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DIFFERENCES IN THE CYTOKINE PROFILES OF CORD BLOOD MONONUCLEAR CELLS FROM ALLERGIC AND NON-ALLERGIC INFANTS

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Objectives and Study: Allergy afflicts one third of children, negatively impacting their quality of life and generating a significant socio-economical burden to society. To this day, this disorder remains difficult to diagnose early in very young patients, and there is no predictive test available. The objective of this study was to determine whether we could identify predictive signs that a child may be at risk of developing allergies.

Methods: To this end, we recruited a cohort of 300 patients, which we followed from birth to 36 months of age. More specifically, the patients were given a clinical exam at birth and at 2, 6, 12, 18, 24 and 36 months of age, with skin prick tests at 6, 18 and 36 months, in order to have a record of their medical history and determine whether the children were allergic or not. In addition, mononuclear cells were isolated from cord blood samples at birth and from peripheral blood samples at 2, 6 and 18 months of age, to analyse their cytokine and chemokine production.

Results: We confirmed the influence of a family history of allergy, particularly regarding the number of allergic people among first degree parents (1.42+/-0.94 in allergic children vs 0.94+/-0.83 in non allergic, $p<0.01$). In addition, we found that a higher proportion of allergic children had taken acetaminophen more than twice over the first 18 months of life (28% vs 11.5% for non allergic children, $p=0.019$) and had suffered more than 3 infections over the first 18 months of life (64% vs 40%, $p=0.009$), both parameters being independent. Neither the mode of delivery nor breastfeeding, ibuprofen or antibiotics seemed to have had an impact on the onset of allergy. Interestingly, we found significant differences in the cytokine profiles of allergic and non-allergic children, particularly in the cord blood samples, with an overall lower cytokine production in cells from allergic patients. Indeed in these patients, we found lower levels of IL-4, IL-9, IL-15, IL-17, IL-1ra and MIP-1a following stimulation when compared to the unstimulated samples, with at least three different stimuli.

Conclusion: Some of these cytokines have not yet been fully explored and could open new avenues in unravelling the physiopathology of paediatric allergy, leading to new prevention strategies. In addition, the fact that most of these markers can be found in cord blood samples is of particular interest as cord blood can easily be taken without further invasive manipulation of the child and it would offer a very early evaluation of the risk to develop allergies.

Disclosure of Interest: None Declared