Background: Spondyloarthritis (SpA) is known to have high familial aggregation, with a positive family history of SpA being a strong risk factor for disease development, in particular for ankylosing spondylitis (AS). Despite this well-known characteristic of the disease, whether family history is associated with disease prognosis and treatment outcome has been much less studied. Patient characteristics predicting response to tumour necrosis factor alpha inhibitors (TNFi) in SpA include age, sex and high disease activity, but whether family history is predictive of TNFi treatment outcomes remains unclear.

Objectives: To assess if a family history of psoriatic arthritis (PsA), AS, or SpA in general is associated with a different drug survival and treatment response to TNFi in patients with AS and PsA.

Methods: Patients diagnosed with AS (N=1688) or PsA (N=3216) starting their first TNFi treatment between January 2006 and December 2017 were identified in the Swedish Rheumatology Quality Register (SRQ). Disease activity measures were extracted from SRQ at treatment start and at 3 and 12 months of treatment. Data on demographics and comorbidities were available through linkage to other national registries. Multiple imputation was applied to address missing data. Family history was defined as having at least one first-degree relative diagnosed with AS, PsA or any form of SpA in the National Patient Register at start of first TNFi. Analyses were made for AS and PsA index patients separately. Kaplan-Meier plots were used to compare drug survival, and hazard ratios for drug discontinuation were estimated with Cox regression adjusting for age, sex, disease duration and baseline disease activity. The change in disease activity from baseline to 3 months of treatment, and the proportion of patients remaining on treatment at 12 months and reaching low disease activity (LDA) with BASDAI (for AS) and DAS28-CRP (for PsA), were analysed in linear regression adjusting for age, sex, disease duration and baseline disease activity.

Results: A positive family history of AS was found in 14% of AS patients, and 12% of PsA patients had a family history of PsA. Characteristics such as age, sex and baseline disease activity were similar in AS patients with and without a family history of AS. Among PsA patients, those with a family history of PsA were to a larger extent female, with lower CRP but longer disease duration. No significant differences were seen in drug survival among patients with and without a family history of their respective disease (Figure 1), with hazard ratios for drug discontinuation of 1.03 (95% CI 0.84 to 1.27) in AS patients and 1.08 (95% CI 0.94 to 1.25) in PsA patients. Using family history of any form of SpA as exposure did not change this conclusion. The changes in disease activity at 3 months of treatment compared to baseline were similar between groups. At 12 months, 55.2% of AS patients with a family history were still on treatment and had a BASDAI corresponding to LDA, compared to 56.4% of AS patients without a family history. Among PsA patients, those with a family history had reached DAS28-CRP LDA, compared to 42.6% for those without a family history. For both AS and PsA, these differences were non-significant.

Conclusion: While family history of SpA is a strong predictor of disease development, family history was not found to affect neither TNFi drug survival nor treatment response in patients with AS and PsA in this register-based study.