Pediatric Rheumatology

Poster presentation

FOXP3 expression in peripheral blood and synovial cells of patients with juvenile idiopathic arthritis: relationship with IL-17 at cytokine and molecular level

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Background

Recently, CD4+CD25+ FOXP3+ (Treg) cells have emerged as master regulator of immune responses, and their role as well as that of IL-17 producing lymphocytes (Th17), is under study in the pathogenesis of juvenile idiopathic arthritis (JIA).

Materials and methods

We have enrolled 58 JIA patients (polyarticular and oligoarticular disease) and 69 healthy controls. We examined CD4+CD25+FOXP3+ percentage (flow cytometry), FOXP3 and RORγt mRNA (RT-PCR) in peripheral blood mononuclear cells (PBMCs), and in synovial fluid mononuclear cells (SFMCs). FOXP3 median fluorescence intensity (MFI) of CD4+ T cells was also determined. Interleukin-17 levels were measured (ELISA) in stimulated PBMCs supernatants in 22 patients.

Results

JIA patients had a significant lower percentage of circulating CD4+FOXP3+ T cells (median: 5.6% ± 1.5) and displayed a concomitantly decreased FOXP3 transcript levels (2.7-fold) than age-matched healthy controls (8.5% ± 1.2; $P < 0.01$). In SFMCs of 14 JIA patients we found higher percentages of FOXP3+ T cells (median: 21.3% ± 7.5; MFI = 58 ± 12.4) and FOXP3 mRNA levels (7-fold) compared to their PBMCs counterparts (6.3% ± 2.0, $P < 0.001$; MFI = 23 ± 3.9). Higher amounts of IL-17 were found in PBMCs supernatants of patients when compared to controls ($p < 0.01$). An inverse significant correlation was observed between IL-17 levels and % of FOXP3+ cells, ($P = 0.016$, $r = -0.509$). RORγt mRNA levels were also higher in SFMCs of JIA patients as compared to their peripheral counterparts (3-fold), and were lower in the presence of higher FOXP3 levels.

Conclusion

These findings point to a Treg/Th17 balance as one important axis in JIA pathogenesis.