European Cystic Fibrosis Society

Journal of Cystic Fibrosis
The Official Journal of the European Cystic Fibrosis Society

Cystic Fibrosis Research News

Title:

CHARACTERISTICS AND OUTCOMES OF ORAL ANTIBIOTIC TREATED PULMONARY EXACERBATIONS IN CYSTIC FIBROSIS CHILDREN

Authors:

Jordana E. Hoppe[a], Brandie D. Wagner[a,b], Frank J. Accurso[a], Edith T. Zemanick[a], Scott D. Sagel[a]

Affiliations:

[a]Department of Pediatrics, University of Colorado School of Medicine and Children's Hospital Colorado, Aurora, CO USA;
[b]Department of Biostatistics and Informatics, University of Colorado School of Public Health, Aurora, CO USA.

What was your research question?

The purpose of this study was to better understand how children with cystic fibrosis (CF) report feeling after being treated with oral antibiotics for worsening respiratory symptoms. We also wanted to better understand how their lung function changes and how bacteria and inflammation in mucus from the airways responds to oral antibiotics.

Why is this important?

Pulmonary exacerbations occur frequently in CF and are characterized by a change in respiratory symptoms including increased cough, increased mucus (sputum) and decreased exercise tolerance. Oral antibiotics are frequently used to treat an increase in respiratory symptoms in children with CF in the outpatient setting. However, little is known about the changes that occur with this treatment including both clinical and laboratory changes. We wanted to know whether oral antibiotics which we frequently prescribe to children with CF improve their symptoms and objective measures of lung function, infection and inflammation.

What did you do?

Children between 8 and 18 years of age being prescribed oral antibiotics for a pulmonary exacerbation were eligible to participate in the study. Individuals provided two sputum samples at the start of the study to measure bacteria and inflammation. The sputum was also tested for viruses. Pulmonary function testing was performed and quality of life questionnaires were completed (by parent or child depending on age). Each participant

completed two weeks of oral antibiotics, as prescribed by the primary CF provider. All testing, except for viral testing, was then repeated within one week of completing the antibiotic course.

What did you find?

Twenty-eight children completed both study visits. Children and parents reported improvement in respiratory symptoms in the quality of life questionnaires with oral antibiotic treatment. Most children had improvement in lung function to their prior baseline (best lung function measurement within 6 months of the exacerbation). However, about 20% did not improve back to their baseline lung function. A decrease in the number of bacteria identified in sputum was observed. There was also a decrease in markers of inflammation in the sputum. Viruses were detected in 11 out of 28 subjects (39%).

What does this mean and reasons for caution?

Significant improvements in patient reported outcomes, lung function, bacteria in the sputum and markers of inflammation were seen following a two-week course of oral antibiotics. However, there were a subset of patients who did not have improvement in lung function back to baseline. This study is limited by the small number of patients who participated. Our patients also had mild lung disease and therefore the results may not apply to those with more severe lung disease.

What's next?

There remains a gap in our understanding of treatment as approximately 20% of patients did not improve to baseline lung function. Understanding how lung function changes over time with multiple pulmonary exacerbations is important. We need to know if treatment outcomes can improve through clinical trials or quality improvement approaches.

Original manuscript citation in PubMed

https://www.ncbi.nlm.nih.gov/pubmed/?term=CHARACTERISTICS+AND+OUTCOMES+OF+ORAL+ANTIBIOTIC+TREATED+PULMONARY+EXACERBATIONS+IN+CYSTIC+FIBROSIS+CHILDREN