

EFFECTS OF HYALURONIC ACID ON EXPRESSION OF TLR2 AND TLR4 ON CORD BLOOD MONOCYTES

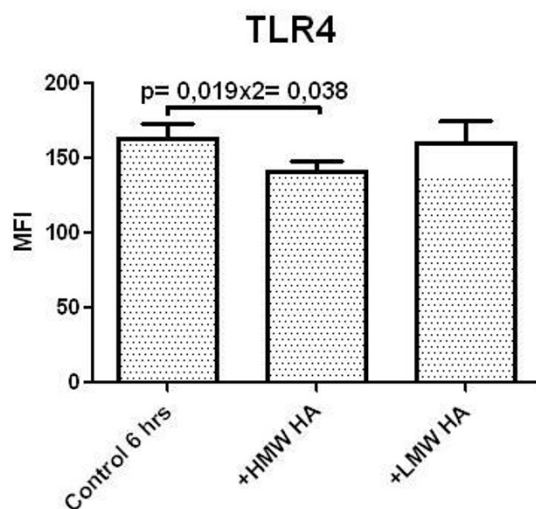
H. Østerholt^{1,2}, B.S. Lundeland^{3,4,5}, T. Sonerud^{1,6}, O.D. Saugstad², B. Nakstad^{1,7}

¹Dep. of Pediatrics, Akershus University Hospital, Lørenskog, ²Dep. of Pediatric Research, The National Hospital, ³Institute of Clinical Medicine, University of Oslo, Oslo, ⁴Division of Protection, Norwegian Defence Research Establishment, Kjeller, ⁵Dep. of Anaesthesiology, ⁶Institute of Clinical Epidemiology and Molecular Biology, Akershus University Hospital, Lørenskog, ⁷Institute for Clinical Medicine, University of Oslo, Oslo, Norway

Background/aim: Hyaluronic acid (HA) serves important biological roles in our body, and is a mediator of inflammation. HA can signal through Toll-like receptor (TLR)2 and TLR4. Our objective was to explore if the presence of HA could change the expression of TLR2 or TLR4 on cord blood monocytes. Blood was also stimulated with LPS in order to mimic a situation of neonatal infection.

Methods: 15 pregnant women volunteered. Human umbilical cord blood was obtained by venopuncture of the umbilical vein immediately after delivery. The stimulations were: 1) No stimulation, 2) LPS, 3) High-molecular-weight (HMW) HA, 4) Low molecular weight (LMW) HA, 5) LPS + HMW HA, 6) LPS + LMW HA. Tubes were incubated for 6 hours. TLR2/4 were analysed by flow cytometry. *p*-values < 0.05 were considered statistically significant.

Results: There were no significant changes in expression of TLR2 between groups. We found a significant decrease in TLR4 expression in the presence of HMW HA (Median fluorescence intensity: $141 \pm 7,3$ vs $163 \pm 9,8$, *p* = 0,038. (Paired-Samples T test, Bonferroni-corrected). See Fig. 1. There were no significant differences in TLR4 expression in LPS stimulated blood. Data are means \pm SEM.



[Figure 1]

Conclusions: We found evidence that HMW HA decreases expression of TLR4 in our model, and speculate if this correlates with an altered neonatal immune response.