DISTINCT EXPRESSION OF INHIBITORY IMMUNE RECEPTORS ON NEONATAL INNATE IMMUNE CELLS

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Background and aims: Neonates are at risk for severe infections, due to quantitative and qualitative defects in the neonatal immune system. Inhibitory immune receptors are important regulators of innate immune function. To better understand the role of inhibitory receptors in dampening neonatal immune responses, we sought to determine whether the expression pattern of seven inhibitory immune receptors differs between neonatal and adult innate immune cells.

Methods: The expression of the inhibitory receptors LAIR-1, SIRT-1, CD31, SIRPalpha, Siglec-9, CD200R and IREM-1 was analyzed by flow cytometry on monocytes, neutrophils and NK cells in cord blood and 1 month-old neonatal blood and compared to adult blood.

Results: The expression of LAIR-1 was decreased on neonatal monocytes compared to adults (mean MFI 878 vs. 1196, $p < 0.05$). IREM-1 was decreased on cord blood and neonatal monocytes (166 and 240 vs. 272, $p < 0.05$). Siglec-9 was increased on cord blood neutrophils (349 vs. 225, $p < 0.01$) and SIRPalpha was decreased on neonatal neutrophils (2376 vs. 3116, $p < 0.05$). A small population of neonatal and cord blood neutrophils expressed LAIR-1, which was not detected in adults (1.40% vs. 0.4%, $p < 0.01$). CD31 was decreased on neonatal NK cells (157 vs. 298, $p < 0.001$).

Conclusion: We demonstrate distinct expression of inhibitory immune receptors on neonatal innate immune cells. Most inhibitory receptors were differentially expressed on at least one cell type. We speculate that distinct expression of inhibitory receptors plays an important role in regulation of the neonatal innate immune system during the first months of life.