Sinomaxillary mucormycosis an increasingly common occurrence in the COVID-19 pandemic

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DESCRIPTION

Dentists occasionally encounter patients reporting with an ulcer or sinus and exposure of maxillary/palatal bone. It may sometimes be associated with pus discharge, covered with necrotic slough and clinically diagnosed as osteomyelitis. When such an appearance is associated with patients with uncontrolled diabetes mellitus or haematologic malignancy, it is generally mucormycosis, a rare deep fungal infection. Though it is an opportunistic infection, it is potentially life-threatening with a high fatality rate.[1] Clinical forms are variable but the common sinomaxillary or rhinocerebral form is encountered by the oral physician. Since the disease is invasive and spreads fast invading, the paranasal sinuses, orbit and the brain, leading to blindness and even death, early diagnosis is important.[2] Recent reports in India suggest of a considerable increase in patients reporting with mucormycosis associated with the patients with COVID-19, possibly due to immune dysregulation. Even the widespread use of broad-spectrum antibacterial drugs and glucocorticoids may be a potential predisposing factor in development of this infection in COVID-19 patients.[3] Awareness regarding invasive secondary deep fungal infections in patients with COVID-19, particularly those with comorbidities would enable early diagnosis and treatment leading to a significant reduction in morbidity and mortality.[3] The treatment requires a multidisciplinary team consisting of an oral surgeon, otorhinolaryngologist and ophthalmologist.

A 61-year-old male patient reported with an ulcer in the palate with exposure of bone for 2 months. History revealed that the ulcer was small and painless, gradually increased in size with exposure of the bone and eventually creating an oroantral communication causing difficulty in having food. He was also febrile, slightly dyspnoeic and had nasal stuffiness. The patient was diabetic with poor glycaemic control. He had developed chronic renal failure a few months ago for which he was hospitalised and underwent renal dialysis. On physical examination, a large, irregular ulcer was seen on the right side of the hard palate extending to the maxillary alveolus with exposure of the maxillary bone (figure 1), covered with necrotic slough, indurated and non-tender on palpation.

Since the patient was medically compromised, he was referred to a medical evaluation. His oxygen saturation was found to be 92%, respiratory rate was elevated to 20 per min and crepts were heard in the lung bases. A reverse-transcriptase PCR from

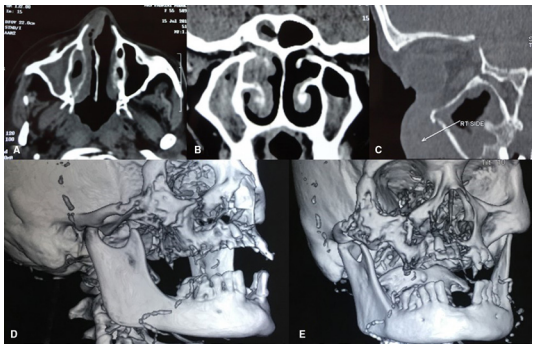

Figure 2 CT scan of the paranasal sinuses showing non-enhancing soft tissue density in sphenoidal, bilateral ethmoidal and frontal sinuses with concentric soft tissue densities and obliteration of osteomeatal openings. (A–C) Three dimensional CT scan showing erosion of the anterior maxilla. (D,E)

Figure 1 Irregular ulcer on the right side of the palate with exposure of maxillary bone.

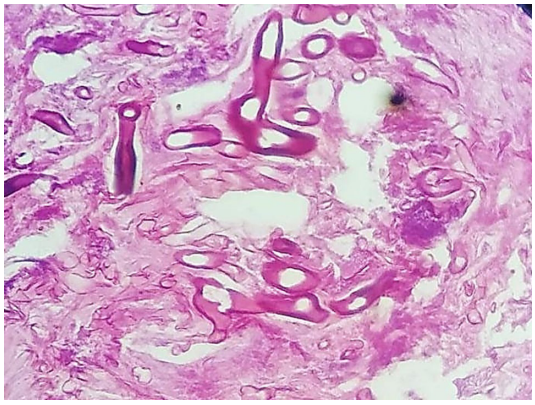

Figure 3 H&E sections showing non-septate fungal hyphae branching at right angles (original magnification ×40).

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a nasopharyngeal swab was positive for the SARS-CoV-2 virus. CT scan of the paranasal sinuses revealed non-enhancing soft tissue density in sphenoidal, bilateral ethmoidal and frontal sinuses. Bilaterally concentric soft tissue densities were seen in the maxillary antra with obliteration of osteomeatal openings (figure 2A–C) with erosion of the anterior maxilla (figure 2D,E). An incisional biopsy was performed under local anaesthesia and histopathologic investigation showed non-septate fungal hyphae branching at right angles in H&E sections (figure 3). Correlating the medical history, clinical, radiologic and histologic features, the patient was diagnosed with mucormycosis. The patient was started on amphotericin B (0.5 mg/kg/day) and other medications as per the COVID-19 and mucormycosis protocols, but the patient gradually deteriorated and died within a week.

Learning points

- Mucormycosis is a rare, deep fungal infection usually seen in patients with uncontrolled diabetes mellitus or haematologic malignancies.
- The disease is more frequently observed in patients with COVID-19 may be due to the widespread use of glucocorticoids and broad-spectrum antibiotics as part of the therapeutic regimen.
- Oral physicians ought to be aware of invasive secondary fungal infections in patients with COVID-19, infection especially in patients with comorbidities as early diagnosis could be life-saving.

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