

Study of Profile, Pattern and Associated Comorbidities in Patients Presenting with Mucormycosis at A Tertiary Care Teaching Hospital

Mehnaaz Sultan Khuroo¹, Ghulam Mustafa Malik² and Ruksana Hamid^{3*}

¹Professor, Department of pathology, GMC Srinagar.

²PG Scholar, Department of pathology, GMC Srinagar.

³Medical officer and anesthesiologist, JK health.

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***Corresponding author:** Ruksana Hamid, Medical officer and anesthesiologist, JK health.

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Abstract:

Mucormycosis (MCM) is a devastating infection with high mortality rates despite recent advances in its diagnosis and treatment. A total of 20 cases of mucormycosis were studied during the study period. Majority of the cases were females and over the age of 40 years. Statistically significant relation was found between mucormycosis and diabetes.

Key words: mucormycosis; opportunistic infections; diabetes; COVID 19

Introduction:

Mucormycosis (MCM) is a devastating infection with high mortality rates despite recent advances in its diagnosis and treatment. It is caused by the filamentous fungi of the Mucorales order of the class of Zygomycetes [1]. Although it is classically defined as an opportunistic infection, preferentially affecting patients with diabetes mellitus (DM), neutropenia, malignancy, chronic renal failure, and acquired immunodeficiency syndrome and those who have received organ or hematopoietic stem cell transplants, it can affect immunocompetent hosts as well (such as trauma patients) [1, 2]. The incidence of MCM worldwide appears to be increasing, particularly in oncological patients and those with DM [3]. Along with aspergillus, it is one of the most common invasive fungal infections affecting immunosuppressed individuals. Despite aggressive surgical and polyene antifungal therapy, overall mortality for MCM infection remains high, with figures ranging from 20 to 50% [4–6]. Depending on patient characteristics (such as critically ill or immunocompromised patients) and site of infection, mortality rises markedly, nearing 70–90% for cases of disseminated mucormycosis [4–6]. Inhalation of sporangiospores is the most common route of transmission, although ingestion of spores, direct implantation into injured skin (burns), trauma with contaminated soil, or intravenous (drug users) transmission have also been described [7]. After nasal inoculation it takes a rapidly progressive course extending to neighboring tissues, including the orbit, and sometimes to the brain. Lipid formulations of amphotericin B are the mainstay of treatment, along with aggressive surgical therapy [8]. However, such drug formulations are not available worldwide due to their elevated costs.

COVID-19-associated mucormycosis, commonly referred to as black fungus, is the association of mucormycosis (an aggressive fungal infection) with COVID-19. It has been reported around the nose, eyes and brain – a clinical manifestation sometimes referred to as 'rhino-orbital-cerebral (ROC) mucormycosis'. The condition does not spread person to person and is not contagious. Reports of COVID-associated mucormycosis have generally been rare. In the reports, the most common risk factor for mucormycosis was diabetes. Most cases presented during hospitalization (often 10–14 days after admission), and all but one of the affected people died. Early aggressive treatment is considered essential. It has been estimated that between 40% and 80% of people who contract any form of mucormycosis die from the disease, depending on the site of infection and underlying health conditions. COVID-associated mucormycosis has especially affected people in India. The association also appeared in Russia. One explanation for why the association has surfaced remarkably in India is high rates of COVID infection and high rates of diabetes. In May 2021, the Indian Council of Medical Research issued guidelines for recognizing and treating



COVID-associated mucormycosis.[9]

Aims and objectives:

To study profile, pattern and associated comorbidities in patients presenting with mucormycosis.

Material and Methods:

Study design: retrospective study design

Study duration: 3 years

Study sample: All the Microbiologically confirmed admitted cases

Statistical analysis: All the data was entered was on MS excel sheets and analysed by SPSS 20.0. The results were drawn in the form of graphs, pie charts and tables. P value was found out to find the statistical significance.

Observations and discussion:

A total of 20 patents were studied during the study period.

Gender wise Distribution of cases:

It was observed out of 20 patients, 14 patients were females while as males were 6 in number showing preponderance of infection in female gender.

Gender	Frequency
Male	6
Female	14
Total	20

Table 1: Genderwise distribution of cases

Age wise distribution of cases:

In our study, of the cases were more than 45 years of age. Around 40 percent of cases were >60 years of age.

Age group	Frequency
16-30	1
31-45	4
46-60	7
>60	8
Total	20

Table 2: Age wise distribution of cases

Domicile status of cases:

In our findings it was observed there 50 percent of the cases belonged to rural areas and 50 percent of the cases belonged to the urban areas.

Domicile	Frequency
Rural	10
Urban	10
Total	20

Table 3: Domicile status of cases

Occupational status:

Occupation	Frequency
Housewife	14
Teacher	1
Business	2
Student	1
Retired Govt Employee	2
Total	20

Table 4: Occupational status of the cases

COVID 19 positive/Negative:

COVID-19-associated mucormycosis, commonly referred to as black fungus, is the association of mucormycosis (an aggressive fungal infection) with COVID-19. [9]. No statistically significant relation was found between the COVID status and mucormycosis.

COVID 19	Frequency	P value
Positive	3	0.675
Negative	17	
Total	20	

Table 5: COVID status of the cases

Diabetes /Non diabetic:

Mucormycosis is as an opportunistic infection, preferentially affecting patients with diabetes mellitus (DM) and other conditions like , neutropenia, malignancy, chronic renal failure, and acquired immunodeficiency syndrome and those who have received organ or hematopoietic stem cell transplants[1, 2].In our study a statistically significant relation was found between diabetes and mucormycosis.

	Frequency	P value
Diabetic (T2DM)	17	0.001
Non diabetic	3	
Total	20	

Table 6: Diabetic and non-diabetic cases

Other clinical conditions:

Malignancy	Nil
Organ transplant /Bone marrow transplant	Nil
Addiction History	Nil
Immunosuppressant Drugs	Nil
Immunocompromised state	Nil

Table 7: No other clinical condition besides COVID 19 and diabetes was observed in patients studied.

Summary and Conclusion:

A total of 20 cases of mucormycosis were studied during the study period. Majority of the cases were females and over the age of 40 years. Statistically significant relation was found between mucormycosis and diabetes.



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