



Cystic Fibrosis Research News

Title:

Eradication of Persistent Methicillin-resistant *Staphylococcus aureus* Infection in Cystic Fibrosis

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What was your research question?

In this study, we investigated whether inhaling the antibiotic vancomycin was safe and effective for treating persistent methicillin-resistant *Staphylococcus aureus* (MRSA) infection in people with cystic fibrosis.

Why is this important?

MRSA has emerged as an important source of infection in the CF population. MRSA pulmonary infections in the CF population have dramatically increased over the last 20 years; now approximately 1 in every 4 people with CF have MRSA detected in their sputum. Studies have shown that chronic (long-term) and persistent MRSA infection is associated with a more rapid decline in lung function and decreased survival in people with CF. However, there are no guidelines regarding treatment of MRSA infection in this population, nor have there been any completed randomized controlled trials that examine treatment of persistent MRSA in people with CF.

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What did you do?

We treated 29 patients with 28-days of comprehensive treatment aimed to eradicate MRSA. All participants received oral antibiotics, topical decontamination (nasal ointments and skin cleaning), and environmental cleaning of bed linen, towels and surfaces. Half of the participants were randomly assigned to also receive treatment with inhaled vancomycin; the other half received inhaled placebo (a dummy drug with no active medication). We obtained sputum cultures, and measured pulmonary function and quality of life over a five month period to see the effects of our treatments. Our primary outcome was the difference in rates of MRSA eradication (where there is no longer any trace of the bug) one month after treatment.

What did you find?

The percentage of participants who had a sputum culture which did not grow MRSA one month after treatment was not different between those who received inhaled vancomycin and those who received the placebo. There were also no differences between these two groups in change in lung function, change in quality of life, or change in the amount of MRSA in the sputum at any measured time point. Four people who were treated with inhaled vancomycin had to stop this medicine because of either a drop in lung function or chest tightness.

What does this mean and reasons for caution?

This study suggests that among people with CF who have persistent MRSA infection, it is difficult to achieve eradication (negative cultures a month after treatment) despite aggressive MRSA treatment. It also suggests that inhaled vancomycin does not appear to increase MRSA eradication and may have significant side effects. However, the study was small and investigated only one dose of inhaled vancomycin.

What's next?

In this study we looked at a single course of vancomycin to eradicate MRSA. In the future, we recommend investigating the long-term use of inhaled vancomycin, similar to how long-term inhaled antibiotics are used to treat *Pseudomonas aeruginosa*.

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