A Case Report of Post COVID Mucormycosis in Diabetic Patient

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Abstract:

Post-COVID patients primarily from India with a history of diabetics are mostly getting affected with mucormycosis (Black fungus), which is a fungal infection caused by the mucormycetes family. Mucormycosis occurs in patients with the poor immune system and patients with high sugar levels. It commonly affects the head and neck region with most frequent sites being the nose, para-nasal sinuses, orbit, and facial bones. Tooth mobility, and gingival abscess are the first symptoms being presented.

Keywords: Covid-19, Fungal infections, Diabetes, Mucormycosis

Introduction

Covid-19 which is also known as corona virus disease, it is a air borne disease which spreads through droplets from one person to other person. It causes severe acute respiratory distress. The common symptoms of covid-19 are fever, cough ,loss of taste or smell ,shortness of breath in some cases . The diagnostic methods for covid-19 e most widely

used methods are Rapid antigen test, RT-PCR, CT scan. Mucormycosis is a fungal infection caused by mucorale. It affects various vital organs such as brain and also cause damage to oral cavity, nose, ear and throat .The symptoms of mucormycosis includes facial pain, numbness, toothache and changes in palate may be seen .The factors responsible for mucormycosis are diabetes, poor immune system and over usage of steroids .The incidence rate is increasing in India over a period of time but the case fatality rate is low.

Case Presentation:

A patient aged 56, known case of diabetes mellitus came to the outpatient department in MNR dental college and hospital with a complain of pain and numbness on the face on left side .The patient was apparently asymptomatic 15 days back and eventually developed pain in upper left posterior tooth region .Patient gives history of covid.

Investigations:

CT of the chest with covid-19 screening protocol displayed multifocal patchy areas of ground glass haziness and corad score of 5.

MRI study shows changes in maxillary sinus which shows diffuse thickening .Mild soft tissue inflammation seen. These imaging features shows fungal infection involving left maxillary sinus.

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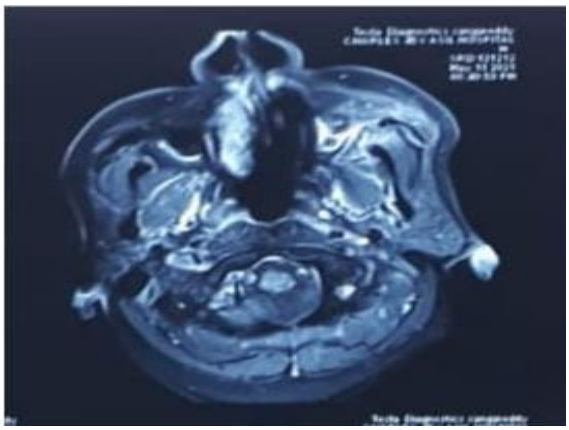

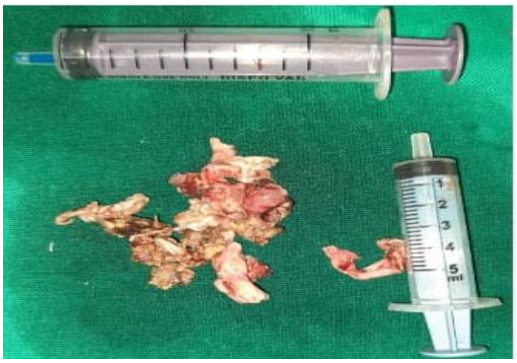

Discussion

Mucormycosis is an angioinvasive[1] infection that occurs due to fungi mucorales .It is a rare disease but mostly found in diabetics, immunocompromised, malignancies and organ transplantation recepient patients. Etiology of mucormycosis includes infections caused by group of fungi such as mucorales. The causative factors of mucormycosis found on soil particles, decayed or spoiled food particles which favours growth of fungus .The mucormycosis may also enter the body through skin pores.Causes of mucormycosis : Patients with diabetic history are more prone to mucormycosis and unsterilized oxygen mask equipment is another predisposing factor for mucormycosis[2]. Additionally covid19 is known to cause hyperglycemia which favours fungal growth .Types of mucormycosis are:

1) Cutaneous mucormycosis (skin)
2) Rhinocerebral mucormycosis(sinus and brain)
3) Pulmonary mucormycosis(lung)
4) Gastrointestinal mucormycosis
5) Disseminated mucormycosis

The signs of mucormycosis involves one sided facial pain, numbness over one side of face, loosening of tooth, ulceration over palate region .pathophysiology of mucormycosis includes various external and internal factors.The patient effected with covid leads to immune suppression .The patient with covid positive uses contaminated oxygen therapy which leads to development of fungal infection and it leads to mucormycosis and increased iron in blood circulation is other reason for mucormycosis. The high levels of glucose content in the body leads to fungal infections [3]

The early diagnosis of this condition is essential to save the life of a patient .Oral and maxillofacial surgeons play vital role in removal of death tissue from the infected part of the face such as maxillary sinuses. .Oral and maxillofacial surgeons are uniquely qualified to

manage patients through all stages of treatment from ablative resection, micro vascular reconstruction [6] and finally dental implant placement for complete restoration of oral function .Treatment of mucormycosis comprises of a combination of surgical debridement and anti fungal therapy [4] .Liposomal Amphotericin B[5],in intial dose of 5mg/kg body weight is the first line of treatment for this condition. It has to be diluted in 5% or 10% dextrose as it is incompatible with normal saline /ringer lactate and has to be given to the patient till a favourable response has been achieved and the disease is stabilized which may take several weeks following which step down to oral posaconazole[8]or isavuconazole has to be made. (200mg one tablet 3 times daily for 2 days followed by 200mg daily) can be prescribed.

Conclusion

Risk factors of mucormycosis with steroid usage are poor immune system. The death rate is high inspite of medical and surgical approach. Hence, a multidisciplinary approach is essential to improve condition and also certain precautions to be followed to prevent mucormycosis. Use of 100 percent oxygen flow to patient , sterilized oxygen mask equipment and maintainance of an optimal sugar levels in the body .The rationale usage of antibiotics and immunosuppressants in covid positive patients .

References

1. Chakrabarti A, Chatterjee S, Das A, Panda N, Shivaprakash M Kaur A, et alS C Varma,4 S Singhi,5 A Bhansali,6 V Sakhuja7Invasive zygomycosis in India: experience in a tertiary care hospital Postgrad Med J 2009;85:573–581. doi:10.1136/pgmj.2008.076463

2. Goel S, Palaskar S, Shetty VP, Bhushan A. Rhinomaxillary mucormycosis with cerebral extension. Journal of oral and maxillofacial pathology: JOMFP. 2009 Jan;13(1):14.
3. Kajs-Wyllie M. Hyperbaric oxygen therapy for rhinocerebral fungal infection. Journal of Neuroscience Nursing. 1995 Jun 1;27(3):174-81.
4. Mesa-Arango AC ,Scorzoni L, Zaragoza O. It only takes one to do many jobs :Amphotericin B as antifungal and immunomodulatory drug .Frontiers in microbiology .2012;3:1-10.
5. Nahabedian MY, Singh N, Deune EG, Silverman R, Tufaro AP. Recipient vessel analysis for microvascular reconstruction of the head and neck. Annals of plastic surgery. 2004 Feb 1;52(2):148-55..
6. Thoma A, Sprague S. Methodologic issues in the comparison of microsurgical flaps/techniques in head and neck reconstruction. Clinics in Plastic Surgery. 2005 Jul 1;32(3):347-59.
7. Posanol (Posaconazole). Solution for injection 300mg/vial (18mg/mL), delayed – release tablets 100mg oral suspension 40 mg/ml (product monograph) [internet].Kirkland (QC): Merck Canada Inc;2016. [cited 2017 jun19].
8. Mahalaxmi I, Jayaramayya K, Venkatesan D, Subramaniam MD, Renu K, Vijayakumar P, Narayanasamy A, Gopalakrishnan AV, Kumar NS, Sivaprakash P, Rao KR. Mucormycosis: An opportunistic pathogen during COVID-19. Environmental research. 2021 Oct 1;201:111643.