



Graft Infection by Yeast of *Mucor Circinelloides* in a Burn Patient

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Clinical Image Description

A 68-year-old man was admitted to the Burn Unit at University Medical Center with a 22% total-body-surface-area third-degree burn. He underwent tangential excision and placement of split-thickness of allograft over his back and bilateral legs. A graft infection of the right knee produced a yellow-to-brown exudate that was submitted for culture.

Potassium Hydroxide (KOH) preparation of the exudate demonstrated large, distorted hyphae and budding yeast of varying sizes (Figure 1) which initially grew as moist, flat yeast on Sabouraud dextrose media. The yeast was identified as *Mucor circinelloides* by Matrix-Assisted Laser Desorption Ionization-Time-Of-Flight Mass Spectrometry (MALDI-TOF MS, bio-Merieux, Durham, North Carolina, USA).

A rapidly growing, off-white mold subsequently appeared on the primary mycology media. Microscopic examination of the mold by lactophenol cotton blue staining revealed unbranched sporangiophores supporting round sporangia (rhizoids were absent). These features were consistent with *Mucor* spp. (Figure 2).

The mold colonies converted back into yeast when incubated under anaerobic conditions. The identity of the *M. circinelloides* was confirmed by genomic sequencing.



Figure 1: Yeast and hyphae of *Mucor circinelloides* (Brightfield microscopy, original magnification x200).



Discussion

M. circinelloides is the major human pathogen within the genus *Mucor* [1]. *M. circinelloides* may infect burned patients and has been responsible for lethal outbreaks in burn units [2]. Unlike other mucormycete molds, *M. circinelloides* is dimorphic, exhibiting mycelia in aerobic conditions and yeast in anaerobic/high-CO₂ conditions [3]. The ability to transform into yeast under anaerobic conditions may explain the pathogenicity of this organism.

Finding pleomorphic yeast and hyphae in burn wound exudate should lead to the clinical suspicion of *M. circinelloides* to allow rapid antifungal treatment of this dangerous mold.

References

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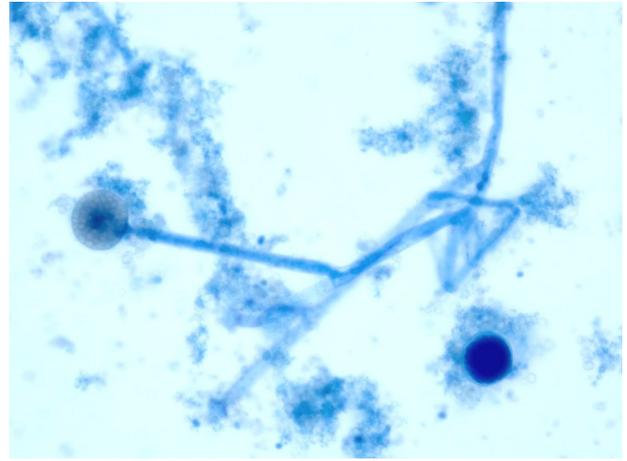


Figure 2: Examination of mold with features consistent with *Mucor* spp. (Brightfield microscopy, Lactophenol aniline blue stain, x100).