

Maxillary Necrosis by Mucormycosis: A Case Report

**Sachi Anand Patil¹, Mrs. Vaishali Balpande², Ashish Bhagat³, J. M. Kumbhare⁴
, Miss. Kanchan Bokade⁵**

- 1] GNM 2nd, Florence Nightingale Training College Of Nursing, Datta Meghe Institute Of Medical Sciences, Sawangi (M), Wardha, Maharashtra, India.
Email:sachipatil803@gmail.com
- 2] Nursing tutor, Florence Nightingale Training College Of Nursing, Datta Meghe Institute Of Medical Sciences, Sawangi (M), Wardha, Maharashtra, India.
Email: vaishalibalpande16@gmail.com
- 3] Research Scientist, Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Sciences, Sawangi (M), Wardha, Maharashtra, India.
- 4] Dept. of Electrical Engineering, Yeshwantrao Chavan College of Engineering, Nagpur. Email:
jkumbhare04@gmail.com
- 5] Clinical Instructor, Shrimati Radhikabai Meghe Memorial College of Nursing,
Email:kanchanbokade31@gmail.com

Abstract:

Introduction: Mucormycosis is a prevalent fungus that infects the maxilla, particularly in diabetics and immunocompromised patients. In an untreated diabetic patient, we present a case of maxillary necrosis due to mucormycosis.

Present complaints and investigations: A 58-year-old male patient admitted in AVBR hospital on dated 18/06/2021 with complaint of one side Swelling of the face, pain in head, stuffy nose, and discoloration of the Nasal Ridge or the upper side of the mouth. Other symptoms became more severe as time went on. and the doctor diagnosed his with maxillary necrosis by mucormycosis.

Investigation: Routine blood haemoglobin 12.5gm/dl RBS count, is 5.24 million/mm and WBC count is 9200/MMC, and also platelets count 2.56/MMC, X-ray of face, MRI, CT scan, collect tissue sample. Doctor diagnosed maxillary necrosis by mucormycosis.

Past history: In the last four months, the patient has he complained of right-hand pain maxillary posterior. The discomfort was considerable, and bending the top and chewing food made it worse. A headache and nasal congestion were also present in the patient.

The main diagnostic therapeutic intervention and outcomes: After physical examination and investigations doctor diagnosed a case of maxillary necrosis by mucormycosis. Anti-inflammatory and antiplatelet agent given us early administration of active antifungal medicine, given patients Posaconazole, Ambisome 0.8mg per kg per day was administered intravenous to the patient for 14 days as part of a variety of antibiotic therapy. also provide protein powder was given 10 days to health immune system fight to disease condition.

Conclusion: He was response to all medication as well as doctor treatment and his recovery was good.

Keywords: Uncontrolled diabetes, maxillary bone necrosis, mucormycosis

Introduction:

Mucormycosis (Phycomycosis, zygomycosis) is a rare unethical fungus infection caused by Mucorales order and Mucoraceae family fungi. [1,2] Paltauf was the first to describe it in 1885. Following candidiasis and aspergillosis, it is the third most frequent angioinvasive fungal infection. It generally affects immunocompromised people and is only rarely observed in otherwise healthy people. [3,4] Mucormycosis infection occurs in the compromised host as a result of impaired immunity, resulting in fast Fungi reproduce by spreading microscopic spores and invasion of fungi in deep soft tissues. Uncontrollable sugar levels (diabetes mellitus) (especially in client suffering from ketoacidosis), malignancies like Non-Hodgkin Lymphoma and leukemia, kidney stones, organ transplantation, durable steroid and immunosuppressant therapy, hepatic cirrhosis, burned, deficiency of all macronutrients, and acquired immunodeficiency syndrome are all risk factors for mucormycosis (AIDS). Spores can be inhaled by the nose or mouth, or even through the skin. incision, is a pathophysiology. Individuals with weakened It's possible that cellular and humoral defence mechanisms are involved. respond ineffectively. [5,6] By direct extension, the fungus can migrate

to the nose channel and, as a result, to the orbit, covering of brain, cerebellum. However, some mucormycosis individuals have no recognised risk factors. To avoid the significant. This disease has a high rate of morbidity and mortality. process, successful care of this lethal illness necessitates early detection of the disease and vigorous and quick surgical operation and resections treatment. A case of maxillary mucormycosis in a diabetic mellitus client is presented here. [7,8]

A case of maxillary mucormycosis in a diabetic patient is presented here. Mucormycosis is a fungal illness that usually starts in the nose and nose channel and progresses quickly. This fungi infiltrates artery and develops thrombus within blood vessels, reducing blood flow and causing breakdown of artery of hard and soft tissues. [8,9] The fungus can spread to orbital and cerebral tissues if it enters the arteries. Mucormycosis usually presents as an acute infection with symptoms that include rhinocerebral, pulmonary, gastrointestinal, cutaneous, and diffuse mucormycosis. In the example at hand, the illness progressed over a long period of time. [10]

PATIENT SPECIFIC INFORMATION

Patient information:

A 58 years old male with maxillary necrosis by mucormycosis admitted on dated 18/06/2021 for treatment. With the major complaint was one side facial swelling, headachenasalor sinus congestion, as well as black lesions on the nasal bridge on the upper side of the mouth that get more severe with time, and other symptoms and the doctor diagnosed her with maxillary necrosis by mucormycosis following a physical examination and investigation

Patient past medical and surgical history.

The patient does not have any previous medical or surgical history.

Family history

Patient belongs to nuclear family, in patients' family there is no hereditary history like asthma, tuberculosis, but patient has diabetes mellitus.

Habits:

Watching TV, reading newspaper and sleeping and patient don't have any habit like chewing tobacco and smoking

Clinical findings:

Physical examination: on clinical examination, a diffuse swelling was notes extra orally extending from nasolabial fold to pre auricular region in anteroposterior direction and from infraorbital region to angle of mandible in superior inferior direction.

Important clinical findings:

Blood investigation- heamoglobin-12.5gm. RBS count 5.24million /MMC WBC count-9200/MMC platelet count- 2.56/MMC

Timeline:

He took treatment in A.V.B.R. hospital and he got the proper treatment. Taking proper medication and now he has been seen the improvement of condition.

Diagnostic Assessment:

Because of its high vascularity, the maxilla seldom necrotizes. Bacterial infections like Osteomyelitis, viral illnesses like herpes zoster, and fungal infections like mucormycosis and aspergillosis are among the most common. among the most common and others can cause maxillary necrosis. Mucormycosis is a type of opportunistic fulminant mycosis that primarily Immunocompromised patients are affected. The illness starts in the nose and paranasal sinuses and spreads throughout the body. after inhaling fungal spores. The infection might spread to ocular and cerebral regions through direct invasion or blood vessels. The fungus produces thrombosis in the arteries, which leads to the hard and soft tissues are both necrotic. To emphasise the need of early identification of this potentially fatal mycosis, we provide a case of mucormycosis-inducedapatient of diabetes mellitus with uncontrolled diabetes mellitus has maxillary necrosis. We cover the current concepts in mucormycosis care and briefly address several disorders that might induce maxillary necrosis. Early detection and treatment can help to lessen the mortality and morbidity associated with this condition, which finally leads to maxillary necrosis.

Mycosis that is fatal. Mucormycosis is a type of mycosis that commonly starts It starts in the nose and spreads to the nose channel fast. The necrosis of skeletal and fibrous tissues is caused by this fungus. by invading the uncommon within blood arteries, reducing blood supply and causing necrosis. The fungus can migrate to the orbital and facial bones. cerebral tissues if it enters the arteries. Typically, mucormycosis has a chronic course and is a somewhat indolent form of fatal mycosis.

Blood investigation:

Haemoglobin -12.5 gm/ MMC, RBC count -5.24million/MMC, WBC count- 9200/MMC, Platelets count - 2.56/MMC

Diagnostic challenge:

No any challenge during diagnostic evaluation.

Diagnostic reasoning:

All investigation is done

Prognosis: this case prognosis was satisfied ministration

Therapeutic interventions:

Present case took the maxillary necrosis by mucormycosis treat with anti-inflammatory and antiplatelet agents given as: Early administration of active antifungal agents, use of various adjunctive therapy, The patient received two weeks of intravenous AmBisome 0.8mg per kg per day Because the medicine can cause renal toxicity, it was slowly administered over a period of Blood urea and creatinine levels are examined for 4-6 hours.

Follow Up and Output:

Follow up:

Patient advice to daily exercise, and avoid high cholesterol diet, given healthy diet. And regularly checked follow up by Doctor Order maintain the personal hygiene and take it properly medication by doctor order.

Outcomes:

On-site of all care patient progress good he was advised to strictly avoid heavy work. Advised to take complete bed rest.

Intervention adherence and tolerability no any intervention adherence patient tolerated treatment properly.

Discussion:

Mucormycosis refers to a group of fungal diseases caused by Zygomycetes, which develop ribbon-like hyphae branching and produces haploid spores, which will, in turn, grow into a new organism. Pathogens can be detected in abundance in fruits, soil, and excrement, as well as in the mouth cavity, nasal antrum, and throat of healthy absence of any disease people. Mucorales's is a Zygomycetes subtype that causes a specific clinical infection pattern. The fungi are normally non-pathogenic and only when the host's resistance is exceedingly low does it become pathogenic. Mucormycosis in the maxillofacial region, particularly in the maxillofacial region, can be spread through mucosal ulceration or extraction wounds. Asexual spore production causes mucormycosis infection. [11,12,13]

The microscopic Spores borne in the air and fall on a membrane rich in mucous glands of the human mouth and nose. A phagocytic reaction will limit the competent in the vast majority of immunologically capable individual hosts. Germination and the development of hyphae will occur if this response fails. [14] In immunocompromised patients, the infection spreads Polymorphonuclear leukocytes are less successful at removing hyphae than Mon morphonuclear leukocytes. As the hyphae penetrate the arteries, they multiply within the walls of artery and lumens of the arteries, caused by thrombosis, ischemic heart disease, and myocardial infarction, as well as dry gangrene of the afflicted tissues.¹⁰ Mucormycosis of the cavity of mouth can be caused by 1 of the 2 things. The first is from Infection that has spread throughout the body, which is spread the first is caused by inhalation (via the nose), while the second is caused by Contamination of the wound directly. which can spread to viscera of other organs. The infection can cause palatal ulceration and necrosis if it enters the body by the nose or PNS with the afflicted area turning black in the majority of instances. Clinical symptoms may emerge When an infection develops from a direct wound, it can spread anywhere in the mouth cavity, including the mandible. exposure. [15] Cavernous sinus thrombosis, a type of infection that affects both the maxilla and the mandible, is a notable difference between the two infections. Asexual spore production causes mucormycosis infection. The microscopic Spores born into the air and fall on the mucosa of the human mouth and nose. A phagocytic reaction will limit these spores the vast majority of immune-competent hosts. [16] Germination and the development of hyphae will occur if this response fails. Polymorphonuclear leukocytes are less effective than monomorphonuclear leukocytes, at hyphae removal in immunocompromised patients, and the infection spreads. As the hyphae penetrate the arteries, they multiply within the walls and lumens of the arteries, causing thrombosis, ischemia, and infarction, as well as dry gangrene of the afflicted tissues. [17,18]

Conclusion:

The presence of exposed necrotic bone in a diabetic patient with a history of past mucous infections should raise the spectre of a refractory mucormycotic infection to the clinician's attention. In such circumstances, the goal of treatment is to improve one's quality of life, which can be accomplished successfully with a multidisciplinary approach including a group of specialists with various specialities. After All the investigation it diagnosed the maxillary necrosis by mucormycosis and it treated with cholesterol modifying medication tables. Amphotericin-B 0.8mg /kg/day and provide antifungal drug because the maxillary fungal infections reduce. Diagnostic evaluation includes, history collection, physical examination and CT scan and MRI of the brain. Medication management would have been sufficient revascularization makes no difference in asymptomatic patient with maxillary necrosis by mucormycosis. Uncontrolled diabetes, kidney failure, organ transplantation, and long-term corticosteroid use and

AIDS, immunosuppressive medications, cirrhosis, burns can all lead to mucormycosis, a severe invasive fungal infection. related cancers such lymphomas and leukaemias. It can be induced even by minor dental procedures, such as tooth extraction, in a diabetic patient. More efforts should be made to diagnose this disease early and treat the patient as soon as possible.

References:

1. Garlapati K, Chavva S, Vaddeswarupu RM, Surampudi J. Fulminant mucormycosis involving paranasal sinuses: a rare case report. *Case reports in dentistry*. 2014 Jan 9;2014.
2. Chayakulkeeree M, Ghannoum MA, Perfect JR. Zygomycosis: the re-emerging fungal infection. *European Journal of Clinical Microbiology and Infectious Diseases*. 2006 Apr;25(4):215-29.
3. Kontoyiannis DP, Lewis RE. Agents of mucormycosis and entomophthoromycosis. Mandell, Douglas and Bennett's Principles and Practice of Infectious Diseases. 7th ed. Philadelphia, Pa: Churchill Livingstone. 2010:3257-69.
4. Afroze SN, Korlepara R, Rao GV, Madala J. Mucormycosis in a diabetic patient: a case report with an insight into its pathophysiology. *Contemporary clinical dentistry*. 2017 Oct;8(4):662.
5. Jones HE. Immune response and host resistance of humans to dermatophyte infection. *Journal of the American Academy of Dermatology*. 1993 May 1;28(5):S12-8.
6. Chakrabarti A. Epidemiology of central nervous system mycoses. *Neurology India*. 2007 Jul 1;55(3):191.
7. 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 Jul 6:111643.
8. Kontoyiannis DP, Lewis RE. Invasive zygomycosis: update on pathogenesis, clinical manifestations, and management. *Infectious Disease Clinics*. 2006 Sep 1;20(3):581-607.
9. Ribes JA, Vanover-Sams CL, Baker DJ. Zygomycetes in human disease. *Clinical microbiology reviews*. 2000 Apr 1;13(2):236-301.
10. O'Neill BM, Alessi AS, George EB, Piro J. Disseminated rhinocerebral mucormycosis: a case report and review of the literature. *Journal of oral and maxillofacial surgery*. 2006 Feb 1;64(2):326-33.
11. Buckland FE, Tyrrell DA. Experiments on the spread of colds: 1. Laboratory studies on the dispersal of nasal secretion. *Epidemiology & Infection*. 1964 Sep;62(3):365-77.
12. Khor TS, Claudtitz TS, Kóvári B, Lauwers GY, Wallace MB, Kumarasinghe P. Inflammatory Conditions of the Colon. *Gastrointestinal Pathology: Correlative Endoscopic and Histologic Assessment*. 2021 Jun 1:235-305.
13. Hingnikar, P., Bhola, N., Jadhav, A., Sharma, A., 2019. Mucormycosis of maxillary sinus in a newly diagnosed case of diabetes mellitus. *Journal of Datta Meghe Institute of Medical Sciences University* 14, 397–400. https://doi.org/10.4103/jdmimsu.jdmimsu_170_19
14. Acharya, Sourya, Samarth Shukla, and Neema Acharya. "Gospels of a Pandemic- A Metaphysical Commentary on the Current COVID-19 Crisis." *JOURNAL OF CLINICAL AND DIAGNOSTIC RESEARCH* 14, no. 6 (June 2020): OA01–2. <https://doi.org/10.7860/JCDR/2020/44627.13774>.
15. Bawiskar, Nipun, Amol Andhale, VidyashreeHulkoti, Sourya Acharya, and Samarth Shukla. "Haematological Manifestations of Covid-19 and Emerging Immunohaematological Therapeutic Strategies." *JOURNAL OF EVOLUTION OF MEDICAL AND DENTAL SCIENCES-JEMDS* 9, no. 46 (November 16, 2020): 3489–94. <https://doi.org/10.14260/jemds/2020/763>.
16. Burhani, Tasneem Sajjad, and Waqar M. Naqvi. "Telehealth - A Boon in the Time of COVID 19 Outbreak." *JOURNAL OF EVOLUTION OF MEDICAL AND DENTAL SCIENCES-JEMDS* 9, no. 29 (July 20, 2020): 2081–84. <https://doi.org/10.14260/jemds/2020/454>.
17. Butola, Lata Kanyal, Ranjit Ambad, Prakash KesharaoKute, Roshan Kumar Jha, and Amol Dattarao Shinde. "The Pandemic of 21st Century - COVID-19." *JOURNAL OF EVOLUTION OF MEDICAL AND DENTAL SCIENCES-JEMDS* 9, no. 39 (September 28, 2020): 2913–18. <https://doi.org/10.14260/jemds/2020/637>.
18. Dasari, Venkatesh, and Kiran Dasari. "Nutraceuticals to Support Immunity: COVID-19 Pandemic- A Wake-up Call." *JOURNAL OF CLINICAL AND DIAGNOSTIC RESEARCH* 14, no. 7 (July 2020): OE05–9. <https://doi.org/10.7860/JCDR/2020/44898.13843>.