ESTABLISHMENT OF INTESTINAL MICROBIOTA IN NEONATES

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Our group has been studying the establishment of intestinal microbiota of neonates in different clinical conditions, aiming to investigate the influences of these factors and the hospital environment on the gut microbiota of these infants. We evaluated the fecal microbiota of 44 neonates with abdominal wall defect or prematurity in a NICU. Samples were collected weekly until discharged from unit. Fecal microbiota composition was evaluated using MiSeq sequencing and qPCR. The results showed lower diversity in surgical newborns, with predominance of the Phyla Firmicutes (genera *Enterococcus* and *Streptococcus*) and Proteobacteria (genera *Acinetobacter*, *Stenotrophomonas*, *Escherichia* and *Enterobacter*). qPCR results showed reduced colonization by *Lactobacillus* and *Bifidobacterium*. Preterm newborns had a distinct profile, with higher diversity, and low abundance of pathogenic bacteria. In this context, measures to prevent clinical intercurrences are necessary in hospitals. Breastfeeding is important for newborn development and initial gut colonization. Administration of colostrum as oral immune therapy was already described as a safe, feasible and well tolerable therapy for newborns. To establish new therapies to maintain the balance of newborn´s gut microbiota during hospitalization period, we performed a longitudinal study with 10 preterm infants, between 28-34 weeks of gestational age, who received direct raw colostrum (RC group) or pasteurized colostrum from the human milk bank, (PC group) and analyzed the gut microbial composition during the first month of baby´s life. Stool samples were collect at: 1-4, 7 and 22 days of life. The samples were used to sequence the *16S rRNA* gene and quantify *Bifidobacterium* by qPCR. We observed a difference in microbial composition between groups, with predominance of Proteobacteria Phylum in PC group. A distinct microbial community was observed, with a more diverse one in RC group. A higher value of *Bifidobacterium* was noticed in feces from RC group, in the weeks following colostrum therapy. In conclusion, surgical infants had a different profile compared with healthy newborns. The long periods with antibiotic treatment, the absence of breastfeeding and the NICU environment itself may contribute to a dysbiotic gut microbiota. Colostrum therapy showed the symbiotic effects of HMO and milk bacteria in preterm infants treated with raw colostrum, and this therapy might be the differential prophylactic treatment for maintaining an eubiotic environment in gut mucosa from hospitalized newborn.

Keywords: intestinal microbiota, preterm newborns, colostrum therapy.