

Anti-Fungal

Treatment of mucormycosis with adjunctive hyperbaric oxygen: five cases treated at the same institution and review of the literature

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INTRODUCTION: Mucormycosis is an invasive fungal infection that affects decompensated diabetics, immunosuppressed patients and occasionally healthy individuals. Despite advances in anti-fungal therapy and surgical techniques, the morbidity and mortality remain high. Adjuvant hyperbaric oxygen therapy (HBO) has been proposed based on pathophysiology and several favorable clinical reports. **MATERIAL AND METHODS:** A chart review of mucormycosis patients referred to the HBO service was performed. Also an electronic search in Medline of relevant literature was undertaken. **RESULTS:** Five mucormycosis patients referred for HBO had complete charts available. Four had craniofacial involvement and one had left upper extremity involvement. The predisposing diseases were leukemia (n = 3), diabetes mellitus plus sarcoidosis (n = 1), and trauma (n = 1). All patients were managed with amphotericin B, surgical debridement and HBO. Survival was 60% (3/5) three months after the diagnosis was established. The literature was scarce but favors HBO. **CONCLUSION:** Considering the pathophysiology of mucormycosis adjuvant HBO therapy seems reasonable. However, the clinical experience is still too limited to make HBO part of the standard of care. Prospective, randomized, controlled trials will help to define the role of HBO in this devastating infection.

Limb-threatening necrotizing alternariosis salvaged by adjunctive hyperbaric oxygen therapy.

Lee SS, Sun JH, Chang LY, Ueng SW, Shih CH.

Scand J Infect Dis. 1998;30(2):194-6.

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We describe, to our knowledge, the first case of limb-threatening necrotizing alternariosis whose limbs were successfully salvaged by adjunctive hyperbaric oxygen therapy (HBO₂). This 58-y-old patient was immunocompromised with both diabetes and Cushing's syndrome. She suffered from necrotizing soft tissue infection of both legs caused by *Alternaria*. It was impossible to halt the progression of the invasive infection with standard anti-fungal treatment and aggressive surgical debridement. After the use of HBO₂, the wound was stabilized and eventually healed. Adjunctive HBO₂ in this case has demonstrated its role in the treatment of complicating necrotizing soft tissue infection caused by invasive fungal infection. The possible mechanisms may be the potentiation of immune responses and the enhancement of fibroblast proliferation.

Hyperbaric oxygen in the treatment of rhinocerebral mucormycosis.

Price JC, Stevens DL.

Laryngoscope. 1980 May;90(5 Pt 1):737-47.

Hyperbaric oxygen therapy was utilized in a case of fulminant mucormycosis of the maxilla, orbit and temporal bone. The patient had refused radical surgery and death seemed imminent in spite of aggressive medical management of diabetic ketoacidosis, amphotericin B and wide surgical drainage of the maxillary and ethmoid sinuses with orbital decompression. Hyperbaric oxygen was instituted on the following theoretical premises: 1. It would provide oxygenation of tissues distal to occluded arteries, thereby increasing local survival and decreasing acidosis, 2. resultant lessening of acidosis would slow or inhibit rapid growth of the organism, and 3. oxygen in sufficient concentration is fungicidal. The rapid progress of the mucormycosis was arrested. Cultures

of tissue prior to hyperbaric oxygen treatment produced heavy growth of Rhizopus, and tissues cultured after therapy grew only bacterial contaminants. The patient survived for 3 mo. only to succumb to Pseudomonas meningitis secondary to necrotic bone and epidural abscess of the middle cranial fossa. Rhinocerebral mucormycosis is a fulminant and frequently fatal disease. No survivors were reported before extensive surgical debridement was utilized. Survival improved to 50% with the addition of amphotericin B. Early diagnosis and correction of underlying acidosis has further improved this to 85%. The response to hyperbaric oxygen in this case report possibly introduces a promising new adjunct to therapy of this serious disease.