
Mucormycosis In a Diabetic Patient - A Case Report and the Review of the Literature

¹Dinesh Sharma, ²Suresh PL, ³Tanvir Karpe, ⁴Mohammed Yousuf Qureshi

¹Professor & H.O.D, Department of Oral & Maxillofacial Surgery, S.B. Patil Dental College & Hospital, Naubad, Bidar, India

²Reader, Department of Oral & Maxillofacial Surgery, S.B.Patil Dental College & Hospital, Naubad, Bidar, India

³Professor, Department of Oral & Maxillofacial Surgery, S.B.Patil Dental College & Hospital, Naubad, Bidar, India

⁴Senior Lecturer, Department of Oral & Maxillofacial Surgery, S.B.Patil Dental College & Hospital, Naubad, Bidar, India

ABSTRACT

Mucormycosis usually occurs in immunocompromised patients with uncontrolled diabetes mellitus, hematologic malignancies etc. These fungi show a predilection for arterial invasion, causing widespread emboli and necrosis of contiguous tissues. Here, we present a case report of Mucormycosis in an immunocompromised diabetic patient and also the review of the literature.

Key words: Amphotericin B, Diabetes Mellitus, Candida, Mucormycosis, Mucoraceae, Opportunistic infection

Introduction

Fungal spores are usually present in soil, manure etc and humans are usually exposed to them [1]. Mucosal and pulmonary defence mechanisms prevent these fungi to inhabitate humans and cause harmful effects. But in patients with suppressed immunity, these fungi can cause life threatening effects, hence are called as opportunistic infections [1,2]. Mucormycosis is a lethal disease caused by Mucorales which has about 50 to 100% mortality rates [3]. The first case of mucormycosis was reported by Paultauf in 1885[1]. The mode of infection of this deadly infection may be by inhalation, ingestion or contamination of traumatized mucosa like ulcer or extraction socket by fungal spores [2,4]. We present a rare case report of mucormycosis affecting the oral cavity in a diabetic patient and its literature review.

Case Report

A 56 year old male patient reported with a chief complaint of pus discharge from the upper left back

region of the jaw since three months. Pain was continuous and mild in nature. Initially he had a swelling which was small in size and gradually increased and localized to discharge pus. His medical history revealed that he is a known diabetic since more than 10 years and was under medication. Since last one year he was taking medication irregularly, and stopped taking medication since last 3 months after taking advise of a local non registered practitioner. Past dental history revealed that one year back he visited a local dentist for swelling and pain in upper posterior teeth, which were loose. He got 23 to 27 teeth extracted in one visit. Personal history revealed that he is a chronic smoker (15 to 20 bidis per day since 15 years). Extra-oral examination revealed facial asymmetry with swelling over left face. Left submandibular lymph node was palpable. Intra-oral examination revealed a solitary exposed necrotic area of about 3x2cms over left gingival region from 23 to 27 region (Fig 1). The necrotic area extended medially up to 23, laterally till the gingival margins of 27. Lesional surface was rough, firm in consistency and tender. There was pus discharge and severe halitosis. Extracted sockets of 23 to 27 were dry, brownish to blackish, denuded and necrotic. Blood investigations showed glucose levels were beyond normal values (300mg/dl), raised ESR (62 mm/hr). Urinary dextrose strip was +++ and urinary ketone bodies-positive. With a provisional

*Correspondence

Dr. Dinesh Sharma

Professor and H.O.D, Department of Oral & Maxillofacial Surgery, S.B. Patil Dental College & Hospital, Naubad, Bidar, India

E Mail: mdabid2512@gmail.com

diagnosis of chronic granulomatous infection, potassium hydroxide smears of scrapings were done and it showed aseptate fungal hyphae. Then incisional biopsy was carried out involving lesional area along with adjacent normal tissue. Hematoxylin and Eosin (H and E) stained sections at focal areas revealed few

broad aseptate fungi of non uniform diameter (Fig.2). Special stains with PAS (Periodic Acid Schiff) was carried out. PAS staining was positive showing broad aseptate fungi of magenta color (Fig.3). A diagnosis of Mucormycosis was given.



Fig 1:Intra-oral view

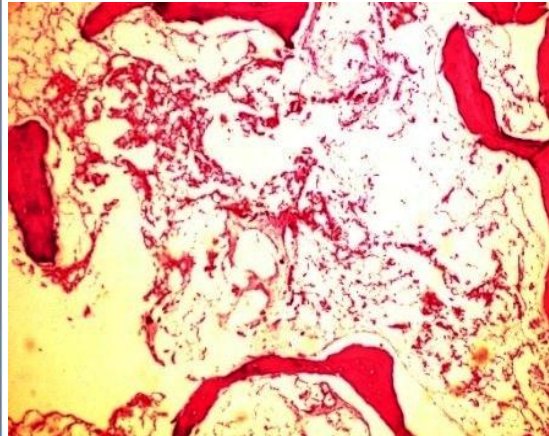


Fig 2: H & E photomicrograph showing broad aseptate fungi in intertrabecular areas

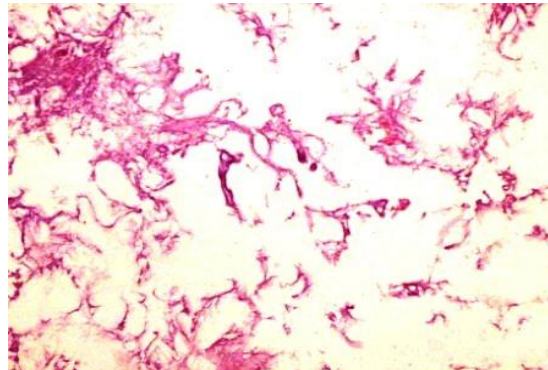


Fig 3: PAS stain showing broad aseptate fungi of magenta color

The patient was admitted and given insulin injections for control of blood glucose levels after taking opinion of physician. Surgical debridement was done. Amphotericin B (intravenously 1mg/kg/day) was given and patient was discharged after one week. The patient is recalled for follow up every month and is under physician's observation.

Discussion

Mucormycosis is a grave opportunistic infection caused by fungi of order mucorales[1].It shows pathognomic histologic features, the fungi appears typically as broad, irregularly shaped with nonseptate hyphae having right angled branches[1,5]. It is opportunistic fungal infection like candidiasis and Aspergillosis and is seen mainly in immunocompromised individuals with uncontrolled

diabetes, leukemia, burns patients, organ transplantation patients, cancer drugs [6].These fungi inhabitate nasal mucosa, lungs (mode of infection being inhalation) and gastrointestinal tract (mode of infection being ingestion)[6,7].Clinically 4 variants of mucormycosis occur, rhinocerebral (most common), pulmonary, gastrointestinal, and disseminated. Rhinocerebral form is of two subtypes.

Rhinoorbitocerebral type considered as most fatal, which involves ophthalmic and internal carotid arteries, Rhinomaxillary form, which involves sphenopalatine and greater palatine arteries. Our case is Rhinomaxillary type. Overall prevalence of this subtype in diabetics is only about 0.15% [1,2,8] Mucormycosis shows a predilection for arteries, where they proliferate and as a consequence causes arterial thrombosis. Later they invade veins and lymphatics also thereby leading to necrosis of involved hard and soft tissues [8,9] Literature review showed that the average age of the patients was 38.8 years, whereas our patient is 56 year old [10]. The lesions that can be considered in differential diagnosis clinically are Wegener's granulomatosis, tuberculosis, squamous cell carcinoma, malignant salivary gland tumor and tertiary syphilis [1,6]. H and E sections and special stains of this fungal infection shows broad aseptate fungi that branch at right angles, which was the same in our case [6-8]. Treatment protocol should be initial surgical debridement of the involved area followed by administration of antifungal drugs intravenously (Amphotericin B 11.5 mg/kg daily). For successful treatment, early diagnosis, proper treatment and correction of underlying cause are very essential. Prognosis depends on cerebral involvement. Survival rates have been shown to be less than 20% in cerebral cases. Cases without cerebral involvement show 50 to 80% survival rates [11,12] Our patient survived because of early diagnosis and prompt medical and surgical treatment.

Conclusion

Mucormycosis is a fatal infection in diabetic patients with a high mortality rate. Physicians, dentists should always keep in mind of this fatal infection in immune-compromized patients. An early diagnosis, combined with medical and surgical treatments, will reduce the mortality rate of this dreadful infection.

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