

Oral presentation

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7.2 Interleukin-17 (IL-17) secreting cells in synovial fluid express the "Th17" master transcription factor RORC and their numbers correlate with CCL20 levels within the joint

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from 15th Paediatric Rheumatology European Society (PreS) Congress
London, UK. 14–17 September 2008

Published: 15 September 2008

Pediatric Rheumatology 2008, **6**(Suppl 1):S12 doi:10.1186/1546-0096-6-S1-S12

This abstract is available from: <http://www.ped-rheum.com/content/6/S1/S12>

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Background

Th17 cells are a recently characterised, highly proinflammatory subset of T cells. We have shown that Th17 numbers are elevated in JIA synovial fluid and are significantly higher in extended than persistent oligoarthritis patients [1]. Interestingly we noted a high number of synovial T cells which produce both IL17 and interferon gamma (IFN γ). We also demonstrated that Th17 are actively recruited by the CCR6 ligand, CCL20, but the clinical relevance of this remained unclear.

Methods

16 JIA patients had serum and/or synovial fluid samples assayed for CCL20 and corresponding samples of SF mononuclear cells (SFMC) analysed for IL-17 expression. SFMC were sorted by flow cytometry by CCR4 and CCR6 expression and sorted cells were analysed for IL-17 and IFN γ expression by intracellular staining. Sorted cells were analysed for expression of the transcriptional regulator of Th17 cells, RORC variant 2, by Q-PCR.

Results

CCL20 levels were elevated in synovial fluid compared to serum (mean 74 pg/ml vs <5 pg/ml) and correlated with Th17 numbers in synovial fluid ($r = 0.74$, $p = 0.0055$). IL-17+CD4 T cells were limited to the CCR6+ fraction while IL-17+IFN γ + double positive cells were enriched within the CCR6+CCR4^{lo} fraction. There was a >10 fold increase in RORC2 expression in the CCR6+ compared to CCR4-/CCR6-CD4+ T cells.

Conclusion

These results suggest that IL-17 expressing T cells within the joint are bona fide Th17, (RORC+). Elevated levels of CCL20 within the joint may account for the enrichment of both classical Th17 and also the IL-17+ IFN γ + T cells seen in JIA.

References

1. Nistala K, Moncrieffe H, Newton KR, Varsani H, Hunter P, Wedderburn LR: **Interleukin-17-producing T cells are enriched in the joints of children with arthritis, but have a reciprocal relationship to regulatory T cell numbers.** *Arthritis Rheum* 2008, **58**(3):875-87.