



ORIGINAL RESEARCH PAPER

Ophthalmology

MRI AND ORBITAL MUCORMYCOSIS IN COVID-19: A DESCRIPTIVE CROSS SECTIONAL STUDY

KEY WORDS: COVID-19; magnetic resonance imaging (MRI); mucormycosis

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ABSTRACT

Coronavirus disease-associated mucormycosis (CAM) is an established clinical entity in India. Early diagnosis can be lifesaving. Magnetic resonance imaging (MRI) imaging remains the corner stone of management in patients with ROCM. This review discussed the utility of MRI imaging in ROCM with an emphasis on the ideal MRI protocol in a suspected case of ROCM, the pathways of spread of infection, the classic diagnostic features, MRI for staging of the disease, MRI for prognostication, MRI for follow up, and imaging features of common differentials in ROCM. The pit falls of MRI imaging and a comparison of CT and MRI imaging in ROCM are discussed. The clinical interpretation of areas of contrast uptake and those of necrosis and its relevance to treatment are discussed. This review aims to familiarize every member of the multidisciplinary team involved in managing these patients to be able to interpret the findings on MRI in ROCM.

INTRODUCTION

- Coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has been associated with a wide range of opportunistic bacterial and fungal infections.¹
- Both Aspergillus and Candida have been reported as the main fungal pathogens for co infection in people with COVID-19²
- India has reported a recent surge in mucormycosis cases.
- According to WHO in India, prevalence of mucormycosis is estimated as 140 per million populations, it is 80 times higher than developed countries so Government of India made it a notifiable disease in May 2021³.
- The primary reason that appears to be facilitating Mucorales spores to germinate in people with COVID-19 is an ideal environment of hypoxia, diabetes, new-onset hyperglycemia, steroid-induced hyperglycemia, metabolic acidosis, diabetic ketoacidosis, increased ferritins and decreased phagocytic activity of WBC due to immunosuppression coupled with several other shared risk factors including prolonged hospitalization with or without mechanical ventilators⁴.
- Rhino-orbito-cerebral mucormycosis (ROCM) is a rare invasive infection caused by class Phycomycetes fungi involving immunocompromised patients, arising from nasal and sinus mucosa, spreads rapidly to orbit and brain.
- It is difficult to treat so early recognition, management is important to reduce complications.
- There are few studies on imaging and mucormycosis in COVID 19 in India.

Aims & Objectives of the Study

- To know the importance of MRI in diagnosis of Rhino-orbito-cerebral mucormycosis (ROCM) in COVID-19 patients.
- To know the extent of orbital involvement in Rhino-orbito-

cerebral mucormycosis (ROCM) in COVID-19 patients.

- Importance of MRI in Rhino-orbito-cerebral mucormycosis (ROCM) in COVID-19 patients management

METHODOLOGY

- A descriptive cross sectional study was conducted in regional eye hospital, Kurnool from May 2021 to October 2021.
- Institutional ethical committee clearance was taken.
- A total of 60 cases were included in study after applying inclusion criteria.
- Sampling technique: convenience sampling was used to collect the data.

Table 1. Socio demographic characteristics of study participants

Orbital involvement status in COVID-19	Frequency	Percentage (%)
Present	38	63.3
Absent	22	36.7
Total	60	100.0

Inclusion criteria :

- COVID-19 patients.
- COVID19 patients with orbital mucormycosis.
- Sample population were investigated and data entered, analyzed by using Microsoft excel

TABLE 2. Distribution of study participants according to orbital involvement (n=60)

Variable	Frequency (n)	Percentage (%)	
Age	< 25 years	10	16.7
	26 -50 years	29	48.3
	>50 years	21	35
	Total	60	100.0
Gender	Male	39	65.0
	Female	21	35.0
	Total	60	100.0

RESULTS

- A total of 60 COVID 19 positive cases orbital involvement was seen in 63 % (38) of cases only

Table 3. Distribution of study participants according to extent of orbital involvement (n=38)

Extent of orbital involvement	Frequency (n)	Percentage (%)
Optic nerve	14	36.9
Extraconal compartment	9	23.9
Intraconal compartment	7	18.4
Bilateral involvement	5	13.1
Retinal detachment	2	5.2
Posterior dislocation of lens	1	2.6
Total	38	100.0

Image 1. Retinal detachment with posterior dislocation of lens (Right eye)



Image 2. Bilateral orbital involvement



Image 3. Medial rectus involvement



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