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| **Cord blood granulocyte levels are associated with severe bronchiolitis in the first year of life** |
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| **Introduction/Aim:** Bronchiolitis is a leading cause of infant hospitalisation in the first year, and it primarily affects previously healthy infants. Certain risk factors like premature birth and maternal asthma during pregnancy are known, yet their impact on the nascent immune system and its association with bronchiolitis hospitalisation remains unclear. Here we assess cord blood immunophenotype in infants born to asthmatic mothers participating in the NHMRC-funded Breathing for Life Trial (BLT) to better understand their susceptibility to bronchiolitis hospitalisation within the first year of life.**Methods:** Cord blood from 89 BLT participants was collected into EDTA tubes and processed within 6 hours of birth. Cells were fixed overnight after being stained in whole cord blood for Eosinophils (CD45+CD16-CD193+) and neutrophils (CD45+CD193-CD16+). Samples were acquired on a BD LSRFortessa X-20 flow cytometer and analysed using FlowJo software. Medical records were reviewed for infants who visited the emergency department or were admitted to John Hunter Children’s Hospital within the first 12 months of life. Statistical analyses were conducted using Stata IC 16.1.**Results:** Logistic regression adjusted for c-section delivery, heart rate deceleration during delivery, gestational age, and infant sex revealed an association between eosinophil levels in cord blood and bronchiolitis hospitalisation within the first 12 months of life with an Area Under the Curve (AUC) of the Receiver Operating Characteristic (ROC) curve of 0.90 p=0.016. Neutrophil levels negatively associated with bronchiolitis hospitalisation (ROC AUC 0.90 p=0.018). **Conclusion:** This is the first report that increased eosinophil levels and decreased neutrophil levels in cord blood might indicate infants at risk of severe bronchiolitis, potentially leading to hospitalisation within their first 12 months of life. **Grant Support:** NHMRC, Hunter Children’s Research Foundation, Rebecca L Cooper Research Foundation, Priority Research Centre GrowUpWell. |