Rhino-Orbito-Cerebral Mucormycosis with Three Intracranial Complications: Infarct, Hemorrhage and Ophthalmoplegia

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Clinical Image

Rhino-orbito-cerebral mucormycosis is a rare life-threatening opportunistic fungal infection caused by fungi from the order Mucorales [1]. The disease commonly affects immunocompromised patients, especially ketoacidotic diabetic patients [2]. We report a case of Rhinocerebral mucormycosis in a 48-year-old diabetic patient, who presented to our department with the complaints of exophthalmos in the left eye, headache, fever and black nasal discharge (Figure 1A/B). Magnetic Resonance Imaging (MRI) of the brain revealed left ethmoid sinusitis, left-side orbital cellulitis and suggested cavernous sinus thrombosis with left ophthalmic artery occlusion (Figure 2 and Figure 3A). He developed progressive skin necrosis on the left periorbital region within 72 hours of admission (Figure 1C). Diagnosis of mucormycosis was confirmed by mycological findings. Initial empirical antimicrobial therapy was initiated with intravenous cefotaxime 2 g intravenously (IV) every 8 hours, metronidazole 500 mg IV every 8 hours, fosfomycin 4 g IV every 6 hours and injectable amphotericin B. Continuous IV insulin infusion was administered with IV fluids.

On the 4th day, the patient developed altered consciousness, the brain CT scan revealed a cerebral hemorrhage in the left frontal lobe (Figure 3B). Despite aggressive therapy, patient

Figure 1: (A) ICU admission: Left palpebral oedema, local erythema, blindness and ptosis of the left eye. (B) Left orbital cellulitis. (C) 72 hours after the admission: progressive skin necrosis on the left periorbital region.

Figure 2: MRI brain: Left orbital cellulitis with contiguous spread of infection to the adjacent basifrontal region.
succumbed to the disease.

This case illustrates the association of three life-threatening intracranial complications of mucormycosis: septic cavernous sinus thrombosis with cerebral infarct, intracerebral hemorrhage and ophthalmoplegia.

Intracranial dissemination of mucormycosis is associated with increased mortality [2].

Infection spreads along vascular and neuronal structures and infiltrates the walls of blood vessels. It spreads to the contiguous sinuses and subsequently to the orbit, the retro-orbital area and brain leading to brain abscess.

Involvement of the superior orbital fissure and its contents, such as cranial nerves III, IV, and VI, and branches of V1 and V2, may cause diplopia, ophthalmoplegia and blindness may occur [3].

A cerebral infarct may occur as a result of a thrombus or a mycotic embolus after arterial invasion [4].

In this context, mucormycosis diagnosis is confirmed by the presence of multiple irregular non-septate hyphae on histopathologic examination [2].

Intracranial and intraorbital extension of mucormycosis is more precisely demonstrated by MRI than by CT [5].

The basis of mucormycosis treatment remains a combination of extensive surgical debridement and amphotericin B for a period of 4–6 weeks [6].

Prognosis may improve with rapid diagnosis, early management and reversible underlying risk factors.

References