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EVIDENCE THAT INTRAUTERINE GROWTH RESTRICTION MAY ENHANCE TYPE III COLLAGEN SYNTHESIS IN FULL-TERM PREGNANCIES

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Background and aims: N-terminal propeptide of type-III procollagen (PIIINP) is a marker of type III collagen synthesis, reflecting overall growth and tissue maturity. We aimed to prospectively investigate circulating PIIINP concentrations in intrauterine- growth-restricted (IUGR) and appropriate-for-gestational-age (AGA) mother/infant pairs at term.

Methods: Serum concentrations of PIIINP (a circulating marker of type III collagen synthesis) were measured by RIA in 40 mothers and their 20 asymmetric IUGR (adjusted birthweight $\leq 5^{\text{th}}$ customized centile) and 20 AGA singleton full-term fetuses and neonates on postnatal day 1 (N1) and 4 (N4). **Results:** Fetal, N1 and N4 concentrations were significantly higher in the IUGR group ($p=0.015$, $p=0.017$ and $p=0.003$, respectively). In both groups, maternal PIIINP concentrations were lower than fetal, N1 and N4 ones ($p< 0.001$ in each case). In a combined group, maternal PIIINP concentrations positively correlated with N1 and N4 ones ($r=0.321$, $p=0.043$ and $r=0.412$, $p=0.008$, respectively). The effect of gender, delivery mode and parity on PIIINP concentrations was not significant.

Conclusions: Contrary to our expectations fetal/neonatal circulating PIIINP concentrations were increased in IUGR cases as compared to AGA controls. We speculate that this fact should be attributed to the stress-related IUGR state, responsible for induction of tissue maturation. Higher fetal/neonatal PIIINP concentrations as compared to maternal ones should be related to higher collagen turnover in the former. Lastly, positive correlations of PIIINP between mother and offspring could imply a transplacental passage of the protein.

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EFFECT OF ENTERAL SUPPLEMENTATION OF NEUTRAL AND ACIDIC OLIGOSACCHARIDES ON SERUM CYTOKINE LEVELS IN PRETERM INFANTS

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Introduction: Preterm have an immature immune system. Aim of this study was to determine the effect of a prebiotic mixture consisting of neutral and acidic oligosaccharides ($_{\text{SC}}\text{GOS}/_{\text{LC}}\text{FOS}/\text{AOS}$) on cytokine levels in the blood of preterm infants.

Methods: In a RCT, preterm infants (gestational age < 32 weeks and/or birth weight < 1500 g) received $_{\text{SC}}\text{GOS}/_{\text{LC}}\text{FOS}/\text{AOS}$ or maltodextrin (placebo) between days 3 and 30 of life. Cytokine levels (IL-1 β , IL-2, IL-4, IL-6, IL-8, IL-10, IL-17, IFN- γ , TNF- α) were analysed by a fluorescent bead-based multiplex immuno assay at 3 time points: before the start of the study, day 7 and day 14.

Results: In total, 113 infants were included. Baseline patient and nutritional characteristics were not different in the $_{\text{SC}}\text{GOS}/_{\text{LC}}\text{FOS}/\text{AOS}$ ($n=55$) and the placebo group ($n=58$). Enteral supplementation of $_{\text{SC}}\text{GOS}/_{\text{LC}}\text{FOS}/\text{AOS}$ did not change cytokine levels. There was a trend toward lower levels of IL-1 β ($P=0.05$, 95% CI 0.15-1.01) and TNF- α ($P=0.14$, 95% CI 0.18-1.26) in $_{\text{SC}}\text{GOS}/_{\text{LC}}\text{FOS}/\text{AOS}$ group compared with the placebo group. Adjustment for serious infectious morbidity did not change the results of the primary analysis.

Conclusions: There is a trend toward decreased levels of the pro-inflammatory cytokines IL-1 β and TNF- α after enteral supplementation with a prebiotic mixture consisting of neutral and acidic oligosaccharides. Increased pro-inflammatory cytokines are associated with multi-organ failure, chronic lung disease and white matter damage and therefore we speculate that a prebiotic mixture consisting of neutral and acidic oligosaccharides may improve clinical outcome in preterm infants.