

CHALLENGE CASES

Rapidly Deteriorating Digits

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A 51-year-old man with a past medical history of end stage renal disease (ESRD) secondary to Goodpasture’s disease, diabetes mellitus, hyperlipidemia and hypertension was transferred to our facility from an outside hospital for fever and gangrenous changes to his middle and ring fingers. His medical regimen included cyclophosphamide and prednisone.

The patient stated that he injured his right hand while cutting his lawn. Over the next 3 days he noted worsening pain, paresthesia, discoloration then numbness that spread from the tips to the base of the middle and ring fingers. He reported fevers over 101 F. Despite broad spectrum antibiotics, including vancomycin and piperacillin/tazobactam, amputation of the involved fingers was necessary.

Pathologic evaluation of the surgical specimens revealed gangrenous necrosis of the digits with angioinvasive fungal elements seen with H&E stain (Figure 1 and 2). A Gomori methenamine silver (GMS) stain revealed numerous branching hyphae (Figure 3). The morphology of the organism recovered in culture allowed the identification of the fungal organism causing the infection (Figure 4).

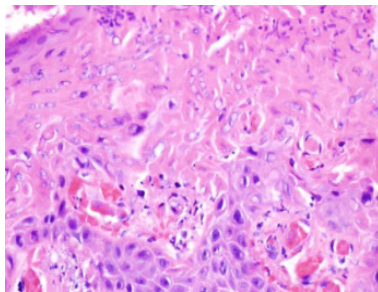


Figure 1

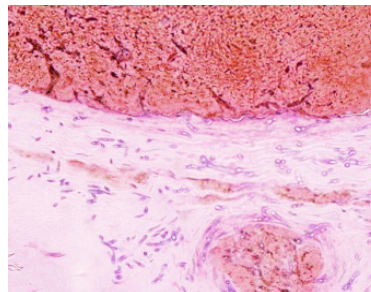


Figure 2

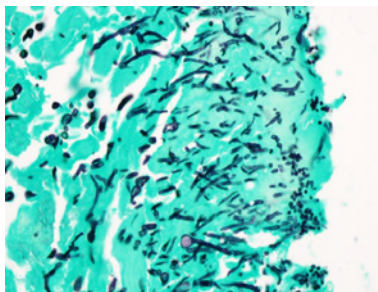


Figure 3

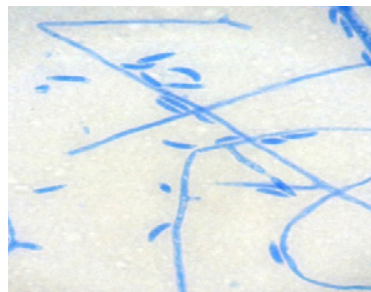


Figure 4

Q: What organism is most likely pathogenic in this situation?

- A. *Aspergillus fumigatus*
- B. Zygomycetes
- C. *Fusarium* species
- D. *Pseudoallescheria boydii*
- E. *Candida glabrata*

Answer: C**Discussion:**

This case demonstrates the dire consequences of immunosuppression and infection. While all of the answer choices should be considered in the differential diagnosis of fungal infections in compromised hosts, fusarium species are the only ones to demonstrate curved macroconidia in culture. Clinical associations include fungemia with sepsis, catheter-tip infection, and various skin infections including burn wounds.

Aspergillus species (A) classically reveal narrow branching, septate hyphae with a distinct margin and white apron in culture. These organisms are often angioinvasive and form cavitory lung lesions.

Zygomycetes (B), such as *Mucor* and *Absidia*, cause life-threatening nasal infections in people with diabetes. Their thick, wide branching, aseptate hyphae are suggestive of the diagnosis.

Pseudoallescheria boydii (D) is another narrow branching septate fungus with hyaline hyphae not easily distinguished from *Aspergillus* species. The asexual form of this organism is named *Scedosporium apiospermum*. Characteristic culture

morphology includes single pear-shaped conidia arising from slender “lollipop-like” conidiophores.

Candida glabrata (E) and other *Candida* species are frequent pathogens in immunocompromised hosts but do not form hyphae at body temperature thus only yeast forms are seen in tissue.

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