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Case Report on Rhinocerebral Mucormycosis

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ABSTRACT

Introduction: Rhinocerebral mucormycosis, commonly known as zygomycosis, is a rare fungus-related disease that affects the nose, paranasal sinuses, and brain. It's an opportunistic pathogen that thrives in immune compromised people. The fungus grows quickly and aggressively because of its interaction with immune compromised patients, generating a well-defined fulminate and life-threatening condition.

Clinical Findings: Right sided facial swelling, Right sided nasal obstruction since 10 days and partially relieved since 4 days, right sided headache radiating to right ear and neck since 10 days, watery discharge from right eye partially relieved since 4 days, fever since 4 days (Temperature 100F).

Diagnostic evaluation: CT Paranasal Sinuses: Mixed density collection in bilateral maxillary sinus with mucosal polypoidal thickening in left maxillary sinuses with patchy areas of hyper densities within the collection.

Magnetic resonance Imaging: MRI Brain and Orbit: Peripherally enhancing mucosal thickening and collection in bilateral maxillary, ethmoidal and sphenoid sinus and frontal sinus on right side with polypoidal mucosal thickening in left maxillary sinus.

Therapeutic intervention: Inj. piptaz 4.45 gm IV × TDS, inj. levoflox 500 mg IV × OD, inj. dexa 6 mg IV × OD inj. lomo Ho 4 mg S/C × OD, inj. pan 40 mg IV × OD, Tab limcee 500 mg OD, Tab zincovit 50 mg OD, Tab. Dolo 650 mg SOS, Inj. Insulin R S/C, tab zifi cv 250 mg BD.

Outcome: After treatment, the patient show improvement. his fever is reduced (Temperature 98.1°F), facial swelling is reduced, relieved from nasal obstruction.

Conclusion: After getting appropriate treatment his condition was improved.

Key words: Mucormycosis, Zygomycosis, Fungal infection, Rhinocerebral mucormycosis

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INTRODUCTION

Rhinocerebral mucormycosis is a rare and severe opportunistic fungal infection that can spread quickly and cause high mortality, particularly in people with covid-19 and diabetics with ketoacidosis. Developing novel techniques to identifying and treating this illness early on is critical to reduce patient morbidity [1].

Rhinocerebral mucormycosis is caused by saprophytic fungus of the class Phycomycetes, order Mucorales, and family *Mucoraceae*. mucor, Rhizopus, Absidia, Cunninghamella, and Apophysomyces elegans are among these fungi. before the histology results, a CT scan is performed to assess the degree of the disease and to acquire a fast overview of the situation. Imaging shows bone erosion and sinus obliteration, and MRI is preferred for visualizing soft tissue changes, but it is more expensive.

It spreads quickly and is very invasive, necessitating urgent treatment. Nonetheless, decisive therapy and a sequential management plan are not accessible. To confirm the unambiguous therapy and identify optimal management measures, a full clinical trial is required. When amphotericin B is detected, it should be given directly. The disease must be treated with Amphotericin B for 4 to 6 weeks to be eradicated [2].

Following medication therapy, surgical excision of the fungus ball is recommended. however, other studies suggested that after a diagnosis, rapid surgical debridement be performed, followed by gradual intravenous amphotericin B therapy.

Surgical intervention is an invasive treatment that entails the removal of damaged bodily tissue as well as the management of fungal growth via sinus drainage and irrigation. When the palate, ocular structures, or nasal cavity are removed, surgery can sometimes modify the layout of body parts [3].

Patient identification

A male adult of 52 year from Navargao Wardha admitted in ENT ward in AVBRH on 15 May 2021 with a known case

of rhinocerebral mucormycosis. He is 62 kg and his height is 156 cm.

Present medical history

A male adult of 52-year-old was brought to AVBRH on 16 may 2021 by his relative with a complaint of right sided facial swelling, right sided nasal obstruction since 10 days and partially relieved since 4 days, right sided headache radiating to right ear and neck since 10 days, watery discharge from right eye partially relieved since 4 days, fever since 4 days. He was admitted in ENT ward. He is known case of rhinocerebral mucormycosis.

Past medical history

Patient first visited to government hospital Sewagram where he was admitted for covid 19 positive status. (HRCT score 15/25)and type II diabetes mellitus(newly diagnosed)for 3 days and was referred to AVBRH for further management. Then patient visited to AVBRH where patient was admitted to covid-19 positive ward for 15 days.

Associated illness

He was under medication inj. piptaz 4.45 gm IV×TDS, inj. levofloxacin 500 mg IV×OD, inj. dexa 6 mg IV×OD, inj. lomo Ho 4 mg S/C×OD, inj. amphotericin B 50 mg in 500 ml D5(5 days). CT scan and MRI brain and orbit was done on 24 May 2021. patient was then transfer to oral surgery ward management of rhinocerebral mucormycosis after testing negative for covid-19.

Family history

There are four members in the family. My Patient belongs to middle class family. He maintains the relationship with family and friends. All other members of the family were not having complaint in their health except for my patient who was being admitted in the hospital.

Past intervention and outcome

My patient was diagnosed with covid-19 positive status from before 15 days. No other past medical illness like hypertension, tuberculosis. After the treatment was started he showed improvement.

Clinical finding

Complaint of cough for 3 days, breathless since 3 days, swelling in right sided of face since 2 days.

Etiology

Saprophytic fungi of the class phycomycetes, order mucorales, and family mucoraceae are the causal agents of rhinocerebral mucormycosis. mucor, rhizopus, absidia, cunninghamella and apophysomyces elegans are among these fungi.

Risk factors include

previous history regarding covid 19, long intubation period, Diabetes mellitus, iron overload, burns, transplantation, immunosuppression, chemotherapy.

Physical examination

In subsequent stages, my patient developed facial pain, headaches, nasal congestion, reddish and swollen nasal bridge and cheek skin, which eventually became black owing to cell death. Black eschar visible on nasal mucosa. A palatal ulcer might be seen on an intraoral examination. He is week and un-cooperative.

Diagnostic assessment

Blood test

Hb–11.4 gm/dl, Total RBC count–5.35 million cells/mcl, CRP-46.0 mg/L, RDW–24.9%, HCT – 34%, Total WBC count–8,500 cells/mcL, platelets count-3.34 billion/ L.

Peripheral smear

RBCs –microcytic mildly hypochromic. Platelets-adequate on smear. No haemoparasite seen.

Therapeutic intervention

Inj. levoflox 500 mg IV × OD, inj. dexa 6 mg IV × OD, inj. pan 40 mg IV × OD, Tab. limcee 500 mg OD, Tab. zincovit 50 mg OD, Tab. Dolo 650 mg SOS, inj. insulin R S/C, tab. zifi cv 250 mg BD.

DISCUSSION

A male adult of 52-year-old from Navargaon was admitted to ENT ward, AVBRH on 15 may 2021 with a complaint of Right sided facial swelling, Right sided nasal obstruction, right sided headache radiating to right ear and neck, watery discharge from right eye, fever. He is known case of rhinocerebral mucormycosis which was diagnosed post covid -19. As soon as he was admitted to hospital investigations are done and appropriate treatment were started. After getting treatment, he shows great improvement and treatment was still going on till My last date of care [4].

The first case of mucormycosis was described in 1885 by Paltauf, who created the term mycosis mucorina. Mucorales spores breathed into the oral and nasal mucosa cause infection. Their germination is aided by low oxygen, high glucose, an acidic medium, and high iron levels.

In most cases of rhinocerebral mucormycosis, the illness begins in the nasal tissues and progresses to the paranasal sinuses and subsequently to the orbit. As in our case, a diabetic patient with poorly controlled blood sugar developed rhinocerebral mucormycosis, which was accompanied by headache, nasal, and left eye discharge, edema, and unilateral proptosis of the left orbit. Because the condition causes diffuse tissue necrosis, fungus can

easily infiltrate blood vessel walls, causing thrombosis and tissue ischemia [5].

Magnetic resonance imaging (MRI) is an important imaging study for determining the degree of the disease. Soft tissue lesions can be seen more clearly on MRI than on CT scan, which is very useful in the diagnosis of cavernous sinus thrombosis. When the orbit is invaded, increased orbital fat density and venous gulping might be seen, as in our case patient. In this patient, the infection began in the paranasal sinuses and progressed to the orbit and brain. The fungus must be identified histologically in tissue specimens or recovered by culture for a definitive diagnosis. Mucorales are irregularly formed and wide aseptate hyphae with right-angle branching (10-50 m).

Treatment for rhinocerebral mucormycosis should include rapid control of hyperglycemia and ketoacidosis, surgical debridement of damaged tissue, and parenteral amphotericin B administration. To document amphotericin B-induced nephrotoxicity, renal functions are monitored. Because of our patient's renal insufficiency, we were able to utilise Posaconazole instead of amphotericin B thanks to this monitoring. It is desirable to do surgical debridement of all necrotic tissue until normal, well-perfused bleeding tissue is obtained. Orbital evisceration, which we did, is indicated if ophthalmoplegia and vision loss have occurred.

Many bacteria found in the human environment can cause extremely severe opportunistic infections in impaired persons. Most patients with immunological problems are treated in maxillofacial departments. In some circumstances, a direct clinical approach is required. Infections caused by fungi are uncommon in the cranio-facial area, whereas infections caused by bacterial flora are the most common. In order for fungal infections to occur, several conditions and needs must be present. Many of them are treated locally with antifungal medications if discovered, while a few require a more extensive surgical excisional treatment. One of these infections is mucor sp., which is linked to mucormycosis (zygomycosis) [6].

Rhinocerebral zygomycosis is particularly dangerous. For all doctors and surgeons, this unusual cranio-facial infection poses a significant problem. Only a correct and accurate diagnosis appears to have an impact on the patient's survival and quality of life after therapy [7]. A case of Mucormycosis of Mandible was reported by Oswal et. al. [8]. Other related studies on different opportunistic infections and Covid-19 were reviewed [9-12]. This study focused on the most recent clinical discoveries and therapeutic options for Covid related mucormycosis.

CONCLUSION

We described a case of rhinocerebral mucormycosis secondary to post COVID-19, it's very important to diagnosed in early stage so that the patient will not be develop complications from the disease. It is also very important to take preventive measure like avoid going to dusty area or construction site, wear N95 mask, avoid activities that has direct contact with dust or soil. Clean oxygen mask, humidifier. My patient show great improvement after getting the treatment and the treatment was still going on still my last date of care.

ETHICAL CLEARANCE

Taken from institutional ethics committee.

SOURCES OF FUNDING

Self.

CONFLICT OF INTEREST

Nil.

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