

Cystic Fibrosis Research News

Title:

EARLY RESPIRATORY VIRAL INFECTIONS IN INFANTS WITH CYSTIC FIBROSIS

Authors:

Ashley R Deschamp^a, Joseph E Hatch^b, James E Slaven^c, Netsanet Gebregziabher^c, Gregory Storch^d, Graham L. Hall^e, Stephen Stick^f, Sarath Ranganathan^{g,h,i}, Thomas W Ferkol^d, Stephanie D Davis^b

Affiliations:

^aUniversity of Nebraska Medical Center, Children's Hospital and Medical Center Omaha, Department of Pediatrics,

^bThe University of North Carolina at Chapel Hill School of Medicine, Department of Pediatrics,

^cIndiana University School of Medicine, Department of Biostatistics,

^dWashington University, St Louis Children's Hospital, Department of Pediatrics,

^eChildren's Lung Health, Telethon Kids Institute, Curtin University, School of Physiotherapy and Exercise Science,

^fUniversity of Western Australia, Telethon Kids Institute, Department of Pediatrics,

^gRoyal Children's Hospital Melbourne, Department of Respiratory and Sleep Medicine,

^hMurdoch Children's Research Institute, Infection and Immunity,

ⁱUniversity of Melbourne, Department of Paediatrics

What was your research question?

In infants with cystic fibrosis (CF), do early respiratory viral infections affect the development of lung disease?

Why is this important?

Respiratory viruses are common in all infants. In CF, respiratory viral infections are likely to last longer and lead to more disease complications. They may also increase the progression of lung disease. Understanding the role of viral infections in the development of CF lung disease during infancy is an important step towards developing early interventions.

What did you do?

We enrolled infants with CF and collected nasal swab samples to test for viruses. Swabs were collected at scheduled clinic visits and by the parents at home when the infants had respiratory symptoms. We performed bronchoscopy with lavage (a procedure to collect fluid

Cystic Fibrosis Research News

samples from the lungs) and infant lung function testing at 6 months of age. We recorded when these infants were admitted to the hospital or received antibiotics and also collected data about their respiratory symptoms.

What did you find?

Respiratory viruses were common in our infants with CF during their first year of life. Seventy six percent had at least one virus before they were 8 ½ months old. Rhinovirus (the main cause of the common cold) was the most common virus. Having a virus at any point prior to bronchoscopy increased the likelihood that we would find bacteria in the lungs. The infants with these bacteria present had higher markers of inflammation in their lung fluid. We also found that when doctors prescribed antibiotics for respiratory symptoms, a virus could be detected in about half of those cases.

What does this mean and reasons for caution?

Early respiratory viral infections may accelerate CF lung disease progression based on the link with lower airway bacteria and inflammation. During the time period we studied, infants only had one to two respiratory viruses, which is a limitation. Also, the study was not designed to look at how antibiotics affected the results. Evaluating samples and data at an older age would allow a more complete assessment of the impact of viruses on lung disease over time.

What's next?

We followed these children through 1 year of life and collected additional viral, bronchoscopy and lung function data. We also performed chest CT-scans at 1 year of age. We will use this additional data, along with gene sequencing of airway bacteria (microbiome), to compare changes over time and to generate a more detailed analysis of the impact of respiratory viruses on CF lung disease during infancy.

Original manuscript citation in PubMed

<https://www.ncbi.nlm.nih.gov/pubmed/30826285>