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Fungus among us: A poster child for diagnostic stewardship

In this issue of *Cleveland Clinic Journal of Medicine*, El-Baba et al address the clinical significance of *Aspergillus* species isolated from respiratory cultures.¹ The authors elegantly and succinctly summarize the clinical classification and diagnostic approach to *Aspergillus*-related lung disease.

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Interpretation of diagnostic studies, including microbiologic tests, should always be predicated on the clinical indication for testing.² So before interpreting the clinical significance of isolation of *Aspergillus* species from respiratory cultures, we should first ask whether the culture was clinically indicated, or whether this was an incidental finding.

Aspergillus species are ubiquitous in the water environments of the home and of health-care facilities.³ Therefore, while *Aspergillus* species can cause several forms of lung disease, some of which are life-threatening, incidental growth of this organism should be expected due to contamination or colonization. Contamination refers to the transient presence of this organism in the airways without causing illness, or its accidental addition to inanimate objects in the process of collection, transport, or processing in the laboratory. Colonization refers to the persistent presence of the organism in the airways, again without causing illness, but it can be one step away from resulting in clinical disease. These concepts apply to other human organ systems, including the skin and the urinary tract.⁴

■ EVOLVING DEFINITIONS OF FUNGAL INFECTIONS

Clinicians have struggled to define fungal infections at the bedside for several decades. The first international consensus defining opportunistic invasive fungal infections in immunocompromised patients with cancer and hematopoietic stem cell transplants was published in 2002.⁵ Diagnostic and management approaches to invasive fungal infections evolved rapidly over the last 2 decades, necessitating consecutive updates in 2008⁶ and 2020.⁷

These consensus definitions were intended to harmonize research studies but nevertheless have been widely adopted for clinical practice. With each update, the definition of the “probable” category expanded, while the scope of the category “possible” was contracted. The International Society for Heart and Lung Transplantation published its own standardized definitions pertaining to lung and heart transplant recipients.⁸

■ NEEDED: DIAGNOSTIC STEWARDSHIP

El-Baba et al¹ describe the diagnostic accuracy of the available imaging and laboratory tests, their limitations, and the risks associated with invasive bronchoscopic and surgical procedures necessary for histopathologic confirmation.

Our antifungal drug options are limited, and most agents have significant adverse effects and drug interactions and are expensive, further complicating management decisions. Practice guidelines by the Infectious Diseases Society of America,⁹ the American Society of Transplantation,¹⁰ and the American Society of Transplantation and Cellular Therapy¹¹ provide excellent guidance in these patient populations.

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If all patients in whom *Aspergillus* species grow from respiratory cultures were to be treated, the risks would outweigh the benefits. In making these decisions, clinicians should apply the principles of diagnostic stewardship² before applying the principles of antimicrobial stewardship.¹²

El-Baba et al provide a clinically driven, systematic approach to applying these principles. ■

■ **DISCLOSURES**

The author reports no relevant financial relationships which, in the context of his contributions, could be perceived as a potential conflict of interest.

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