Pediatric Rheumatology

Poster presentation

The TLR4 ligands MRP8 and MRP14 in the diagnosis and pathogenesis of systemic onset juvenile idiopathic arthritis

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Background

Fever of unknown origin (FUO) is a diagnostic challenge in children, especially differentiation of systemic onset juvenile idiopathic arthritis (SOJIA), an autoinflammatory syndrome associated with uncontrolled activation of phagocytes. In this study, we analysed the relevance of myeloid related proteins 8 and 14 (MRP8, MRP14), two endogenous activators of toll-like receptor 4, for early diagnosis and pathogenesis of SOJIA.

Materials and methods

Serum concentrations of MRP8/MRP14 were analysed in 60 SOJIA patients, in 85 patients with severe infections, in 40 patients with acute lymphoblastic leukaemia (ALL), 5 patients with acute myeloblastic leukemia (AML) and in 50 healthy controls. In addition, we investigated the link between interleukin-1β and MRP8/MRP14 in SOJIA.

Results

MRP8/MRP14 serum concentrations were significantly ($p < 0.001$) elevated in patients with active SOJIA (mean 14,920 ± 4,030 ng/ml) and distinguished them with high specificity from healthy controls (340 ± 70 ng/ml,), patients with severe infections (2,640 ± 720 ng/ml), ALL (650 ± 280 ng/ml) and AML (840 ± 940 ng/ml). MRP8/14 in serum of SOJIA is a strong inducer of interleukin-1β expression in phagocytes.

Conclusion

The analysis of MRP8/14 in serum is an excellent diagnostic tool for the initial diagnosis of SOJIA. MRP8/14 and IL-1 represent a novel positive feedback mechanism activating phagocytes via major signalling pathways of innate immunity during the pathogenesis of SOJIA.