Do HLA-B27 positive patients differ from HLA-B27 negative patients in clinical presentation and imaging? Results from the DESIR cohort on patients with recent onset axial spondyloarthritis

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Background: HLA-B27 is associated with all types of spondyloarthritis (SpA). Its role in diagnosis is reflected by the inclusion of HLA-B27 in the Amor criteria for spondyloarthropathy and in the Assessment of SpondyloArthritis international Society (ASAS) classification criteria for axial SpA. HLA-B27 is also known to be associated with several features of activity and severity. However, its phenotype in very early axial SpA is still largely unknown.

Objective: To clarify the influence of HLA-B27 status on the phenotype of early axial SpA.

Methods: Seven hundred and eight patients with IBP of less than 3 years duration defined by Calin or Berlin criteria were recruited in the DESIR cohort, a multicenter study in France. Six hundred and fifty four fulfilled at least one of the SpA criteria sets (Modified New York (mNY), European Spondyloarthropathy Study Group (ESSG), Amor, and/or ASAS axial SpA) and were included in the analyses. Clinical, demographic and imaging parameters were compared between HLA-B27 positive and negative patients. Significant parameters in univariate differences between HLA-B27 positive and negative patients were tested in multivariate models explaining various outcomes

adjusted for age, gender, duration of inflammatory back pain, race and other potential confounders.

Results: Patients in our cohort had young age (mean 33.6, median 33.0 years) and short duration of symptoms (mean 1.5, median 1.4 years). They had high disease activity (mean Bath Ankylosing Spondylitis Disease Activity Index (BASDAI) 4.5, median 4.6), minimal radiographic spinal damage (mean modified Stroke Ankylosing Spondylitis Spinal Score (mSASSS) 1.1, median 0.0) and moderately affected physical function (mean Bath Ankylosing Spondylitis Functional Index (BASFI) 3.1, median 2.6). HLA-B27 was positive in 61.5% of the patients. In multivariate analysis, HLA-B27 was significantly and independently associated with a younger age at onset of IBP (regression coefficient (B)=-2.60; p=<0.001), less delay in SpA diagnosis (B=-1.02; p=0.01), more frequent uveitis (Odds ratio (OR)=2.63; p=0.01), MRI inflammation of the sacroiliac (SI) joints (OR=2.13; p<0.001), MRI inflammation of the spine (OR=1.59; p=0.04) and radiographic sacroiliitis (OR=1.87; p=0.003). MRI inflammation of the SI joints was shown to be an intermediate variable between HLA-B27 positivity and SI joints radiographic damage.

Conclusion: In this group of patients with early axial SpA with a symptom duration of 1.5 years, HLA-B27 is associated with earlier onset of IBP, less delay in diagnosis, uveitis, axial inflammation on MRI (spine and SI joints) and structural damage of the SI joints.