



Cystic Fibrosis Research News

Title:

THE USE OF ANTIMICROBIAL SUSCEPTIBILITY TESTING IN PEDIATRIC CYSTIC FIBROSIS PULMONARY EXACERBATIONS

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What was your research question?

We wanted to know if a certain type of testing of bacteria found in the lungs of children and adolescents with cystic fibrosis (CF) (known as antimicrobial susceptibility testing or AST) who are in hospital with a pulmonary exacerbation (PEX) is linked to improved clinical outcomes.

Why is this important?

Antibiotics are routinely used in CF to treat acute or chronic lung infections, but choosing the appropriate antibiotic can be challenging. Over time, antibiotic resistance develops in the bacteria found in the lungs of people with CF. AST is frequently used to help clinicians select antibiotics to target these resistant respiratory bacteria. However, AST is time-consuming, expensive, and not readily available at all CF centres. A better understanding of how best to use AST in clinical practice can help inform future AST guidelines and hopefully improve the lives of people with CF.

What did you do?

This study used data from the Pediatric Health Information System (PHIS) database to look at children and adolescents hospitalized for the treatment of a PEX. We looked at how often AST was used during a hospitalization, and if this was associated with a change in the antibiotics used to treat the PEX. When AST was used in hospital, this study also looked at if there were better clinical outcomes demonstrated by a longer time until the next PEX requiring a hospitalization and IV antibiotics.

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What did you find?

Out of 6,451 PEx-related hospitalizations in this study, AST was performed on average 39% of the time. The children and adolescents with CF for whom AST was done in hospital were older and more likely to have had at least two PEx needing hospitalization in the last 12 months. A change of antibiotic after the 5th day in hospital was more likely when AST was performed compared to when it wasn't, suggesting that AST results influenced antibiotic prescribing patterns. Using AST during a hospitalization for PEx was not linked to a longer time until the next PEx needing IV antibiotics.

What does this mean and reasons for caution?

Our results indicate that using AST increased the likelihood of changing antibiotics when children are hospitalized for a PEx, but did not increase the time to the next PEx needing IV antibiotics. Therefore, AST might not influence how often children and adolescents need to go into hospital for a PEx. However, those who were sicker when admitted for PEx treatment in this study were more likely to have AST performed, which might explain why using AST did not increase the time to next PEx requiring IV antibiotics. We also could not adjust our results for lung function or other important markers of disease severity.

What's next?

Using the newly-created CF Foundation Patient Registry (CFFPR)-PHIS linked database, we hope to further evaluate the use of AST in treating paediatric PEx. These assessments will include additional relevant clinical outcomes, such as the change in lung function from before to after the PEx and the return to baseline lung function.

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