra-articular manifestations that can be seen in the course of AS, studies in the literature mostly report that HLA-B27 is associated with uveitis regardless of its presence in the course of AS [41]. However, as in this study, some studies have not found a relationship between HLA-B27 and uveitis, leading to conflicting interpretations on this matter [42]. In this study, 32.9% of HLA-B27 negative individuals experienced at least 1 episode of uveitis. This finding suggests that more research is needed on the etiopathogenesis of uveitis observed in the course of AS. Regarding peripheral arthritis, Feldtkeller and colleagues, consistent with the findings of the current study, reported that peripheral arthritis is more frequently observed in HLA-B27 positive AS patients, although they did not find statistical significance [37]. On the other hand, Sonkar and colleagues observed a relationship between HLA-B27 positivity and involvement of the shoulders and knees [43]. The lack of a detected relationship between HLA-B27 and peripheral arthritis in the study may be explained by the limited patient population and ethnic background. The frequencies of other extra-articular findings observed in the study cohort were consistent with the prevalence of IBD (4-16%) [44,45], psoriasis (4-9%) [44,46], and enthesitis (25-58%) [47] reported in the literature, contributing to the robustness of the study's estimates. Additionally, the lack of a significant relationship between HLA-B27 and extra-articular manifestations observed in this study aligns with findings from other studies conducted in Turkey [17,28]. The lack of an observed relationship between iLBP and HLA-B27 is also consistent with the literature, as some studies have not found a significant association between axial symptoms and HLA-B27 [24].

Regarding the relationship between BASDAI and BASFI scores, CRP, ESR, and HLA-B27 positivity, some studies in the literature have reported that BASDAI and BASFI scores are higher in HLA-B27 negative AS patients [24]. Rosenbaum and colleagues, however, found an inverse relationship between HLA-B27 and BASDAI [48]. The findings in the literature regarding the relationship between CRP, ESR, and HLA-B27 positivity are conflicting [43,49]. In the current study, HLA-B27 positive individuals exhibited a higher AS disease burden, and significant relationships were found between the examined scores, CRP, and ESR. The contradictory findings compared to those observed in the literature can be explained by the small sample size. These differences may also reflect regional variations, study design discrepancies, or the complexity of AS, which may not always follow consistent patterns across different populations. Further larger studies are needed to clarify these inconsistencies and determine the true nature of these relationships.

Looking at studies in the literature, the use of biological DMARDs in AS patients has been reported as 46% in a study by Cooksey et al [50]. In the study by Kerola et al, this rate was reported as 35%, and similar rates have been observed in the general literature [51]. The high usage rate of biologics in this cohort could be attributed to several factors. One key consideration is the high patient demand for such therapies, which may be influenced by country-specific reimbursement policies. In regions where biological treatments are covered by healthcare systems, patients may have greater access to these therapies, leading to an increased utilization rate.

This study has several limitations that should be considered when interpreting the findings. First, the retrospective design may have introduced selection bias, as data were obtained from a single center, limiting the generalizability of the results to broader populations. Additionally, while HLA-B27 positivity was analyzed in relation to clinical and radiological features, potential confounding factors such as genetic background, environmental influences, and treatment history were not fully accounted for. Another limitation is the reliance on cross-sectional data, which does not allow for assessing the longitudinal impact of HLA-B27 on disease progression. Regarding methodological limitations, HLA-B27 status was determined using real-time PCR, which, while highly sensitive and specific, does not distinguish between different HLA-B27 subtypes, some of which may have varying disease associations. The study also relied on MRI and X-ray for sacroiliitis evaluation, but interobserver variability in radiographic grading can affect accuracy. Additionally, disease activity measures, including BASDAI and BASFI, are subjective and may be influenced by patient-reported variability. Despite these limitations, the study provides valuable insights into HLA-B27 prevalence and its clinical significance in AS patients from the Thrace region of Turkey, contributing to the understanding of regional differences in AS presentation. Future studies with larger, multicenter cohorts and prospective designs are needed to validate these findings and further explore the genetic and environmental factors influencing AS outcomes.

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Conclusions

This study assessed the frequency of HLA-B27 positivity in AS patients from the Thrace region of Turkey and its association with clinical, laboratory, and radiological features. The HLA-B27 positivity rate (59.43%) was lower than that reported in Western populations but consistent with previous studies in Turkey. HLA-B27 positivity was significantly associated with earlier disease onset, male predominance, higher inflammatory markers, and more severe sacroiliitis on imaging, supporting its role in disease progression. These findings underscore the diagnostic and prognostic value of HLA-B27 testing in risk stratification and disease management, while also highlighting regional variations in AS presentation and the role of HLA-B27 in disease severity. Identifying HLA-B27 positive patients with severe sacroiliitis may facilitate earlier intervention, improving outcomes. Further multicenter, prospective studies with larger cohorts are needed to confirm these associations and explore additional genetic and environmental factors influencing AS outcomes.

Data Availability

Data are available upon request.

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