AB0228

CHILDREN WITH EXTENDED OLIGOARTICULAR AND POLYARTICULAR JUVENILE IDIOPATHIC ARTHRITIS HAVE A CYTOKINE PATTERN FAVOURING B CELL ACTIVATION IN CIRCULATION SIMILARLY TO EARLY AND ESTABLISHED RHEUMATOID ARTHRITIS PATIENTS

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Background: The majority of polyarticular JIA (pJIA) and a large fraction of extended oligoarticular JIA (oJIA) patients fulfil classification criteria for rheumatoid arthritis (RA) in adulthood. B cells play several important roles in RA pathogenesis, but it is still unclear if the pattern of B cell involvement in pJIA and extended oJIA follows what has been described for adults with RA.

Objectives: The main goal of this study was to determine the concentration of cytokines potentially relevant for B cell activation in serum from children with pJIA and extended oJIA when compared to children with persistent oJIA, adult JIA, early and established RA patients.

Methods: Serum samples were collected from children with extended oJIA (n=8), persistent oJIA (n=6), pJIA (n=6), adult JIA (n=8), untreated early RA (< 1 year of disease duration, n=12), established RA patients treated with synthetic DMARDs (n=10) and two corresponding groups of age- and sex-matched healthy donors (children, n=6 and adults, n=10). A proliferation-inducing ligand (APRIL), B-cell activating factor (BAFF), interleukin (IL)-6 and IL-21 serum levels were measured by ELISA.

Results: Children with extended oJIA, early and established RA patients had significantly higher BAFF serum levels when compared to controls, but no significant differences were observed in children with persistent oJIA, pJIA and adult JIA when compared to all groups included. APRIL serum levels were significantly increased in all patient groups when compared to controls, except in adult JIA, who had similar APRIL concentrations in comparison to controls. In addition, children with extended oJIA and pJIA had significantly higher APRIL serum levels when compared to adult JIA. IL-6 serum levels were significantly increased in children with extended oJIA, pJIA, early and established RA when compared to controls, but no significant differences were found in children with persistent oJIA and adult JIA patients. IL-21 serum levels were significantly increased in early RA when compared to controls, but no significant differences were observed between any of the other groups included.

Conclusion: The similarity in B cell cytokine pattern found between extended oJIA, pJIA, early and established RA patients, contrarily to what was observed in persistent oJIA, suggests an early B cell involvement in the pathogenesis of extended oJIA and pJIA as described for RA.

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AB0229

RELATIVE MONOCYTE SUBSET DIFFERENCES BETWEEN JUVENILE- AND ADULT-ONSET SYSTEMIC LUPUS ERYTHEMATOSUS

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Background: 15-20% of patients with Systemic Lupus Erythematosus (SLE) develop the disease in childhood or adolescence (Juvenile-onset SLE, JSLE)¹. Whilst it is recognised that JSLE is often more severe than adult-onset SLE², there is a lack of knowledge related to differences in the disease pathogenesis. Peripheral blood CD14⁺ monocytes are thought to play a role in lupus development. CD16⁺ Non-classical and

Intermediate monocyte subsets, producing inflammatory cytokines and contributing to T-cell activation and B-cell proliferation, are enriched in adults with SLE³. Furthermore, CD16⁺ Classical monocytes are important for phagocytosis of apoptotic cells - a process known to be aberrant in lupus- contributing to the generation of autoantibodies. Thus we hypothesised that monocyte subsets could be differentially dysregulated in SLE and JSLE and relate to the disparities seen in pathogenesis and clinical presentation.

Objectives: To compare relative percentages of classical, intermediate and non-classical monocyte subsets in patients with SLE and JSLE.

Methods: Peripheral blood from female patients with SLE (n=17) and JSLE (n=23) was collected at the UCLH rheumatology clinics after obtaining informed consent. In depth phenotyping of peripheral blood mononuclear cells was performed using multiparameter flow cytometry. GraphPad Prism was used for Mann-Whitney U-tests and Spearman's Correlations, and 'R' for logistic regressions.

Results: Non-Classical CD14^{dim}CD16⁺⁺ (p=0.007) and Intermediate CD14^{high}CD16⁺ (p=0.039) monocytes had significantly increased frequencies in SLE patients compared to those with JSLE while no significant differences were seen in Classical CD14^{high}CD16⁻ monocyte percentages between groups. Interestingly, non-classical monocytes correlated positively with age (p=0.006, rho=0.431), while classical monocytes negatively correlated with age (p=0.042, rho= -0.323), suggesting a relationship between age and increasing proinflammatory monocyte phenotype. No relationship was observed between dsDNA titre or C3 levels and monocyte subset frequencies in SLE or JSLE patients. Classical monocyte frequencies negatively correlated with ESR (p=0.027, rho= -0.323) in JSLE patients, but this correlation was lost when JSLE and SLE were grouped together, or when SLE was examined in isolation. Increased percentages of non-classical monocytes were associated with a higher odds of adult onset SLE relative to JSLE, after adjusting for the effects of disease activity (SLE-DAI) (OR= 1.137, 95% CI= 1.021- 1.266, p= 0.018).

Conclusion: Pro-inflammatory CD16⁺ subset percentages were higher in adults and increased with age. Studies have shown a similar correlation in healthy adults⁴, suggesting that age-related differences in baseline immune cells may underpin differing mechanisms of monocyte involvement in lupus pathogenesis.

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AB0230

CYTOKINE SIGNATURE DOES NOT CORRELATE WITH PAIN OR DISEASE ACTIVITY IN WELL CONTROLLED ERA

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Background: Inflammation is a mediator and primary driver of joint damage in juvenile idiopathic arthritis (JIA). Musculoskeletal pain can be experienced in the presence or absence of inflammation. Enthesitis related arthritis (ERA) is a subtype of JIA characterised by inflammation of the spine, enthesitis, and peripheral joints. Cytokines and numerous other regulatory molecules are implicated in pain and inflammation, yet, to date, no reliable biomarkers have been identified.

Objectives: To assess if cytokine profiles correlate with pain or disease activity in patients with ERA.

Methods: 42 patients, with either a prior diagnosis of JIA or back pain, agreed to have a standard clinical MRI scan of lumbar spine, sacroiliac joints, and pelvis and to donate serum. Serum was also collected from 12 volunteer age matched healthy controls. Serum was analysed using a bead-based multiplex assay (Luminex) for the concentrations of the