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Research Article

INCIDENTAL FINDING OF AML IN A CASE OF MUCORMYCOSIS DURING THE COVID-19 PANDEMIC IN INDIA: A CASE REPORT

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ABSTRACT

Mucormycosis is an uncommon but severe invasive fungal infection caused by molds in the order Mucorales. Mucormycosis typically affects persons with immunocompromising conditions such as a hematologic malignancy, stem cell or solid organ transplantation, or uncontrolled diabetes.(8) COVID-19 might increase mucormycosis risk because of COVID-19–induced immune dysregulation or associated treatments such as corticosteroids and immunomodulatory drugs (e.g., tocilizumab or baricitinib) that impair host defenses against molds .(9)

INTRODUCTION

Mucormycosis, is caused by infection with fungi belonging to the order Mucorales. The infection starts with nasal congestion or discharge, though it may progress to facial numbness, blurry vision, nasofrontal headache, ocular pain, fever, diplopia, and chemosis.(1)Risk factors include immunocompromising conditions such as uncontrolled diabetes mellitus, malignancy and individuals receiving immunosuppressive agents. (2,3) Acute myeloid leukaemia (AML) is a malignant disease of the bone marrow in which hematopoietic precursors are arrested in an early stage of development caused by genetic mutations with no identifiable risk factor.(4) In India, the incidence of AML is 15% of all hematological malignancies respectively.(5)

This report describes an incidental finding of a patient with mucormycosis concurrent with AML.

Case Report

A 16 year old female came to ENT OPD with complaints of left eye periorbital swelling, blurring of vision in left eye and watery discharge from left eye, left sided facial swelling since 3 days.

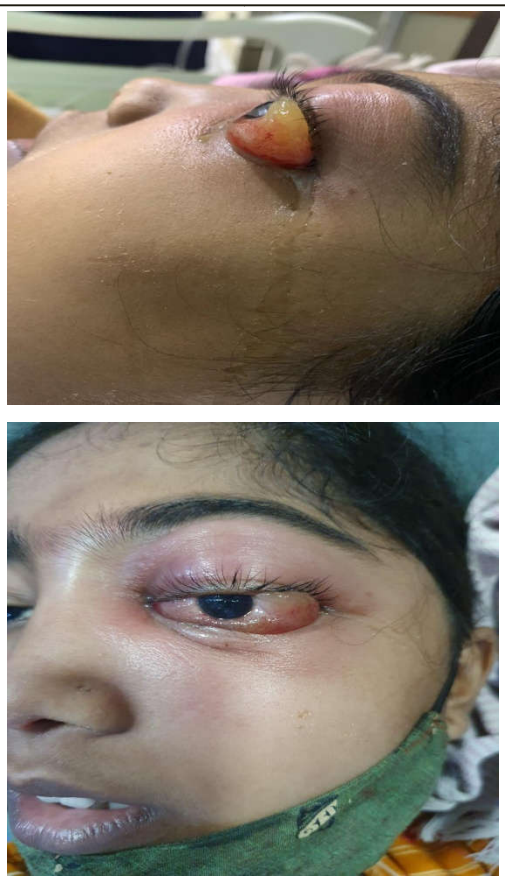

Figure 1

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She had 1 episode of fever; 1 week back, high grade, associated with chills. Her ENT complaints were bilateral nasal discharge (left>right), Purulent in nature since 5 days. She had no known co-morbidities and was not on any long term medications.

On anterior rhinoscopy, she had DNS to the right with right inferior hypertrophy and nasal discharge in right nasal cavity. Diagnostic nasal endoscopy showed debris which was yellowish in color and mucoid crusts along the floor of the left nasal cavity. Debris was sent for KOH mount and histopathological examination.

On ocular examination, left eye findings were: eye vision was reduced , reduced eye movements, chemosis, grade-3 Relative afferent pupillary defect(RAPD) in left eye pupil.

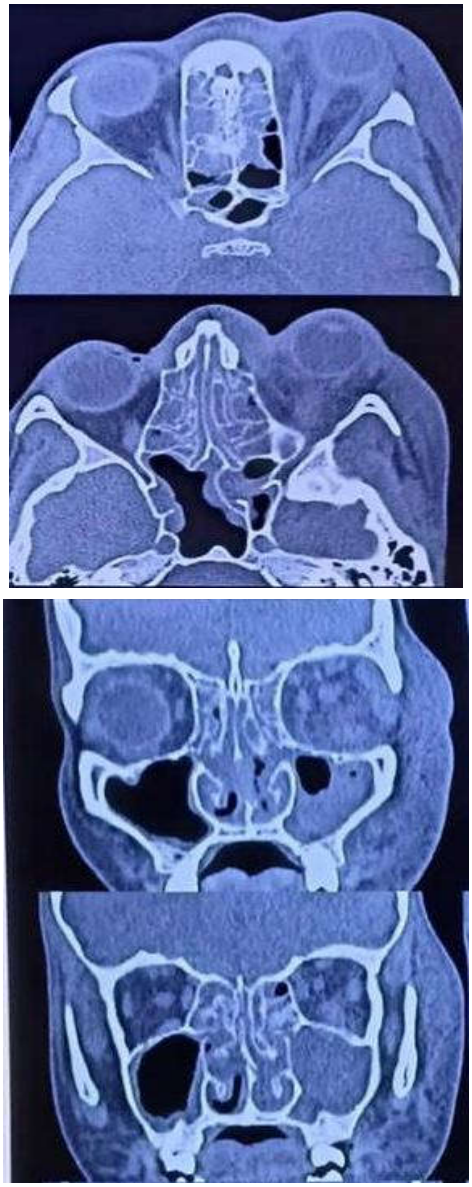

Figure 2

Computed Tomography-Paranasal Sinuses reported opacification of left maxillary sinus, bilateral nasal cavities, bilateral ethmoidal sinus and frontal sinus. Subtle Mucosal opacification of sphenoid sinus and right maxillary sinus. Subtle thinning of walls of maxillary sinus, with no obvious erosion. Asymmetric bulkiness with fat stranding seen in soft tissue adjacent to left maxillary sinus, upper alveolar process of maxilla and zygomatic process on left side. Orbital fat stranding seen on left side with cellulitis and protusion of globe measuring 26 mm from interzygomatic line- features are suspicious for fungal infection.

MRI (Brain+Orbit) reported poorly enhancing soft tissues seen in bilateral frontal, ethmoid, maxillary and sphenoid sinuses amidst peripheral moderately enhancing mucosa. Lesions seen extending in nasal cavities, left cheek and left orbit intra and retro orbital soft tissues, causing proptosis of left eyeball. Swelling and enhancement in left periorbital and zygomatico-temporal region. No bone destruction yet. S/O Diffuse fungal infection like Mucormycosis.

HRCT Thorax: Significant areas of consolidation with air space bronchogram are noted in peri hilar and peri bronchovascular location with sparing of peripheral subpleural region involving bilateral lung parenchyma predominantly in the bilateral lower lobes. Mild cardiomegaly with minimal pericardial effusion was noted. Mild to moderate pleural effusion with bilateral fissural extension and passive atelectasis and interlobular septal thickening of the underlying lung parenchyma is noted. Multifocal bilateral patchy areas of ground glass opacities are noted involving bilateral lung parenchyma. CORADS 3(CTSS17/25). Few subcentimeter sized pretracheal/ paratracheal and subcarinal lymph nodes are seen. Tiny calcified granuloma was noted in the left lobe of the liver.

Koh Mount was reported as broad aseptate fungal hyphae

Histopathology Report of Tissue From Left Nasal Cavity was reported as few broad aseptate fungal hyphae seen, some of which show right angle branching suggestive of mucormycosis.

Special stain(PAS)- Positive for fungus.
Incidentally her CBC count was deranged

Haemoglobin	5.4 g/dl
RBC count	1.77Mil/ul
Packed cell volume(PCV)	15.7%
Mean cell volume(MCV)	88.6fL
Mean cell haemoglobin(MCH)	30.6pg
Mean corpuscular Hb concentration(MCHC)	
Red cell distribution width(RDW)	34.5gm/dl
Total leucocyte count	16.1%
Neutrophils	
Lymphocytes	2670 per cumm
Monocytes	22.9%
Eosinophils	30.9%
Basophils	45.7%
Platelet count	0.2%
	0.30%
	73000 per cumm

In mucormycosis, neutrocytosis is present in most of the cases but pancytopenia and abnormal morphology of cells in this case led to a suspicion of a hematological disorder for which bone marrow biopsy was advised.

Bone marrow biopsy (tissue sample collected from posterior iliac crest) findings were diluted yet cellular marrow with excess of blast cells. Erythroid, myeloid, megakaryocytic series were suppressed. Differential count was as follows: Blasts-82%, Neutrophils: 2%, Lymphocytes -16%. Suggestive of Acute myeloid Leukaemia.

Flow cytometry revealed a cluster of 75.2% cells in blast window with low scatter. It is suggestive of Acute Myeloid leukaemia.

HRCT Thorax was done to rule out possible infections with COVID-19. RTPCR for COVID-19 was done on day one from the first day of symptoms, which was negative
The diagnosis of Acute Myeloid leukaemia with Mucormycosis was made, and the patient was treated with a combination of chemotherapy of Cytarabine, Daunorubicin and antifungal medication (Inj Amphotericin-B and Tab Posaconazole).

DISCUSSION

Mucormycosis presents with nasal congestion and discharge, sinusitis, facial heaviness, eye discharge, anosmia and hyposmia. During the COVID-19 pandemic lowered immune status was attributed to infection by COVID-19 itself and more commonly diabetes mellitus.

Although, RTPCR for COVID-19 was negative her HRCT THORAX showed significant areas of consolidation involving bilateral lung parenchyma predominantly in the bilateral lower lobes. Mild cardiomegaly with minimal pericardial effusion was noted. Multifocal bilateral patchy areas of ground glass opacities were noted involving bilateral lung parenchyma. CORADS 3(CTSS17/25). Few subcentimeter sized pretracheal/paratracheal and subcarinal lymph nodes were seen.

CT-Paranasal Sinuses reported opacification of left maxillary sinus, bilateral nasal cavities, bilateral ethmoidal sinus and frontal sinus.

Koh Mount was reported as broad aseptate fungal hyphae.

Therefore her diminished immunity was attributed to a possible infection with COVID-19, although her RTPCR was negative.(6)

CBC was also suggestive of neutropenic lymphocytosis. Her neutropenic status triggered a suspicion of an alternative cause for her suppressed immunity.

AML presents with fever, fatigue, anorexia and weight loss, bleeding disorders; most of which coincide with COVID-19 symptoms.(7) Her bone marrow biopsy (tissue sample collected from posterior iliac crest) was suggestive of Acute myeloid Leukaemia.

CONCLUSION

During the second wave of COVID-19 pandemic in India, a patient presenting with mucormycosis and an HRCT thorax showing patchy areas of ground glass opacities were not uncommon. In this case a deranged CBC alerted the consultant to the possibility of another causality of an immunocompromised status

Source of Finding: None

Conflict of Interest: None

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