Cystic Fibrosis Research News

Title:
Prevalence, Risk Factors, and Sequelae of Asymptomatic *Clostridioides difficile* Colonization in Children with Cystic Fibrosis

Lay Title:
The Presence of *Clostridioides difficile* in Stool Samples of Children with Cystic Fibrosis

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What was your research question?
We sought to determine how often children with cystic fibrosis (CF) have *Clostridioides difficile* (*C. difficile*) in their stool without having diarrhea.

Why is this important?
*C. difficile* is a bacterium that can cause significant diarrhea. Patients with CF have many of the risk factors for infection with *C. difficile*, including antibiotic use and hospitalizations. However, they frequently tested positive for *C. difficile*, called colonization, but rarely develop *C. difficile*-associated diarrhea. There is concern that colonization can be associated with later
risk of developing *C. difficile* infection, other inflammatory conditions, or be related to the spread of *C. difficile* to other patients.

**What did you do?**
We enrolled 108 children with CF and tested their stool samples for the presence of *C. difficile*. We compared clinical characteristics and medical exposures between those patients who tested positive for *C. difficile* (colonized) and those who tested negative for *C. difficile*.

**What did you find?**
We found that 32% of patient stool samples tested positive for *C. difficile* (colonized) despite not having diarrhea. None of the patients developed a *C. difficile* infection with diarrhea in the follow-up period. Patients that had a higher body mass index (BMI) and exposure to certain antibiotics (cephalosporins, fluoroquinolones, and vancomycin) were significantly more likely to test positive for *C. difficile*.

**What does this mean and reasons for caution?**
This study shows that *C. difficile* colonization is common in children with CF, with nearly one-third of patients stool samples testing positive for *C. difficile*. Despite this, no patients had diarrhea from *C. difficile* infection during the follow-up period. Our results highlight that the patients BMI and exposure to antibiotics are related to their risk of *C. difficile* colonization. While we do not suggest changes to clinical care from this study, our results show the importance of considering *C. difficile* as a frequent and possibly transmissible bacterium present in the colon of children with CF.

**What’s next?**
We look forward to continuing to study the gastrointestinal microbiome in children with CF with focus on the role of *C. difficile*. Specifically, with the use of newer medications like CFTR modulators, we will track whether these medications will decrease how often children with CF are colonized with *C. difficile* or increase how often they develop *C. difficile*-associated diarrhea.

**Original manuscript citation in PubMed**