A33 ELEVATED LEVELS OF CD5+ B CELLS IN SPONDYLOARTHRITIS PATIENTS

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Background We recently proposed that spondyloarthritis (SpA) is characterised by primary alterations in the innate rather than the acquired immune system. However, SpA patients develop a strong IgM antinuclear antibody profile upon tumour necrosis factor blockade. The characteristics of these autoantibodies are compatible with natural antibodies originating from 'innate' B cells rather than with genuine, pathogenic autoantibodies. As in mice natural autoantibodies are produced by CD5 expressing peritoneal B cells responding to innate immune signals, we aimed to quantify and characterise the CD5 B cell subset in SpA.

Methods We collected peripheral blood mononuclear cells of 17 SpA patients, 11 rheumatoid arthritis (RA) patients and 20 healthy controls. Subsets and activation markers were analysed using flow cytometry (FacsCanto, BD) and FlowJo software. CD5 and CD5 IgD+/CD27 B cells were sorted (FACSARIA, BD) (n=HC and n=SpA). Cells were cultured for 40 h with T cell dependent (interleukin 2 (IL-2)/CD40L/anti-IgM) or T cell independent (IL-2/CpG) stimuli and analysed for the expression of the activation marker CD80.

Results Total B cell numbers were similar between the three groups. Naïve (IgD+/CD27), memory (IgD−/CD27) and marginal zone-like (IgD+/CD27) B cell populations were not different between the groups. Also subclassification of the B cells according to CD38/IgD expression yielded no differences. In contrast, analysis of CD5 expression indicated an increased CD5 B cell population in SpA (22.6%) versus HC (13.6%) ($p=0.048$). No difference was observed between HC and RA patients. The difference in CD5 B cells between SpA and HC was most pronounced in the naïve subset (28.0% vs 12.8%, $p=0.009$) and the IgD+/CD27 subset (18.4% vs 10.5%, $p=0.006$). Expression of the costimulatory molecules CD80 and CD86 was lowered in CD5 versus CD5 B cells both in SpA and HC ($p<0.05$). In contrast, expression of the early activation marker CD69 was elevated in CD5 versus CD5 B cells both in SpA and HC ($p<0.05$). After both T cell dependent and T cell independent stimulation, sorted CD5 naïve B cells downregulated CD80 expression ($p<0.05$) whereas CD5 B cells upregulated CD80 expression ($p<0.05$).

Conclusion These data indicate a significant increase of CD5 B cells in SpA. Our preliminary data suggest that these cells could have an anergic phenotype. Further functional characterisation of this cell population is of particular interest in the context of a regulatory, IL-10 mediated function of these cells in the mice intestine and the association between SpA and inflammatory bowel disease in humans.