CASE REPORT

Rhinosinus Mucormycosis with Drug-induced Pancytopenia in an Immunocompromised Severe COVID-19 Patient: A Success

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ABSTRACT

Secondary infections in COVID are becoming common. We report a case of a female known case of diabetes, sarcoidosis on steroids and methotrexate admitted with COVID pneumonia. She was treated with steroids, remdesivir, and anticoagulants and was discharged. She revisited the hospital after 2 months with complaints of severe right-sided headache, eye pain, and vomiting. Magentic resonance image of brain and paranasal sinus revealed possibility of invasive rhinosinus mucormycosis. Functional endoscopic sinus surgery (FESS) was done and culture showed growth of mucor and methicillin resistant staphylococcus aureus (MRSA) following which she was started on amphotericin B and antibiotics. She also developed methotrexate and amphotericin B-induced pancytopenia for which injection folinic acid, granulocyte-colony stimulating factor (G-CSF), and erythropoietin were given and was switched over to liposomal amphotericin B. After 5 days of ventilatory support, she was discharged in a stable condition. Extensive steroids in an immunocompromised patient might have led to this event hence physicians should always keep this possibility of secondary fungal infection in COVID patients for understanding the impact of disease.

Keywords: COVID pneumonia, Diabetes, Immunocompromised, Pancytopenia, Rhinosinus mucormycosis.

Indian Journal of Critical Care Medicine (2022): 10.5005/jp-journals-10071-24134

INTRODUCTION

Coronavirus pneumonia has been presenting with variety of symptoms which include fever, cough, dyspnea, loss of smell, and constitutional symptoms. Patients with known diabetes, CAD, CVA, and elderly are more predisposed to this illness. Apart from these symptoms, a variety of fungal infections can also be seen especially in the population who are immunocompromised and are on long-term steroids. Rhinocerebral mucormycosis is one such entity. We encountered a case of rhinosinus mucormycosis in an immunocompromised elderly woman where prompt diagnosis and early management helped us save her life.

CASE HISTORY

A 70-year-old woman presented with history of fever, breathing discomfort, and cough since 3 days. She was a known diabetic on oral hypoglycemic agents (OHA), interstitial lung disease (ILD) on methotrexate 15 mg weekly, and low dose steroids, old left-sided hemiparesis on tab ecosprin 75 mg od. On examination, she had pulse rate of 110/min, SpO2 of 86% on room air, BP 140/90 mm Hg. Physical examination revealed bilateral chest crests. Her RT-PCR for COVID-19 was done which was positive. High-resolution computed tomography (HRCT) chest (Fig. 1) revealed bilateral ground glass opacities with severity score of 16 thereafter she was treated with injection remesdevir for 5 days, methylprednisolone IV in a dose of 40 mg thrice a day with injection clexane 0.6 mL sc twice daily. In view of persistent dyspnea, she was shifted to the medical ICU wherein she was given BiPAP support along with two units of plasma therapy. The same line of management was continued and gradually she was weaned off the BiPAP support and was discharged in stable condition on steroids, OHA, and other medications.

After 2 months, she again presented with the history of right-sided headache, eye pain, and vomiting. On examination, she had tachycardia and SpO2 of 88% on rheumatoid arthritis (RA) with redness over right eye and facial edema. Blood investigations were done, hemogram revealed Hb 11g%, total leukocyte count (TLC) 24,000, platelet 232 lakhs, and creatinine 2.92. In view of headache, magnetic resonance imaging (MRI) of brain was done, which revealed microvascular changes. Keeping a possibility of fungal sinustitis, HRCT paranasal sinuses (PNS) (Figs 2 and 3) was done, which showed sinonasal inflammatory process following which urgent MRI paranasal sinus and orbit (Figs 4 to 6) was performed, which showed suspicion of invasive fungohinosinusitis, orbital cellulitis, and optic neuritis.

Ophthalmology consultation was taken, which confirmed presence of orbital cellulitis with impending optic neuritis. Nasal swab was taken, which came out to be negative for fungus. ENT consultation was taken and FESS was done. Pus was sent for culture, which revealed growth of mucor with Staphylococcus aureus. The patient was intubated during FESS and was started on amphotericin B (lipid formulation) 250 mg once daily with

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Rhinosinus Mucormycosis with Drug-induced Pancytopenia

Fig. 1: HRCT showing ground glass opacities

Fig. 2: HRCT PNS showing sinonasal inflammatory process

Fig. 3: HRCT showing sinonasal inflammation

Fig. 4: MRI PNS showing possibility? Rhinosinus mucormycosis

Fig. 5: MRI PNS showing possibility? Fungal rhinosinusitis

Fig. 6: MRI PNS showing possibility? Fungal rhinosinusitis
Rhinosinus Mucormycosis with Drug-induced Pancytopenia

Early initiation of the therapy ameliorates the outcome. The treatment of choice remains amphotericin B with monitoring of the renal functions. Lipid formulation of amphotericin B can be preferred over amphotericin B deoxycholate to deliver high dose with less nephrotoxicity. For patients who have responded to amphotericin B, posaconazole, or isavuconazole can be used as a step down therapy after continuing amphotericin B until the patient has shown signs of improvement or in patients who do not respond or are intolerant to amphotericin B. In a salvage study, the clinical efficacy of posaconazole revealed that it resulted in complete or partial response in 60% of patients, 21% had stable disease. Creatinine should be regularly monitored and if it starts rising, tablet formulation of posaconazole extended release or switch to IV isavuconazole should be considered. Treatment extends for years and sometimes lifetime if immunosuppression cannot be corrected.

A review of 208 patients concluded that the most significant factors that contributed to mortality were delayed diagnosis, bilateral sinus involvement, renal disease, and use of deferoxamine. Mortality ranges from 25 to 62%. Prognosis is best in patients with infection confined to the sinuses and is poor in patients with brain involvement, involvement of cavernous sinus or carotid artery.

**CONCLUSION**

There can be many secondary bacterial and fungal infections associated with COVID-19. The widespread use of steroids, broadspectrum antibiotics play a crucial role. Physicians should be well acquainted with the possibilities of existence of underlying fungal infection in patients with preexisting comorbidities like diabetes, malignancies, post transplant patients, and patients who are on steroid therapy, immunomodulators and COVID-19 disease.

In our patient, long-standing diabetes, immunocompromised state due to ongoing methotrexate, lymphopenia, and steroids predisposed the patient to mucor infection and timely intervention saved her life. Thus early clinical suspicion of the disease and timely management will result in the reduction of morbidity and mortality and can be lifesaving.

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**REFERENCES**


