

Cystic Fibrosis Research News

Title:

Identification of *Mycobacterium porcinum* in Patients with Cystic Fibrosis: Pathogen or Contaminant?

Authors:

Grace R. Paul^a, Amy Leber^b, Christopher J. Nemastil^a, Kimberly J. Novak^a, Michael Brady^c, Stephanie Stack-Simone^d, Alexander L. Greninger^e, Stella Antonara^f

Affiliations:

^aDivision of Pulmonary Medicine, Nationwide Children's Hospital, Columbus, OH, USA

^bDepartment of Pathology and Laboratory Medicine, Nationwide Children's Hospital, Columbus, OH, USA

^cDivision of Infectious disease, Nationwide Children's Hospital, Columbus, OH, USA

^dDepartment of Epidemiology, Nationwide Children's Hospital, Columbus, OH, USA

^eDepartment of Laboratory Medicine, University of Washington, Seattle, WA, USA

^fDepartment of Laboratory Services, OhioHealth, Columbus, OH, USA

What was your research question?

We identified a new bacteria named *Mycobacterium porcinum* in the sputum cultures of a few of our patients with cystic fibrosis (CF). Our aim was to find out where the patients 'got' the bacterium from, and to check if *M. porcinum* caused any airway problems in people with CF.

Why is this important?

M. porcinum is a non-tuberculous mycobacterium found in drinking water. These bacteria can be found in sputum cultures when patients consume water from contaminated sources. In a complex disease like CF, where multiple bacteria can affect the lungs, it is important to know whether bacteria like *M. porcinum* worsen CF related lung disease, or not. After several of our patients had *M. porcinum* in their sputum samples, we decided to investigate further so that treatment could be started promptly if *M. porcinum* was identified in other CF patients. It was also important to know where patients had acquired the bacteria so as to prevent further exposure.

What did you do?

We reviewed previous sputum cultures from our patients with CF, and new sputum samples were collected and tested for *M. porcinum*. To identify where the bacteria came from, we



Cystic Fibrosis Research News

collected water from hospital rooms and ice machines, and tested them for *M. porcinum*. We also conducted special genetic testing of the bacteria to see if the *M. porcinum* found in patients and the environmental cultures matched. A thorough review of the patients' hospital records helped us understand if *M. porcinum* caused any lung problems.

What did you find?

At our institution, 14 people with CF had *M. porcinum* in their sputum cultures within three days of being admitted to the hospital. Even though these patients had CF related lung disease, our careful review of their lung function over one year did not show any decrease in lung function due to *M. porcinum*, including in three patients who later underwent lung transplantation. *M. porcinum* isolates from patients and hospital samples were similar, and genetic testing proved that the ice machines were the source of contamination. *M. porcinum* is more likely a quiet bacteria than a disease-causing bacteria.

What does this mean and reasons for caution?

Multiple bacteria can be found in sputum cultures from people with CF. It is important to know which ones can worsen lung function and which ones do not, so that treatment can be started correctly. Following validated guidelines for CF related lung disease helps doctors make the correct diagnosis and treat bacteria like *M. porcinum*. Periodic cleaning of water sources is important to prevent exposure to bacteria that can cause lung disease.

What's next?

We will continue to look for *M. porcinum* cultures from our patients with CF and provide education to patients, families, and hospital staff about this and other similar bacteria. Larger and long-term research studies are needed to further investigate uncommon bacteria that may be found in people with CF.

Original manuscript citation in PubMed

<https://www.ncbi.nlm.nih.gov/pubmed/31982335>