

ORIGINAL RESEARCH

CLINICAL STUDY OF COVID ASSOCIATED RHINO-ORBITAL MUCOR MYCOSIS IN STATE COVID HOSPITAL

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ABSTRACT

Background: Mucormycosis is one such infection which has shown a sudden rise during the second wave in India. (Our present study has been designed to all the confirmed cases of rhino orbital mucormycosis. In our study we have included all the rhinorbital mucormycosis cases that have been confirmed by microscopy and or radiological evidence. Mucormycosis (also called zygomycosis) is a serious fungal infection caused by a group of molds called mucoromycetes.

Materials and Methods: All the patients that have directly attended the ophthalmology OPD. Chief complaint with duration (Look for redness, watering, discharge & pain in the eye, diplopia, eyelid/periocular swelling) facial swelling, eyelid/periocular facial discoloration, Worsening headache, sudden drooping of eyelid (or) restricted eye movements, sudden loss of vision, facial paraesthesia / anaesthesia, nasal discharge (blackish/ bloody/foul smell nasal stuffiness, dental pain).

Results: Out of all 60 cases, 79 there were 47 males and 13 females. In this study 48.33% cases belong to age group of 50-60 years followed by 36.66% belong to age group of 60-70 years. Among the 60 patients who presented to hospital within 1 week of onset of symptoms like pain redness watering et 35 of them got good vision, whereas among the 15 members who presented beyond 2 weeks after the onset of their symptoms only 7 got good vision while 2 of them got poor vision below 6/60 indicating the importance of early diagnosis. 65% cases affected at right eye and 63.33% cases showing symptoms like Redness, treatment under goes with total Restriction 42 members and Painful ocular movement in 43.33% cases.

Conclusion: The second wave of COVID-19 in India has led to more deaths than the first. In just a few weeks, the B.1.617.2 (Delta) variant became the dominant strain across India. It has since spread to about 40 nations, which include United Kingdom, Fiji and Singapore.18 the first case of Covid-19-related Mucormycosis has now been found in Chile. It is important to recognise at an early stage this infection, so as to potentially reduce soft and hard tissue necrosis and severe complications and alert colleagues of this mutilating and life threatening infection.

Keywords: Rhinorbital Mucormycosis, Facial Swelling, Eyelid/Periocular Facial Discoloration, COVID-19.

INTRODUCTION

In 2019 after reporting the first case of novel corona virus in Wuhan, China it took no time to our hospital else to insite a pandemic. It came out with many presentations and due to alteration in immunological response it has also produced many secondary infections. Mucormycosis is one such infection which has shown a sudden rise during the second wave in India. (Our present study has been designed to all the confirmed cases of rhino orbital mucormycosis. In our study we have included all the rhinorbital mucormycosis cases that have been confirmed by microscopy and or radiological evidence. Mucormycosis (also called zygomycosis) is a serious fungal infection caused by a group of molds called mucoromycetes.^[1] The types of fungi that mostly cause mucormycosis include *Rhizopus* spp., *Mucor* spp., *Rhizomucor* spp., *Syncephalastrum* spp., *Cunninghamella bertholletia*, *Apophysomyces* spp., and *Lichtheimia* (formerly *Absidia*) spp.^[2] The *Rhizopus oryzae* is the most common type and responsible for nearly 60% of mucormycosis cases in humans and accounts for 90% of the Rhino-orbital-cerebral (ROCM) form.^[3] These fungi live particularly in soil and in decaying organic matter, such as leaves, compost piles, or rotten wood. It is transmitted by coming in contact with the fungal spores in the environment. Mucormycosis may be associated to different clinical manifestations depending on the organs affected. There has been a rise in the number of cases of mucormycosis in patients with COVID-19 worldwide, particularly in India. The reason behind this is the favorable environment in the affected patient that allows the spores to grow. These include hypoxia, high glucose levels due to diabetes or steroid-induced hyperglycemia, acidic medium created by diabetic ketoacidosis or metabolic acidosis, high ferritin levels due to inflammation, and a decreased activity and count of white blood cells along with several underlying conditions that promote the germination of spores and lead to the catastrophic picture of rhino cerebral mucormycosis co-infection with COVID-19.^[4]

Aims and objectives

1. Collecting demographic data of the patients included
2. Different clinical presentations
3. Various treatment modalities (Medical and surgical)

MATERIALS & METHODS

All the patients that have directly attended the ophthalmology OPD

All the patients referred from other departments (mainly ENT & General Medicine)

Sample size / duration

All confirmed cases of post covid mucormycosis. Registered during the period of 1-5-2021 to 31-12-2021 in our hospital

Inclusion and exclusion criteria point wise

All confirmed cases of post covid rhinoorbital mucormycosis

Exclusion Criteria

Rhino -orbital mucormucosis in non covid cases were excluded from the study procedure to be followed.

The procedures to be followed in the study

Make a note of patient data

Chief complaint with duration (Look for redness, watering, discharge & pain in the eye, diplopia, eyelid/ periocular swelling) facial swelling, eyelid/perioculay facial discoloration, Worsening headache, sudden drooping of eyelid (or) restricted eye movements, sudden loss of vision, facial parasthesia / anaesthesia, nasal discharge (blakish/ bloody/foul smell nasal stuffiness, dental pain.

Past History

H/o diabetes and other co-morbidities

H/o Covid-19, steroid usage & oxygen usage

H/o Vaccination - 1st & 2nd dose

Ocular Examination

Visual acuity

Extra - ocular movements

Anterior segment examination

Eyelids- edema, periorbital fullness,ptosis, legophthalmos any ulcers(or) matting of lids

Conjunctiva- Congestion (Superficial (or) deep), dryness, chemosis, sib-conjunctival haemorrhage

Cornea- clear / hazy, corneal sensations, stain to look for esxposure keratitis (or) any

Features of Keratitis

Anterior Chamber- Look for cells, flore (or) hypopyon

Pupil-Normal/ sluggish/RAPD/Dilated fixed pupil

Lens - clear cataractous

Fundus

*Our hospital being a state Covid hospital has treated more than patients during the first and second waves of pandemic

Make a note of patient data

Chief complaint with mention the potential risk in the study and the probable benefits of the study.

Statistical Analysis

Outline the parameter to be studied.

Mention the type of data to be collected.

Exact statistical tests to be employed for analysis.

Mention the level of significance.

RESULTS

Table 1: Gender distribution

| | No. of Patients | % |
|---------------|-----------------|-------|
| FEMALE | 13 | 21.66 |
| MALE | 47 | 78.34 |
| | 60 | 100 |

Table 2: Age distribution

| | No. of Patients | % |
|--------|-----------------|-------|
| < 30 | 1 | 1.66 |
| 30 -40 | 12 | 20 |
| 40-50 | 12 | 20 |
| 50 -60 | 29 | 48.33 |
| 60-70 | 22 | 36.66 |
| 70-80 | 4 | 6.66 |
| TOTAL | 60 | 100 |

Table 3: Relation between the Duration of Symptoms Experienced By Patients and Their Final Acquired Vision

| Duration Of pain | 6/6-6/12 | 6/18-6/60 | <6/ 60 |
|------------------|----------|-----------|--------|
| < 1WEEK | 35 | 15 | 10 |
| 1-2WEEKS | 29 | 24 | 07 |
| >2WEEKS | 9 | 5 | 2 |

Among the 60 patients who presented to hospital within 1 week of onset of symptoms like pain redness watering et 35 of them got good vision, whereas among the 15 members who presented beyond 2 weeks after the onset of their symptoms only 7 got good vision while 2 of them got poor vision below 6/60 indicating the importance of early diagnosis.

Table 4: Affected Eye

| | No. of Patients | % |
|-----------|-----------------|-----|
| RIGHT EYE | 39 | 65 |
| LEFT EYE | 21 | 35 |
| | 60 | 100 |

Table NO.5: Clinical Features

| | No. of Patients | % |
|-----------------------|-----------------|-------------|
| Conjunctivitis | 41 | 68.3 |
| Mild congestion | 24 | 40 |
| Proptosis | 39 | 65 |
| Redness | 38 | 63.33 |

| | | |
|------------------------|----|-------|
| Painful oculr movement | 26 | 43.33 |
| Pupil dilated | 19 | 31.66 |

Table NO.6: EOM

| | No. of Patients | % |
|-------------------|-----------------|-----|
| Total restriction | 42 | |
| Mild restriction | 18 | |
| | 60 | 100 |

DISCUSSION

Globally, the incidence of mucormycosis varies from 0.005 to 1.7/million population, whereas in India, it is much higher, that is, 0.14/1000 individuals. In addition, the presence of risk factors increases the prevalence. Extensive angioinvasion, leading to vascular thrombosis and tissue necrosis, is the hallmark of mucormycosis. This aggressive behavior of Mucorales is attributed to innate thermo tolerance, rapid growth, an affinity for endothelial cell surfaces, ability to obtain iron from the host, and impairment of host defense mechanism (involved in pathogen recognition, tissue repair, etc.). Hence, the risk factors that predispose to mucormycosis include compromised immune response (as seen in uncontrolled diabetes, DKA, and neutropenia), elevated free iron levels, defect in zinc metabolism, and immunosuppressant therapy for an organ transplant.^[5-7]

Most CAM-affected patients were male (73.9%). Similar findings were reported by Patel et al. Even in the pre-COVID-19 era, male predominance was observed. Although mucormycosis is not gender dependent, COVID-19 infection has been reported more in males. The most common form of mucormycosis observed in the present set of patients was rhino-orbital or rhino-orbito-cerebral (n = 258). While one patient showed pulmonary involvement along with rhino-orbital form, one case with only maxillary sinus and one case with only hard palate involvement was noted. According to the literature, the most common form of mucormycosis is rhino-orbito-cerebral (44–49%), followed by cutaneous, pulmonary, disseminated, and gastrointestinal types. Literature reports have suggested that rhino-orbito-cerebral form is commonly associated with diabetes and DKA.^[9-11]

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CONCLUSION

The second wave of COVID-19 in India has led to more deaths than the first. In just a few weeks, the B.1.617.2 (Delta) variant became the dominant strain across India. It has since spread to about 40 nations, which include United Kingdom, Fiji and Singapore.¹⁸ The first case of Covid-19-related Mucormycosis has now been found in Chile. It is important to recognise at an early stage this infection, so as to potentially reduce soft and hard tissue necrosis and severe complications and alert colleagues of this mutilating and life threatening infection.

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