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Association between newborn infant microbiota and parental skin disease

JongHeon Park[1], Daewon Sim[1], Soyell Jung[1], Sook-Young Kim[1],
Je-Gun Joung[1,*], Man Yong Han[2,*]
[1]*Department of Biomedical Science, College of Life Science, CHA University*

[2]*Department of Pediatrics, CHA University School of Medicine*

**Corresponding author: jgjoung@cha.ac.kr, drmesh@gmail.com*

Atopy, a skin disease that occurs in infancy and childhood, is known to result from the interplay of environmental and genetic factors. Therefore, a comprehensive research approach, including the study of microbiome, is required. Identifying specific microbial species or patterns associated with atopic skin disease can provide valuable insights into the triggers of atopy.

We collected skin, nasal, and buccal samples from newborns using cotton swabs and conducted a pilot study on their microbiota. Microbiotas exhibiting significant differences between the test group (n=3) with atopic/skin disease in one of the parents and the normal control group (n=3) without skin disease were identified through 16S rRNA microbiome sequencing analysis. As a result, we found a high significance and ration of Actinobacteriota (Lawsonella and Cutibacterium) in the skin microbiota of the test group. In contrast, no significant results were observed in the samples from the nasal and buccal areas. Lawsonella and Cutibacterium, identified in the skin of the test group, are Gram-positive bacteria and their functions are associated with immune diseases. Lawsonella, a species commonly found in various internal inflammation and abscesses such as breast, liver, abdomen, and spine, is known to be closely related to the Corynebacterineae suborder. Cutibacterium, typically found in acne, is known as Cutibacterium.acnes.

These results suggest the possibility that parental skin diseases can affect newborns, and we plan to study how parents' skin diseases affect newborn microbiota through a follow-up study.