

Poster presentation

## Role of V $\gamma$ 9V $\delta$ 2+ $\gamma\delta$ T cells in juvenile idiopathic arthritis

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### Introduction

T cells (TC) bearing V $\gamma$ 9V $\delta$ 2+  $\gamma\delta$  TC receptor (TCR), are a subset of innate CD4-CD8- TC pro-inflammatory and immunoregulatory TC recognizing non-peptidic phosphorylated mediator isopentenyl pyrophosphate (IPP) in the mevalonate pathway. The role V $\gamma$ 9V $\delta$ 2+ TC has never been explored in JIA joints.

### Patients and methods

Mononuclear cells (MC) isolated from synovial fluids (SF) of 47 patients with monoarticular (M, n = 11), pauciarticular (P, n = 19), extended (E, n = 5), polyarticular (Po, n = 2), systemic (S, n = 4), psoriatic (Ps, n = 4), enthesitis related (Sp, n = 2) JIA were dually stained with monoclonal antibodies to CD3 and variable (V) regions of the  $\gamma\delta$  TCR. Flow cytometry of fresh SFMC and following *in vitro* 10 days stimulation with 0.5 mg/ml IPP plus 100 IU/ml interleukin-2 (IL-2) was performed.

### Results

V $\gamma$ 9V $\delta$ 2+TC constituted  $6.8 \pm 1.3\%$ ,  $6.4 \pm 0.9\%$ ,  $4.6 \pm 1.0\%$ ,  $3.8 \pm 3.6\%$ ,  $5.6 \pm 1.6\%$ ,  $6.1 \pm 0.1\%$  and  $1.3 \pm 0.8\%$  of the SF CD3+cells in the M, P, E, Po, Ps, Sp and S JIA types respectively, and were significantly higher in ANA+ (n = 19) than ANA- (n = 22) patients ( $7.8 \pm 0.9\%$  vs  $4.1 \pm 0.6\%$  p < 0.004, Student T test). IPP and IL-2 activated SFMC showed a greater expansion of V $\gamma$ 9V $\delta$ 2+ TC of ANA+ (n = 12) than ANA- (n = 18) patients ( $61.2 \pm 17.1\%$  vs  $31.7 \pm 7.6\%$ , p < 0.005) and of patients with M or P (n = 11) relative to S, E or Po (n = 6) JIA ( $44.9 \pm 10.9$  vs  $16.2 \pm 10.5$  p < 0.02).

### Conclusion

SF V $\gamma$ 9V $\delta$ 2+ TC responses are stronger in M and P than in E, Po, and S JIA and in ANA+ than – patients, suggesting that a potent V $\gamma$ 9V $\delta$ 2+ TC response may augment acute inflammation while limiting progression to chronic and destructive arthritis.