Cystic Fibrosis Research News

Title:

Comparing the harmful effects of nontuberculous mycobacteria and Gram negative bacteria on lung function in patients with cystic fibrosis

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What was your research question?

How do different infections affect lung function in people with cystic fibrosis (CF)?

Why is this important?

Lung infections contribute to the decline in lung function over time in people with CF. It is important to understand the impact of different infections on the lung function of people with CF so that treatments can be prioritised, starting with the most serious threats to health. It is particularly important to understand how emerging infections such as nontuberculous mycobacteria (NTM) affect lung function since treatments are long-term and have severe side effects such as kidney failure.

What did you do?

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We analyzed lung function data from 432 children and adults with CF in Denmark over the period 1974 to 2014. People with CF in Denmark are seen by the clinical team every four weeks, and we looked at how different infections affected their lung function over time.

What did you find?

We saw that all the infections we recorded, except *M. avium* complex, were linked to a faster decline in lung function (measured using % FEV1). We found that Mycobacterium abscessus complex increased the annual rate of decline in lung function by 2 percentage points of FEV1 % predicted. This was followed in order by B. cepacia complex, A. xylosoxidans and P. aeruginosa. 70% of patients cleared their NTM infections. Clearing Mycobacterium abscessus complex restored the rate of decline of lung function to its previous rate.

What does this mean and reasons for caution?

In Denmark where infections are treated promptly with inhaled and intravenous therapies, we have shown how each chronic infection affects lung function. We saw that clearing Mycobacterium abscessus complex may restore the rate of decline in lung function to its previous rate, pointing to the important role of eradication therapy in CF.

What's next?

Further studies are needed in other settings to explore whether the eradication of Mycobacterium abscessus complex did return the rate of decline in lung function to the previous rate. It would be justified to look at how Gram-positive bacteria such as *Staphyloccocus aureus* and Aspergillus fit into the hierarchy of lung infections.

Original manuscript citation in PubMed

http://www.ncbi.nlm.nih.gov/pubmed/?term=Comparing+the+harmful+effects+of+nontuberculous+mycobacteria+and+Gram+negative+bacteria+on+lung+function+in+patients+with+cystic+fibrosis

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