



Zygomycosis and Aspergillosis of Rhinomaxillary Region

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ABSTRACT

Fungal infections has gained a remarkable interest in the past few decades, owing to increase in immunocompromised conditions among the population. A variety of organisms are responsible for paranasal mycosis, Aspergillus and Zygomycetes being the commonest.. Reports of combined Zygomycosis and Aspergillosis of oro-rhinocerebral region are very rare. A female patient aged 58 years presented with 15 days history of pain and swelling in the left orbitomaxillary region. On oral examination an ulcer was noted on left side of hard palate with black crusting in left nasal cavity. A provisional diagnosis of chronic rhino sinusitis with mucormycosis was made. KOH examination of antral washing showed broad aseptate hyphae and fruiting bodies of Aspergillus. Rhizopus. arrhizus and Aspergillus. flavus were grown from sample which was inoculated on SDA media. Early diagnosis and prompt therapeutic interventions may prevent progressive tissue invasion and reduce the need for or extent of surgical resection, disfigurement and survival.

INTRODUCTION

Fungal infections are far more common than were previously suspected probably due to improved diagnostic methods. Fungal infections have gained a remarkable interest in the past few decades, owing to increase in immune compromised conditions among the population.

A variety of organisms are responsible for paranasal mycosis, Aspergillus and Zygomycetes being the commonest¹. Paranasal mycoses manifests as two distinct entities, a benign or non-invasive infection and the more serious invasive infection, which occurs in immune compromised individuals. It is important to distinguish the

invasive disease from the non-invasive because treatment and prognosis are different in each².

Zygomycosis is a rare opportunistic infection caused by fungi belonging to the Mucorales order and the Mucoraceae family³. Mucormycosis was first described by Paultauf in 1885⁴. It is recognized as one of the most rapidly progressive lethal form of fungal infection in human beings with a high mortality of 50–100%⁵.

Aspergillus species are other common fungus causing infections of rhinomaxillary region. Aspergillus sinusitis may be non-invasive or invasive. The non-invasive diseases include allergic sinusitis and Aspergillus fungal ball in sinuses. The invasive aspergillosis of sinus can be localized or fulminant⁶. Aspergillus fumigatus is the commonest species encountered in invasive aspergillosis⁷.

The rarity of these two kinds of diseases leads to difficulties in diagnosis and treatment. Early diagnosis is vital in these cases as delay in initiation of treatment can be life threatening due to ability of the fungi to invade adjacent blood vessels. Reports of combined Zygomycosis and Aspergillosis of oro-rhinocerebral region are very rare⁸.

CASE REPORT

A female patient aged 58 years presented with 15 days history of pain and swelling in the left orbitomaxillary region. She was a known case of Diabetes mellitus since 4 years on irregular treatment. On examination patient was conscious and oriented. A tender, diffuse swelling was seen on left orbitomaxillary region, with left eye edema and mild proptosis. On oral examination an ulcer

was noted on left side of hard palate with black crusting in left nasal cavity. A provisional diagnosis of chronic rhinosinusitis with mucormycosis was made. Biochemical investigations showed RBS-297 mg/dl, fasting blood sugar - 170 mg/dl. MRI of orbito-maxillary region and brain revealed left orbital proptosis, edema around the left orbito- maxillary region and marrow edema of left side maxilla. No focal lesion in brain parenchyma. Findings suggestive of ? infective etiology. KOH examination of antral washing showed broad aseptate hyphae and fruiting bodies of Aspergillus. Rhizopus. arrhizus and Aspergillus. flavus were grown from sample which was inoculated on SDA media.

Patient was administered Amphotericin- B and Itraconazole. After improvement in general condition patient underwent sinonasal debridement. During surgical management and follow up healing was satisfactory.

DISCUSSION

Zygomycosis and Aspergillosis are important opportunistic fungal infections observed. Predisposing factors for these infections are uncontrolled diabetes mellitus, renal failure, cirrhosis, malignancies, long-term corticosteroid and immunosuppressive therapy, and AIDS⁹.The predisposing factor in our patient was diabetes mellitus.

Diabetes mellitus decreases granulocyte phagocytic ability with altered polymorphonuclear leukocyte response of the patient. Peripheral vascular disease in diabetic patients also causes local tissue ischemia and increased susceptibility to infections¹⁰.

The fungi responsible for Zygomycosis are particularly lethal in uncontrolled diabetes mellitus patients. Fungal hyphae have a predilection for growth into arteries, lymphatics and nerves¹¹. Vascular invasion of the hyphae produces a fibrin reaction and the development of thrombi, which occlude vessels, producing ischemia and infarction. The infarction produces the black, necrotic eschars in the nasal and oral cavities and on the face that are characteristic of Zygomycosis¹². The infection spreads rapidly to the adjacent sinuses and orbit and then continues into the cranium via direct extension through the ethmoid bone or orbital vessels. The diagnosis of rhinocerebral Zygomycosis is made by demonstration of the characteristic broad aseptate hyphae and culture on plain SDA media which is gold standard method for diagnosis. The successful treatment of mucormycosis requires four steps:

- (1) Early diagnosis
- (2) Reversal of underlying predisposing risk factors like control of diabetes
- (3) Surgical debridement of necrotic bone; and
- (4) Prompt antifungal therapy¹³.

Aspergillosis is a well-known fungal infection. Aspergillus belongs to ascomycetes class and is a saprophyte. Aspergillus flavus is the species, which commonly affects paranasal sinuses in humans. Inhalation is the usual mode of infection but marijuana smoking and dental fillings are other modes of infections¹⁴. Morrel Mackenzie in 1893, published the first report of Aspergillosis of maxillary sinus¹⁵. Clinically this disease presents as noninvasive, invasive, fulminant and allergic forms. Invasive

Aspergillosis of the rhino-orbital region manifests initially in the sino-nasal localization and may spread to the palate or alveolar process, appearing as yellow to black necrotic ulcers¹⁶.

Diagnosis of Aspergillosis is made by KOH examination, showing septate hyphae with dichotomous branching and sometimes the characteristic Aspergillus fruiting head as seen in our case. The fungus can be cultured on SDA media. The successful treatment includes early diagnosis, antifungal therapy, surgical debridement and correction of underlying predisposing factors.

Invasive zygomycosis or invasive Aspergillosis cause severe morbidity and mortality, Timely initiation of treatment improves outcome of the disease

CONCLUSION

Combined Zygomycosis and Aspergillosis of rhinomaxillary region are very rare, posing difficulties in diagnosis and treatment. Early diagnosis and prompt therapeutic interventions may prevent progressive tissue invasion and reduce the need for or extent of surgical resection, disfigurement and survival.

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