Case Report: Disseminated mucormycosis in an ostensibly immunocompetent patient

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Case Presentation & Clinical Course

- A 67-year-old man with history of COPD, T2DM, and CKD, presents with 3 weeks of URI symptoms refractory to a course of levofloxacin and steroids. He has a tender lesion on his posterior shoulder and is septic.
- His physical exam reveals a tender and erythematous lesion of the left posterior shoulder, and labs are remarkable for leukocytosis (19.5k), elevated ESR (70), hyperglycemia (316), and elevated A1c (7.3).
- He has no burns, trauma, recent travel, deferoxamine use, solid organ or stem cell transplant, chronic steroid exposure, IVDA, history of malignancy, or unusual hobbies.
- His only surgical history was placement of implanted pacemaker device several months prior.
- Over the following days, he remains febrile despite empiric antibiotics (vancomycin and meropenem), and complains of ongoing malaise
- On approximately day 3 of hospitalization, further examination reveals other similar lesions developing at distal sites (**Figure 2-4**)
- The differential diagnosis at this stage included Sweet's syndrome, calciphylaxis, and cutaneous vasculitis
- Concerns for cutaneous vasculitis prompted brief treatment with IV methylprednisolone
- Punch biopsy of skin lesions reveals classic broad, non-septate histopathology consistent with mucor (**Figure 5-6**)
- The patient is taken for urgent surgical debridement before being transferred to an outside institution specializing in burn care
- Patient is taken for further surgical debridement but ultimately passes away several days after transfer to burn center.

Images

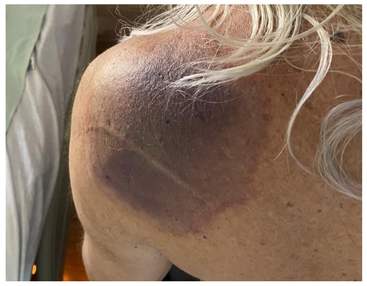

Figure 1: *Photo taken on Day 3 of hospitalization illustrating left shoulder lesion. The erythematous rim extended centrifugally with new development of internal ecchymosis.*

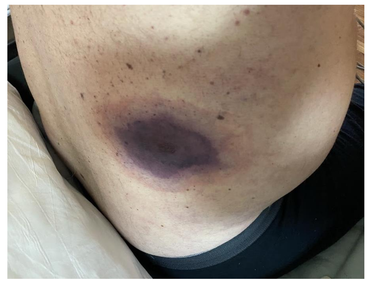

Figure 2: *Photo of right flank was also taken on Day 3. Note the outer erythematous rim with internal ecchymosis and a single bullae. Moreso than the shoulder lesion, this lesion highlights classic necrosis seen with cutaneous mucormycosis.*

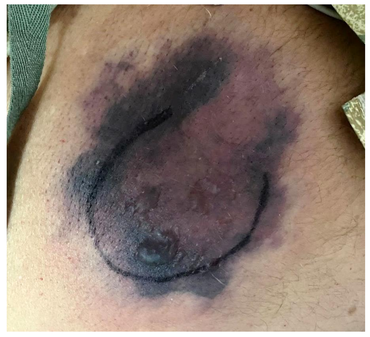

Figure 3: *Photo taken on Day 3. The erythematous rim extended centrifugally with development of an ecchymosis center of central necrosis*.

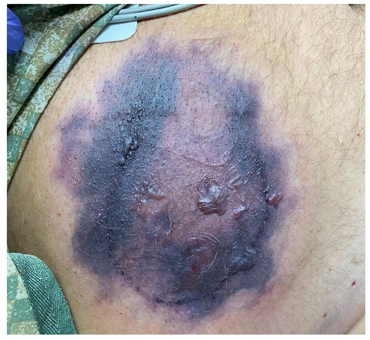

Figure 4: *Taken 3 hours after Figure 3, this highlights the speed of progression. It shows central clearing and enlargement of interior bullae.*

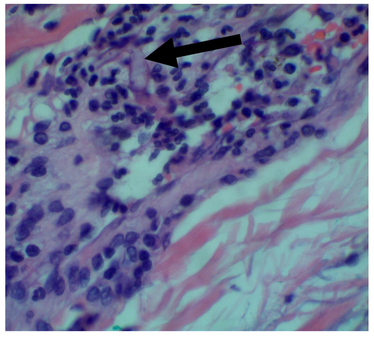

Figure 5: *This H&E slide of a skin biopsy demonstrates the classic broad and non-septate hyphae of mucor (arrow). The approximately 90-degree angle of branching helps differentiate it from the acute branching of aspergillus.*

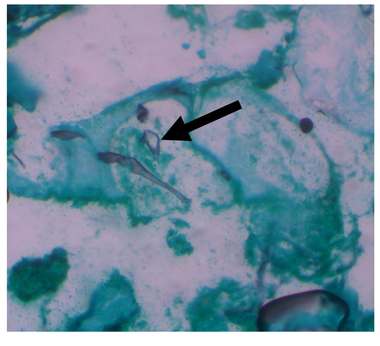

Figure 6: *The Grocott Methenamine-Silver Nitrate Stain (GMS) is useful in staining carbohydrates and thus highlights the polysaccharide-rich cell walls of fungi. This image was also obtained by skin biopsy and shows a mucor hypha en face (arrow) within a lymphovascular vessel.*

Discussion

- Mucor is an opportunistic fungal infection that classically affects only immunocompromised patients, especially those with uncontrolled diabetes.
- The most common location of infection is the rhinocrerebrum, followed by pulmonary infection and rarely cutaneous, disseminated, or gastrointestinal infection.
- Standard of care is primarily aggressive surgical debridement with IV amphotericin B infusion.
- Mucor can disseminate quickly via angioinvasive spread. This is highlighted by the appearance of new skin lesions distant from the initial site, and lesions with central necrosis.
- Although this patient had a history of well-controlled DM and brief steroid exposure, he lacked any additional risk factors for a disseminated or even cutaneous mucormycosis infection.
- Mucorymycosis has an overall mortality rate of 54%, although rates vary significantly according to site: rhinocerebrum (46%), pulmonary (76%), disseminated (96%).

Conclusion

Even in patients lacking classic mucormycosis risk factors or presentation, mucor should be considered in the differential diagnosis when presented with rapidly spreading, necrotic cutaneous lesions that fail to improve with empiric antibiotics. Suspicion for mucor should prompt urgent biopsy and emergent debridement upon recognition of classic histology on pathological samples. Given the particularly high mortality associated with a potential diagnosis of mucormycosis, prompt recognition and aggressive surgical management is imperative to achieve a more favorable prognosis and prevent severe disfigurement if not rapid decline.

References

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3. Roden MM, Zaoutis TE, Buchanan WL, et al. Epidemiology and outcome of zygomycosis: a review of 929 reported cases. Clin Infect Dis 2005; 41:634.

This research was supported (in whole or in part) by HCA Healthcare and/or an HCA Healthcare affiliated entity. The views expressed in this publication represent those of the author(s) and do not necessarily represent the official views of HCA Healthcare or any of its affiliated entities.

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