The Upper Airway Microbiome in Hispanic Children with Cystic Fibrosis

John Palla[1], Santosh Thapa[2], Alamelu Venkatachalam[2], Jessica K. Runge[2], Theresa Laguna[1], and Ruth Ann Luna[2]

[1]Ann and Robert H Lurie Children's Hospital of Chicago
[2]Texas Children's Hospital

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Abstract

Background: Hispanic people with cystic fibrosis (CF) have decreased life expectancy and earlier acquisition of *Pseudomonas aeruginosa* compared to non-Hispanic white individuals with CF. Racial and ethnic differences in the airway microbiome of CF may contribute to known health disparity, but have not been studied. The objective was to describe differences in the upper airway microbial community in Hispanic and non-Hispanic white children with CF. **Methods:** This prospective, observational cohort study of fifty-nine Hispanic and non-Hispanic white children with CF, ages 2-10 years old, was performed at Texas Children's Hospital (TCH) from February 2019 to January 2020. Oropharyngeal swabs were collected from the cohort during clinic visit. Swab samples underwent sequencing (16S V4 rRNA), diversity analysis, and taxonomic profiling. Key demographic and clinical data were collected from the electronic medical record and the Cystic Fibrosis Foundation Patient Registry (CFFPR). Statistical analysis compared sequencing, demographic, and clinical data. **Results:** We found no significant difference in Shannon diversity or relative abundance of bacterial phyla between Hispanic and non-Hispanic children with CF. However, a low abundant taxa- "uncultured bacterium" belonging to the order *Saccharimonadales* was significantly higher in Hispanic children (mean relative abundance=0.13%) compared to the non-Hispanic children (0.03%). Hispanic children had increased incidence of *Pseudomonas aeruginosa* (p=0.045) compared to non-Hispanic children. **Conclusion:** We did not find a significant difference in the airway microbial diversity between Hispanic and non-Hispanic white children with CF. However, we found a greater relative abundance of *Saccharimonadales* and higher incidence of *Pseudomonas aeruginosa* in Hispanic children with CF.

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