

Covid-19 Patients with Rhino-Orbito-Cerebral Mucormycosis (Black Fungus) in Western U.P., India

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ABSTRACT:

The rare, rapidly lethal condition known as mucormycosis (sometimes known as "black fungus") is brought on by a saprophytic fungus in the mucorales family. The only accessible tool is early diagnosis and quick medical and surgical treatment. The rhino-orbito-cerebral subtype is the most prevalent. During the second wave of COVID 19, we noticed a dramatic increase in mucormycosis infections in India. This required a thorough analysis of the mucormycosis pandemic in COVID-19. A retrospective multi-centric investigation was undertaken on 60 patients of rhino-orbito-cerebral mucormycosis with current or recent COVID19 positive status that presented to us between April and May, 2021, in Western Uttar Pradesh. All of the patients had Type 2 Diabetes Mellitus or a history of recently using significant dosages of steroids. The pathogenicity of the Delta strain B1.617.2 is a substantial contributor. By considerably reducing the number of days of liposomal amphotericin B therapy, FESS with sino-nasal debridement significantly reduces mortality and overall treatment costs. The key to reducing mortality and morbidity continues to be early diagnosis, timely medical and surgical therapy, blood sugar control, and avoiding the use of excessive doses of steroids.

Keywords: Black fungus, Mucormycosis, rhino-orbito-cerebral, Covid-19, Steroids, Steam, Oxygen, Surgery.

INTRODUCTION:

A series of invasive illnesses known as mucormycosis is brought on by filamentous fungi belonging to the Mucoraceae family. After candidiasis and aspergillosis, it is the third most significant invasive mycosis. 2 Mucormycosis occurs in about 1.7 cases per 1000000 people annually, and the main risk factors for the disease include ketoacidosis (diabetic or not), iatrogenic immunosuppression, the use of corticosteroids or deferoxamine, disruption of mucocutaneous barriers by catheters and other devices, and contact with bandages contaminated with these fungi. [2]

Most often occurring clinical subtype of illness is rhino-orbito-cerebral. Mucormycosis is an uncommon, difficult-to-diagnose illness with a high fatality rate. [3] The symptoms of this kind initially include sinusitis, pain in the face and eyes, proptosis, and evidence of involvement in the orbital structures. [4-7]

The existence of risk factors, disease symptoms, the observation of specific morphological fungal elements in histological sections, direct material smears, and, to a lesser extent, culture results all contribute to the diagnosis of mucormycosis. There are currently no accurate serological assays for diagnosis [6,-8] In Western Uttar Pradesh, India, the incidence of mucormycosis increased more quickly during the second wave of COVID-19 than it did during the first wave, with at least 28,252 cases reported as of June 7, 2021. Among them, 86.6% are known to have had COVID-19, and 62.3% are known to have diabetes. [9]

METHODOLOGY:

This Multi-centric Retrospective study was carried out in ENT department at Santosh Medical College and Hospital, Ghazaabad UP, to examine multiple risk factors, clinical characteristics, diagnoses, treatments, and outcomes of patients with mucormycosis during the second wave of COVID-19.

Patients with mucormycosis that was biopsied and had symptoms that were clinically consistent with the diagnosis, i.e., two or more of the following upon presentation, Severe facial discomfort and swelling that started during the last 28 days, along with black eschar in the oral cavity, blackish eschar in the nasal cavity, and/or blackish eschar over the face. Participants with ptosis, proptosis, or eye edema were recruited for the study.

The exclusion criteria included cancers of the mouth and sinuses, other illnesses linked to oro-mucosal ulcerations, and a lack of recent COVID 19 status.

Records were examined for the presence and absence of various risk factors, treatments provided, histology results, surgeries carried out, and results after all inclusion and exclusion criteria had been met. A spreadsheet created in Microsoft Excel was used to compile and tabulate all the data. For the statistical calculations, SPSS 22 was employed. The findings were organized and compiled.

RESULT:

Both sexes are equally affected by the condition. Only diabetics or people who have recently taken steroids are affected by the condition. The risk of getting mucormycosis is higher in immunocompromised patients with Delta stain of COVID-19 Pango lineage B.1.617.2 than in non-COVID patients. Inhaling oxygen increases the risk as well. Inhaling steam has neither a good nor a bad effect. The COVID 19 delta strain has caused an upsurge in the number of mucormycosis cases. The peak is moving toward younger age groups. Eye involvement has become more common. Maximum mortality occurs in the first 72 hours after presentation.

When COVID 19 delta strain is also present, the mortality ratio is lower. By lowering mortality, shortening the course of Liposomal Amphotericin-B therapy, and hence lowering treatment costs, surgery has a major positive impact.

Table 1: Age, Sex and Covid status distribution of patients.

Sex	No of cases
Male	32
Female	28
Total	60
Less than 31	3
31-45	22
46-60	22
More than 60	13
Total	60
Active COVID	29
Post COVID	31

Table 2: Various Risk Factors for mucormycosis with Delta stain of COVID-19 in study.

Risk factor	No of cases	Association
Diabetic	45	Strong
Recent history of Steroids	51	Strong
Either Diabetes or steroids	53	Definitive
Oxygen support	18	Weak
History of Tocilizumab	zero	Can not comment
Steam inhalation more than one hour a day	2	Absent

Table 3: Outcome in 60 patients of Mucormycosis with COVID-19

Outcome	No. of patients	Frequency
Recovered during study period	20	33.3
Survived but did not recover during study period	25	41.6
Facial disfigurement	6	10
Permanent loss of vision from one eye	5	8.3
Permanent loss of vision from both eyes	2	3.3
Expired during study period	10	16.6

Table 4 Treatment offered in terms of Liposomal Amphotericin B and Debridement surgery to various patients

Treatment given	No of patients	Frequency
Liposomal Amphotericin B for 1-7 days	39	65
Liposomal Amphotericin B for 8-14 days	15	25
Liposomal Amphotericin B for more than 14 days	1	1.6
Debridement surgery	36	60

Table 5 Figures of mortality from the time of presentation

Duration from presentation	No of patients who expired
Within 24 hours	3
24-48 hours	5
48-72 hours	0
More than 120 hours	4
Total	12

CONCLUSION:

Due to its immunosuppressive effects, the COVID-19 Delta strain in Western Uttar Pradesh, India, has considerably raised the prevalence of mucormycosis. The same has also been impacted by overuse of steroids. Since this strain affects patients of younger ages more frequently, the peak of mucormycosis has also shifted in that direction. Early ethmoid and ophthalmic artery involvement leads to early turbinate necrosis in a young patient with unatherosclerosed and more patent vessels, combined with obvious eye symptoms. The extensive media coverage of black fungus has raised public awareness of mucormycosis, which has helped the disease manifest itself earlier and be diagnosed. When observed over a brief period of time, early diagnosis combined with early surgery in younger patients may have helped to minimize mortality.

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