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5. Impact of HLA-B27 on Patient Profile and Treatment Response in AS Patients Treated with Anti-TNF in Canadian Real-World

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Objectives: The human leukocyte antigen (HLA)-B27 allele is one of the strongest known genetic factors associated with the development of ankylosing spondylitis (AS), however, previous studies have shown that approximately 10-25% of AS patients are HLA-B27 negative (HLA-). The aim of this analysis was to compare the profile of HLA - and HLA+ AS patients initiating anti-TNF treatment in Canadian routine clinical care.

Method: : BioTRAC is an ongoing, prospective registry of patients initiating treatment with infliximab (IFX) or golimumab (GLM) for RA, AS, or PsA, or with ustekinumab for psoriasis. Patients eligible for this analysis included AS patients treated with IFX or GLM, enrolled since 2005 and 2010, respectively with available information on HLA B27 status. Descriptive statistics were used to assess patient and disease characteristics at Baseline and Month 12. Multivariate general linear models were used to assess the impact of HLA status on BASFI, BASDAI and ASDAS at Month 12 while adjusting for age, gender, disease duration, anti-TNF type, and baseline scores.

Results: A total of 147 HLA+ and 78 HLA- AS patients were included, of which 93 had available data at Month 12 (62 HLA+, 31 HLA-). Table 1 summarizes the baseline patient characteristics and disease parameters by HLA status. HLA+ patients were significantly younger compared to HLA- patients both at diagnosis (32.2 vs. 46.8 years; P=0.001) and at anti-TNF initiation (42.1 vs. 48.2 years; P=0.002). Furthermore, HLA+ patients had significantly higher disease duration (7.7 vs. 3.9 years; P=0.002) and were more likely to be male (69.0% vs. 42.1%; P<0.001). Geographic distribution was comparable between HLA+ and HLA- groups (P=0.886). With respect to disease parameters, baseline BASDAI, BASFI and ASDAS were significantly higher in the HLA- group (P < 0.05), as was the proportion of HLA- patients reporting very high ASDAS disease activity (62.5% vs. 38.2%). Mean baseline CRP levels, although higher in HLA- patients compared to HLA+ patients (16.7 vs. 10.5 mg/L), were not found to be significantly different between groups (P=0.085).
Upon adjusting for potential confounders, HLA+ patients experienced greater improvements from baseline to Month 12 in BASDAI (-2.13 vs. -0.24; P=0.008), BASFI (-1.64 vs. 0.11; P=0.030), and ASDAS (-0.95 vs. -0.26; P=0.067). At Month 12, ASDAS DA categories were found to be statistically comparable across both groups (P=0.396), although a lower proportion of HLA - patients reported inactive-moderate disease (30.0% vs. 51.2%).

Conclusion: In this Canadian real-world cohort, HLA- AS patients were found to be demographically distinct from HLA+ patients and present with more advanced disease at baseline. Furthermore, HLA- was identified as an independent predictor of worse treatment outcomes, highlighting the importance of early diagnosis and management of HLA- AS patients.