



AN EPIDEMIOLOGICAL STUDY ON POST-COVID MUCORMYCOSIS IN JAMNAGAR, GUJARAT

Preventive & Social Medicine

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ABSTRACT

Introduction: Covid19 predisposes to mucormycosis, probably due to diabetes, steroid and immunosuppressive status and is associated with high morbidity and mortality. Present study aims to evaluate socio-demographic and clinical profile, its outcome, anatomical site of involvement and covid vaccination status of patients of post-covid mucormycosis. **Methods:** It's a cross-sectional study conducted in GG Hospital, Jamnagar between May to June 2020 with a total sample size of 264 patients. **Results:** The mean age of mucormycosis patients was 53.63 years. More than three fourth of patients had history of diabetes. About 85% patients were unvaccinated for covid19. The case fatality rate of mucormycosis was 23.10%. The most common types of mucormycosis was Rhinomucormycosis (51.5%). **Conclusion:** A fatal combination of diabetes and indiscriminate use of steroids in covid19 increases possibility of mucormycosis. Discharge rate was 69%, with 23% mortality rate. This could be due to delayed diagnosis of disease and consequent late initiation of treatment. A larger proportion of patients (86%) were unvaccinated for covid19, that could led to increased probability to severe forms of covid 19 and subsequent oxygen therapy. Rhinomucormycosis is most common form of presentation. **Recommendation.** Timely diagnosis and early initiation of treatment, strict glycemic control, and rational use of steroids could save mucormycosis patients. Lack of awareness and ignorance could lead to severe covid19, that can lead to hypoxemia, and is sought to be one of the reasons for mucormycosis.

KEYWORDS

mucormycosis, coronavirus, covid vaccine, diabetes

INTRODUCTION:

Coronavirus disease (covid19) caused by severe acute respiratory syndrome (SARS Cov2) is found to be associated with many fungal infections like aspergillus, Candida etc.⁽¹⁾ The main reason for development of fungal infections are hypoxia, hyperglycemia, metabolic acidosis and immunosuppressive state⁽²⁾. It's an opportunistic infection leading to invasion of blood vessels by fungal hyphae, causing infarction and necrosis of tissues⁽³⁾. The disease causes high morbidity and mortality given that it progresses rapidly and diagnosis is often delayed.⁽⁴⁾

The prevalence of mucormycosis in India is estimated to be 0.14 per 1000 population, about 80 times higher than developed countries, making it highest burden of mucormycosis.^(5,6) Diabetes mellitus is the most common risk factor, followed by haematological malignancy, solid-organ transplant, post-pulmonary tuberculosis, chronic kidney diseases and⁽⁷⁾. The aim of our study is to evaluate socio-demographic and clinical profile, outcome, anatomical site of involvement and covid vaccination of patients of post-covid mucormycosis, admitted in GG Hospital, Jamnagar.

MATERIALS AND METHODS:

It's a cross-sectional study conducted in a tertiary care hospital. We included all patients admitted for treatment of post-covid mucormycosis from May 1, 2020 to July 31, 2020 (Three months) in Guru Gobind singh Hospital, Jamnagar. Total sample size is 264 patients, with a non-response rate of 0%.

A pre-tested semi-structured proforma was used to collect relevant data from eligible participants, that were then entered and analyzed in Microsoft Excel for Windows 10.

RESULTS:

Table No.1. Demographic Characteristics Of Patients (n= 264)

Characteristic	Value (%)
Mean Age (SD) in Years	53.63 (12.47)
Gender	
Male	168 (63.64)
Female	96 (36.36)
Place of Residence	
Jamnagar	145 (54.92)

Devbhumi Dwarka	33 (12.5)
Junagadh	23 (8.71)
Porbandar	19 (7.2)
Rajkot	16 (6.06)
Morbi	8 (3.03)
Others	20 (7.58)

Table No.2. Past Clinical History Of Patients. (n=264)

Characteristic	Value (%)
Covid status at the time of admission to mucor ward	
Positive	71 (26.89)
Negative	191 (72.35)
Unknown	2 (0.76)
History of Diabetes Mellitus	
Yes	202 (76.52)
No	62 (23.48)
History of Immunosuppressive drugs	
Yes	9 (3.41)
No	247 (93.56)
Not Known	8 (3.03)
History of Steroid Use during covid illness	
Yes	143 (54.16)
No	121 (45.83)
History of Remdesvir given	
Yes	67 (25.38)
No	197 (74.62)
History of covid vaccination status	
No vaccination	227 (85.98)
One dose	28 (10.61)
Two doses	9 (3.41)

Table No.3. Distribution Of Patients According To O2 Therapy And Treatment Of Mucormycosis

Characteristics	Value (%)
Indoor Admission Status	
Room Air	236 (89.39%)
Nasal Prong	13 (4.92)
NRBM	13 (4.92)
Bi-PAP	2 (0.76)
Outcome of patient	
Discharge	183 (69.32)

Absconded	2 (0.76)
Refer to higher centre death	18 (6.82) 61 (23.10)
Types of mucormycosis patients	
Rhino	136 (51.51)
Rhino-orbital	86 (32.58)
Rhino-palatal	1 (0.38)
Rhino-orbito-cerebral	25 (9.47)
Palatal	14 (5.30)
Pulmonary	2 (0.76)

DISCUSSION:

The emergence of epidemic of mucormycosis after recovery from covid created a public consciousness, and brought attention to epidemiologists, as thousands of cases of mucormycosis have been notified across the country.

Our study found the mean age of mucormycosis patients admitted in GG Hospital, Jamnagar was 53 years, and there were more males (63%) than females admitted. A study conducted by Luv Selarka et al also had similar findings, the mean age patients was 55 years⁽⁸⁾. In a study by Patel et al and Priya et al, more males were involved than females.^(9,10) A study by Muthu et al also had similar findings like our study, mean age was 56.1 years, male involvement was 80.3%.⁽¹¹⁾

Diabetes mellitus, especially poorly controlled, is a risk factor for severe COVID-19 and is associated with increased mortality due to COVID-19.^(12,13,14) Among those patients admitted, three-fourth had been suffering from Diabetes Mellitus, whereas 3.4% patients had history of immunosuppressive drugs. Upon asking for history of steroid intake during covid illness, almost half of respondents had history of steroids during their covid episodes. About 25% respondents had history of remdesvir injection and as well. Our study observed that almost one-fourth of mucormycosis patients were covid positive at the time of admission in mucormycosis ward/ICU, whereas remaining were covid negative.

A study by Luv Selarka et al reported about 76.6% patients having history of diabetes mellitus, 74.4% patients received injection remdesvir⁽⁸⁾. Several other studies also observed Diabetes as one of the important risk factor for development of mucormycosis.^(2,5,11,15)

Out of 264 patients, 236 (89%) were on room air, 10% were put on NRBM or Nasal Prong. The discharge rate among admitted patients was 69%. We also observed that 23% admitted patients died due to mucormycosis even after treatment. Possible reason for high fatality rate could be presence of diabetes, delayed diagnosis and treatment initiation, advanced age etc. A study by Muttu et al reported 36.5% mortality⁽¹¹⁾. Another multi-centric study in India reported 45.7% mortality in coronavirus associated mucormycosis.⁽¹⁴⁾ A study by Singh AK reported 30.7% mortality among mucormycosis patients.⁽¹⁶⁾ Several other studies reported mortality rate from mucormycosis from 28-52%.^(8,15,17) As per a study by WK Balwan et al, mortality was 80% if a patient was untreated, and if treated, it was still 40-50%.⁽¹⁸⁾

We classified patients of mucormycosis as per their anatomical site of involvement, and observed that majority of patients (52%) had Rhinomucormycosis, followed by Rhino-orbito-mucormycosis (33%), Rhino-orbito-cerebral mucormycosis (9.4%). A study reported the most common site of infection being nose and sinuses.⁽⁹⁾

A study by Awadesh Kumar et al, Mucormycosis involving nose and sinuses (88.9%) was most common followed by rhino-orbital (56.7%).⁽²⁾ Another study found that Rhino-orbito mucormycosis was most common (58.8%), followed by Rhino-orbito-Cerebral (29.6%), and cases with Pulmonary involvement were very few (7.3%).⁽¹¹⁾

In our study, we found that about 86% patients were unvaccinated, 10.60% had taken single dose. In a study by Luv Selarka et al, 66% patients were unvaccinated, 29.8% had taken one dose.⁽⁸⁾

CONCLUSION:

The study revealed mean age of patients of mucormycosis was 53.63 years, and with males being more affected. Diabetes is an important predisposing factor and rampant use of steroid in diabetic patient might hamper glycemic control in already hyperglycemic diabetic patients making them more vulnerable to mucormycosis. Discharge rate and case fatality rate were 69% and 23% respectively. This could be due to

delayed diagnosis and consequent late initiation of treatment. A larger proportion of patients (86%) were unvaccinated for covid19, that could led to increased probability to severe forms of covid 19. Most common type of mucormycosis was Rhinomucormycosis (52%), followed by Rhino-orbito-Mucormycosis (33%) and Rhino-orbito-cerebral Mucormycosis (9.4%).

Recommendation:

A fatal combination of diabetes Mellitus and indiscriminate use of steroids in a covid19 episode seems to increase possibility of mucormycosis. Timely diagnosis of mucormycosis and early initiation of treatment, strict glycemic control, and rational use of steroids could save lives of mucormycosis patients.

Lack of awareness and ignorance about covid vaccine among community dwellers could lead to severe forms of covid19 associated hypoxemia, and is sought to be one of the reasons for development of mucormycosis. Advocacy and IEC activities regarding widespread coverage of covid vaccine could be useful in prevention and control of severe forms of covid19 and subsequent development of mucormycosis.

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