

Cystic Fibrosis Research News

Title:

Fatal disseminated *Rasamsonia* infection in cystic fibrosis post-lung transplantation

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What was your research question?

Disseminated fungal infections are a known serious complication in individuals with cystic fibrosis (CF) following lung transplantation. The fungus *Rasamsonia* has recently been isolated from the respiratory tract of CF patients frequently. However, its clinical relevance is still unknown.

Why is this important?

While *Aspergillus* and *Scedosporium* species are among the more common causes of invasive fungal infection in the CF population, it is important for clinicians to be aware of other emerging fungal species which may require markedly different antifungal therapy.

Cystic Fibrosis Research News

What did you do?

We present the first case of a 21-year old woman with CF who had a double lung transplant and then died from a widespread infection caused by *Rasamsonia aegroticola*. She had several complications after the lung transplant and was treated with medications to help the transplanted lungs function better; however these treatments, continued to weaken her immune system. Despite antibiotics and other treatments, she died from these complications. Her cause of death was investigated and revealed that there was fungal infection throughout her body, affecting her lungs, heart, right eye, intestines, and other organs. The fungus was identified as *Rasamsonia aegroticola* by a combination of morphological features and nucleic acid based molecular identification results. Prior to our case report, this fungus had never been reported to cause severe and fatal fungal infection in CF patients. Further testing using advanced molecular tools, discovered that *Rasamsonia* was present in the patient's respiratory tract long before her lung transplantation as well as post transplantation. The lung infection was severe and spread to her other organs because of her weakened immune system and inadequate antifungal treatment. The patient received an antifungal treatment, voriconazole, that treats other fungi such as *Aspergillus*, an additional fungus found in her lungs before the transplant. However, voriconazole is a weak antifungal against *Rasamsonia* species.

What did you find?

We describe the first laboratory-documented case of a fatal disseminated fungal infection caused by *Rasamsonia aegroticola* in a 21-year-old female CF patient post lung transplantation. Molecular analysis revealed the presence of the identical *Rasamsonia* strains in the patient's respiratory cultures preceding transplantation. Our report suggests *Rasamsonia* species may be important fungal pathogens that may have fatal consequences in immunosuppressed CF patients after solid organ transplantation.

What does this mean and reasons for caution?

This case demonstrates that individuals with CF with fungi in their lungs who undergo lung transplantation are at risk of widespread fungal infections if not treated adequately. Because specific antifungal medications work well against certain fungi and not for others, it is important to do high level testing for accurate identification of the fungus, such as nucleic acid based molecular identification methods, and antifungal drug susceptibility testing to determine which antifungal medication works best against the fungus.



Cystic Fibrosis Research News

What's next?

Our case highlights the importance of further investigation into risk factors for airway colonization with *Rasamsonia* in CF patients and strategies for prevention of invasive fungal infection after lung transplantation. Further study to understand this potential fungal pathogen in CF patients is warranted.

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