

Case Report

An Interesting Case of Post Covid Mucormycosis with Rhino-Cerebro-Orbital Involvement

Gaurav RA, Bhanupriya S and Ankur S*

Department of Radiodiagnosis, Dr. Ram Manohar Lohia Institute of Medical science, Lucknow, India

*Corresponding author: Sah Ankur, Department of Radiodiagnosis, Dr. Ram Manohar Lohia Institute of Medical science, Lucknow, India

Received: February 03, 2022; Accepted: February 26, 2022; Published: March 05, 2022

Abstract

Mucor mycosis is an uncommon fungal infection which has ability to invade blood vessels and can affect different part of the body, the most common and most aggressive form being rhino-cerebro-orbital mucormycosis that occur in immunocompromised patient.

We describe a case of rhino-cerebro-orbital mucormycosis in a post vaccinated diabetic patient.

Keywords: Mucormycosis; Steroids; Diabetes; Rhino-cerebro-orbital involvement; Angioinvasive

Introduction

The term mucor mycosis denotes acute or subacute rapidly progressive infection that is caused by angioinvasive fungi in order of Mucorales, though there are rare reports of indolent disease [1]. It has unique nature to cause devastating disease in immunocompromised patients like patients with diabetes mellitus and causes significant morbidity and mortality. The commonest clinical manifestation is rhino-cerebro-orbital mucormycosis [2].

Case Presentation

A 56-year-old male patient with bilateral covid pneumonitis with type 2 diabetes mellitus was apparently asymptomatic 1 month back when he developed fever for 3 days post vaccination followed by breathlessness with drop in spo₂ (82) and sudden increase in blood sugar (464mg/dl), for which he received treatment and steroid was also given. One day after the treatment, he developed sudden onset left sided retro-orbital pain, swelling of left eye and drooping of left eye followed by drooping of right eye.

Past history: H/O type II diabetes mellitus on medication.

On Examination

Patient was dyspneic with orbital edema and ptosis predominantly on left side.

CHEST-bilateral crepts was present.

Blood Investigation

TLC: 15.9 (raised) with increased polymorphs

HSCRp: 188 (raised)

Serum Ferritin: 913 (raised)

Serum LDH: 247 (raised)

D-Dimer: 0.55 (borderline raised)

Imaging

Under the advice of clinician due to deteriorating condition of the patients, MRI was performed in GE Signa3. OT HD-32 Channel MRI

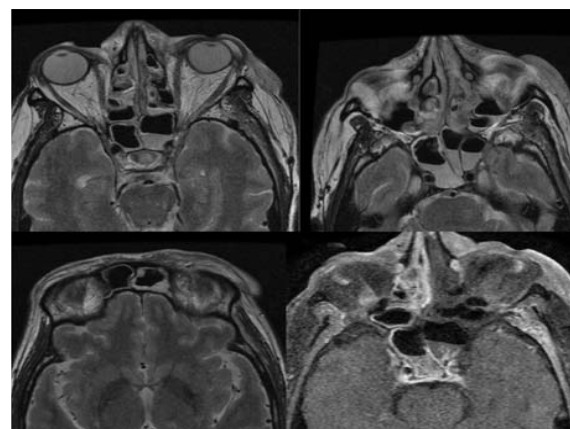


Figure 1: Axial T2 FSE image of paranasal sinuses along with orbital cuts shows pansinusitis. Axial T1 contrast image of paranasal sinuses showing diffuse avid mucosal enhancement along visualized section of sinuses. Follow up MRI 2 weeks after surgical debridement showed no relief in patient condition with following imaging findings.

System using brain coils.

Discussion

It is postulated that SARS-CoV-2 infection may affects CD4+ and CD8+ T cells, causing reduction of absolute number of lymphocytes and T cells associated with creation of a temporary state of compromised immunity [3].

Extensive use of glucocorticoids causes reduction in hospital stay and mortality that is related to COVID 19. Due to the immunosuppressive nature of glucocorticoids, patients become susceptible to secondary infections. Survival in mucormycosis depends on many factors like early diagnosis, alleviation of predisposing factors, aggressive debridement of necrotic tissue and appropriate systemic anti-fungal agents. For reduction of mortality, predisposing factors like corticosteroid therapy should be discontinued and blood sugar is to be controlled [4].

Inoculation occurs by inhalation, when nasal cavity and

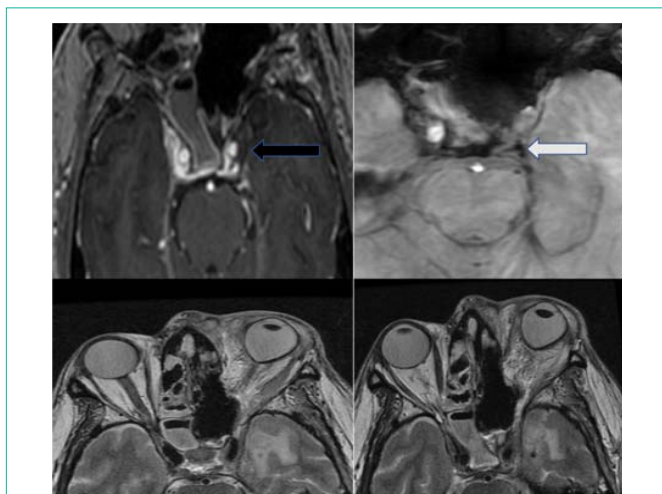


Figure 2: GRE sequence showing patchy area of blooming on SWAN in left cavernous sinus in second image (white arrow) corresponding to the same area of non-opacification of left cavernous sinus in post contrast sequence (black arrow) suggesting thrombosis of cavernous sinus.

Axial T2 section of brain showing diffuse edematous swelling of preseptal and postseptal part of left orbit along with intra and extraconal fat stranding. There is also evidence of thickened and edematous lateral rectus muscle and atrophic medial rectus with protrusion of preseptal fat into ethmoidal sinuses.

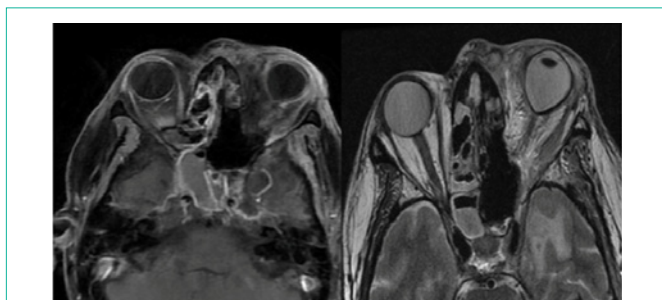


Figure 3: Post contrast images showing Dural enhancement along left temporal lobe with a well defined peripherally enhancing area in left temporal lobe.

T2 hyperintensity in left temporal lobe at same corresponding location of contrast enhancement (possibility of intracranial extension).

nasopharynx is invaded by the spores of the fungus. The fungus then spreads to orbit, meninges and brain by direct extension. It also invades the walls of blood vessels resulting in vascular occlusion, thrombosis and infarction as well as dissemination to central nervous system through primary focus [5].

Imaging characteristics usually demonstrates a rim of soft tissue thickness along paranasal sinuses with sinus opacification and air-

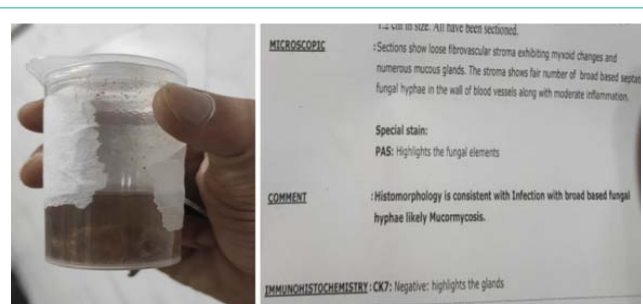


Figure 4: Patient underwent surgical debridement in ENT department which showed multiple fragments of brownish colored soft tissues. Histopathology report of the patient from the debrided tissue confirms the presence of mucormycosis.

fluid concentration. On MR imaging, variable intensity seen on T1 and T2 sequences. Fungal elements may cause low signal intensity on T2. DWI sequence may aid in diagnosis showing increased signal intensity of affected sinus. The infarcted mucosa may lead to restriction of diffusion [6]. In our case, there was evidence of diffuse mucosal enhancement of the paranasal sinuses along with features of pansinusitis with involvement of left orbit, cavernous sinus thrombosis and subsequent extension into left temporal lobe.

Conclusion

Mucor mycosis is a fungal disease that has high morbidity and mortality rate and has aggressive characteristic for extension and invasion into vascular and intracranial structures. MR plays an important role in aiding physician in making diagnosis for early treatment.

References

1. Wali U, Balkhair A, Al-Mujaini A. Cerebro-rhino orbital mucormycosis: an update. *J Infect Public Health*. 2012; 5: 116-126.
2. Ak AK, Gupta V. Rhino-orbital Cerebral Mucormycosis. In: StatPearls. Treasure Island (FL): StatPearls Publishing. 2021.
3. Sethi HS, Sen KK, Mohanty SS, Panda S, Krishna KR, Mali C. COVID-19-associated rhino-orbital mucormycosis (CAROM)-a case report. *Egyptian Journal of Radiology and Nuclear Medicine*. 2021; 52: 165.
4. Veisi A, Bagheri A, Eshaghi M, Rikhtehgar MH, Rezaei Kanavi M, Farjad R. Rhino-orbital mucormycosis during steroid therapy in COVID-19 patients: A case report. *European Journal of Ophthalmology*. 2021; 11206721211009450.
5. Herrera DA, Dublin AB, Ormsby EL, Aminpour S, Howell LP. Imaging Findings of Rhinocerebral Mucormycosis. *Skull Base*. 2009; 19: 117-125.
6. The "Black Turbinate" Sign: An Early MR Imaging Finding of Nasal Mucormycosis. *American Journal of Neuroradiology*. 2021.