CLINICAL REPORT

Rhinoorbitocerebral Mucormycosis with Maggots in a Neglected Diabetic Patient

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Abstract Mucormycosis is a rare opportunistic fungal infection in immunocompromised patients, *Rhizopus* species are most common, sometimes mucormycosis can be life threatening we report a case of rhinoorbitocerebral mucormycosis a patient with diabetic ketoacidosis secondarily infected by maggots with altered consciousness and metabolic decompensation.

Keywords Rhinoorbitocerebral (ROC) · Anterior cerebral artery (ACA) · Noncontrast computed tomography (NCCT) · Complete blood count (CBC) · Random blood sugar (RBS)

Introduction

Rhino cerebral mucormycosis is a rare opportunistic infection of the sinuses, nasal passages, oral cavity, and brain caused by saprophytic fungi [1–4], Rhino cerebral mucormycosis commonly affects individuals with diabetes and immunocompromised states, uncontrolled infection can rapidly result in death. 70% of mucormycosis cases occur in patients with diabetes, particularly in association with poor glycemic control and acidosis, as it relates to cellular immune dysfunction. Patients with diabetes are predisposed to mucormycosis because of the decreased ability of their neutrophils to phagocytize and adhere to endothelial walls. Furthermore, the acidosis and

hyperglycemia provide an excellent environment for the fungus to grow, we are reporting a rare case of extensively disseminated rhinoorbital mucormycosis secondarily infested by maggots with ACA infarction in a neglected diabetic patient.

Case Report

A 75 years old female patient presented to ICU department in unconscious state, she was a known diabetic on oral hypoglycemic drugs (OHD), Her GCS was 7/15 at presentation and was intubated and put on positive pressure ventilation (Fig. 1).

On local examination of ENT a diffuse necrotic blackish area was seen over dorsum, root of nose extending towards maxillary area.

On anterior rhinoscopy a blackish mass was seen with lots of maggots inside rt. Nasal cavity,

Rt side eye movement was completely lost with few maggots in rt. Orbit.

CBC showed raised TLC with neutrophil leukocytosis, Serum creatinine was 7.80 mg/dl, RBS 660 g/dl.

Routine urine examination showed 2+ sugar and ketone bodies.

NCCT Head showed diffuse cerebral edema with infarcts in ACA territory (Fig. 2).

Patient was put on insulin infusion with monitoring of ABG, maggots removed under all aseptic condition, Blackish mass sent for HPE that reported it as mucormycosis (Fig. 3).

Patient put on Amphotericin B but patients metabolic state doesn't improved and she succumbed to this life threatening condition.

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Fig. 1 Showing blackish necrotic area over dorsum and root of nose extending toward maxillary area

Fig. 2 NCCT Brain showing collection in bilateral maxillary sinuses, diffuse edema brain with ACA infarction

Discussion

Mucormycosis in individuals who are immunocompromised results in germination and hyphae formation, and this allows the organism to invade the patient's blood vessels [1, 3, 5–8]. Mucormycosis is described almost exclusively in patients with compromised immune systems or metabolic abnormalities. *Rhizopus* species have an active ketone reductase system that enables them to thrive in an acidic pH and glucose-rich medium. Hyperglycemia enhances fungal growth and impairs neutrophil chemo taxis; therefore, individuals with diabetic ketoacidosis are commonly affected [4, 6–9]. *Rhizopus* species also favor an iron-rich environment and are frequently

Fig. 3 2284 × 1882 pixels high power field showing filamentous fungi

isolated in patients receiving deferoxamine therapy (an iron-chelating agent). In most cases, the fungi gain entry to the body via inhalation of airborne spores through the sinuses. It has been postulated that the most common reservoir for organisms is the pterygopalatine fossa. Infection spreads along vascular and neuronal structures and infiltrates the walls of blood vessels. Infections can erode bone through walls of the sinus and can spread into the orbit and the retro-orbital area, thereby extending into the brain. Invasion of nerves, blood vessels, cartilage, bone, and meninges, as well as perineural spread [3, 6, 7], are common. Direct invasion by fungal elements results in thrombosis and nerve dysfunction. Advancing infection can result in thrombosis arising in the cavernous sinus, carotid arteries, and jugular vein. Carotid artery occlusion has also been reported as a complication [2, 4, 5, 8, 10].

Permanent residual effects of the disease occur up to 70% of the time. No survivors of mucormycosis were reported before 1955. (Amphotericin became available in the 1950s.) Mucormycosis has a fulminantly fatal clinical pattern. The survival rates among patients with invasive sinus disease without cerebral involvement may be as high as 50–80%. If infection spreads to the brain, the case fatality rate can exceed 80%. Death may occur within 2 weeks if mucormycosis is not treated or is unsuccessfully treated. Rhinocerebral mucormycosis carries a prognosis of high morbidity and mortality. Survival depends on the reversibility of underlying risk factors and early surgical intervention [2, 5, 11, 12].

Conclusion

We are reporting this case of ROC mucormycosis complicated by maggots infestation with cerebrovascular accident in neglected diabetic patient with poor glycemic

control to emphasis on early diagnosis and prompt treatment of this fatal condition.

Compliance with Ethical Standards

Conflict of interest None of author has received any grant and funds from any agency.

Ethical Approval This article doesn't contain any studies with human participants or animals.

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