European Cystic Fibrosis Society

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Cystic Fibrosis Research News

Title:

Mycobacterium abscessus treatment outcomes in cystic fibrosis: A single centre experience.

Lay Title:

Evaluating the treatment outcomes of the bacteria, *Mycobacterium abscessus*, in people with cystic fibrosis at the Royal Papworth Hospital, UK.

Authors:

[1,2]Ieuan Edward Shepherd Evans
[3,6]Aaron Weimann
[4]Timothy Baird
[5,6]Charles S Haworth
[3,5,6]R Andres Floto

Affiliations:

[1]Adult Cystic Fibrosis Centre, The Prince Charles Hospital, Brisbane, Queensland, Australia
[2]Faculty of Medicine, University of Queensland, Brisbane, Queensland, Australia
[3]Molecular Immunity Unit, Department of Medicine, University of Cambridge, Cambridge, UK
[4]Department of Thoracic Medicine, Sunshine Coast University Hospital, Queensland, Australia
[5]Cambridge Centre for Lung Infection (CCLI), Royal Papworth Hospital, Cambridge, UK
[6]Heart Lung Research Institute, University of Cambridge, Cambridge, UK

What was your research question?

We wanted to evaluate the treatment outcomes of people with cystic fibrosis infected with *Mycobacterium abscessus* under the care of cystic fibrosis centre with expertise in managing complex infections. Specific focus was attributed to determining if there were any significant factors governing treatment outcome.

Why is this important?

Despite significant advances in the care of people of cystic fibrosis since the introduction of *CFTR* modulators, in particular Trikafta/Kaftrio, opportunistic infections remain problematic. One of the major bacterial species continuing to cause concern is *Mycobacterium abscessus*, particularly given that infection with this organism has been associated with more rapid declines in lung function and often precludes lung transplantation in infected individuals. Treatment outcomes for *Mycobacterium abscessus* are notoriously poor, with optimal treatment strategies and the factors that govern treatment outcomes remaining largely

unknown. Despite advances in other aspects of care, antimicrobial options targeting *Mycobacterium abscessus* remain limited.

What did you do?

Using digital and paper medical records held at the Royal Papworth Hospital, Cambridge, UK, we evaluated the treatment outcomes of people with CF infected with *Mycobacterium abscessus* managed at the centre between 1st January 2004 and the 31st December 2016. Data was gathered on the type and duration of antibiotic therapy used as well as a range of other demographic features to help characterise the population studied. Information was also gathered on the long trajectories of these cohort with a particular focus on lung function and treatment side-effect burden.

What did you find?

Despite treatment in a specialist centre dealing with people infected with *Mycobacterium abscessus*, the overall treatment outcomes matched that of previous limited published data. Overall, a successful outcome of treatment, reflected in sustained clearance of *Mycobacterium abscessus*, was seen in 28% of people. Interestingly, there was no correlation with lung function decline and treatment outcome, though those people with poor outcomes, either chronic infection or death, did exhibit higher levels of systemic inflammation compared to those either clearing the bacteria or still undergoing treatment. Most importantly, having a high degree of side-effects secondary to antibiotic treatment was associated with a poorer treatment outcome.

What does this mean and reasons for caution?

Whilst treatment outcomes in our study remained poor and no antibiotic regimen used for treatment of *Mycobacterium abscessus* was found to be preferable or more effective, there is ongoing research to address this exact issue in the Finding the Optimal Regimen for *Mycobacterium abscessus* Treatment (FORMaT) Trial. Furthermore, these data precede the use of Trikafta/Kaftrio and there have been reports of improved outcomes in relation to non-tuberculous mycobacterial infection following the introduction of this modulator therapy. However, *Mycobacterium abscessus* remains a major pathogen irrespective of this and understanding the implication of aspects such as side-effect burden on treatment outcomes is vitally important in guiding future treatment.

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What's next?

Ongoing focus will involve understanding how the prevalence of *Mycobacterium abscessus* in people with CF is impacted by modulator therapy, evaluating the factors governing why some people continue to isolate non-tuberculous mycobacteria despite modulator therapy and improving therapeutic strategies and the use of novel antimicrobial agents to optimise the treatment outcomes.

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cfresearchnews@gmail.com