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Cystic Fibrosis Research News

Title:

Diagnostic and prognostic significance of systemic alkyl quinolones for *P. aeruginosa* in cystic fibrosis: a longitudinal study

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What was your research question?

Can a new blood or urine test be used to detect the bacteria *Pseudomonas aeruginosa* (*P. aeruginosa*) in the lungs of people with cystic fibrosis by measuring small molecules that the bacteria produces during infection?

Why is this important?

Lung infection with the bacteria *P. aeruginosa* is common in people with cystic fibrosis and can result in increased cough and sputum, more hospital admissions and poorer lung function. It is important to pick up this infection quickly so we can treat people with antibiotics and try to prevent the bacteria staying in the lung permanently. These bacteria can be easily detected in sputum samples. However, detecting these bacteria is difficult in those who cannot cough up sputum, such as infants and children.

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What did you do?

We took a sample of sputum, blood and urine from 176 adults with cystic fibrosis and a blood and urine sample from 68 children with cystic fibrosis. We compared our new method for detecting *P. aeruginosa* using blood and urine samples to the results of cough swabs or sputum cultures which were taken at the same time. We also looked to see if this new test could indicate that people were likely to be infected with P. aeruginosa in the following year.

What did you find?

We found that by measuring these small molecules, we could use these blood and urine samples to accurately detect *P. aeruginosa* infection when compared to the results of cough swabs or sputum cultures. We also found that one of the molecules detected in the blood may indicate early infection with *P. aeruginosa* in both adults and children with cystic fibrosis.

What does this mean and reasons for caution?

In future, it is possible that we could use this new method to detect the bacteria *P. aeruginosa* by taking blood or urine samples from people with cystic fibrosis. However, further testing is needed in people with and without cystic fibrosis to confirm these findings. Currently this new method is expensive and time consuming. Lastly, only a few people acquired *P. aeruginosa* infection in the year after the study, so further testing would be needed to find out if this molecule is an early marker of infection.

What's next?

Further tests in other people with and without cystic fibrosis are needed to check the accuracy of the test and see if one of these molecules can give an early warning of *P. aeruginosa* infection. We are working on developing a urine dip stick test, similar to a pregnancy test, which in the future could be used to routinely monitor patients in clinic.

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