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Significant intestinal microbiota differences in biliary atresia infants with distinct clinical outcome

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Intestinal microbiota has been thought to be associated with human health and disease. Its impact on hepatobiliary disease in infancy such as extra-hepatic biliary atresia is of limited study. Our study aimed to figure out the association between changes in intestinal microbiota and the disease outcome of infant with biliary atresia. Two infants with biliary atresia received Kasai's operation before 60 days of age. The infant with good outcome had jaundice resolved gradually within one month and the other infant with poor outcome had progressive liver cirrhosis and finally underwent liver transplantation when 6-month-old. Their fecal samples were collected at two-time points with the interval of 1 month. Universal primers for the 16S variable regions V1-3 and V3-5 were used for Polymerase Chain Reaction (PCR) amplification. Sequences were aligned and microbiota composition was characterized compared to the Human Microbiome Project (HMP) database. All statistical tests were performed using SAS software v. 8 for windows. A significantly lower Shannon diversity index (entropy score) of the intestinal microbiota in patient with poor outcome was found compared to the one with good outcome. Patient with poor outcome has greater richness in phylum level of Bacteroidetes, while patient with good outcome has higher Proteobacteria. Other than decreasing in microbial diversity, there was an overall significant higher richness in Bacteroides ($P<0.01$) in patient with poor outcome and *Escherichia* in patient with good outcome ($P=0.03$). A significantly increased species composition of *Bifidobacterium breve* ($P=0.0159$) was found in the later phase of good-outcome patient compared to its early phase. In conclusion, the microbiota community was significantly different in biliary atresia infants with distinct outcome through correlated bile acid dysbiosis. The results will facilitate further studies of the interaction between the intestinal microbiota and hepatobiliary disease in children and infants.

Biography

Hsin-Yeh Lin has completed General Pediatrics training and is continuing her Medical training in Chang Gung Memorial Hospital. She is currently in her first year of Pediatric Gastroenterology and Hepatology Fellowship.

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