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Available online at: http://www.iajps.com *A Case Study*

INCIDENCE AND PREVALENCE OF MUCORMYCOSIS IN COVID -19 PATIENTS WITH COMORBID CONDITIONS IN TERTIARY CARE HOSPITAL

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Abstract:

Aim: *The aim of the study carried out was to check the Incidence and prevalence of Mucormycosis in covid-19 patients with comorbid conditions.*

Methodology: *This is the retrospective observational study conducted in the In-patient department of the Covid-19 ward at Aware Global Hospital and Govt. ENT Hospital, the relevant data on the Drug prescription of each patient was collected from Medical Record Department, patient age, sex, diagnosis, treatment, drugs, doses of drugs, frequency of drugs, and route of administration were collected.*

Results: *A total number of 100 patients with mucormycosis were enrolled in the study, of which 80 were male patients and there were 20 female patients. The study revealed that hypertension is the second leading factor for Covid-19 associated with Mucormycosis. 1/4th of the patients have developed Denovo diabetes due to administration of steroids, were as 1/5th of the patients have both diabetes and hypertension.*

Conclusion: *The study concludes that most of the patients with a history of diabetes and hypertension were detected during the study period. Mostly males were affected, due to over usage of steroids few patients are affected with Denovo diabetes.*

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INTRODUCTION:

Mucormycosis - also known as black fungus, is a serious fungal infection generally in people who are immunocompromised (1). Symptoms may depend on where in the body the infection occurs (2). It most commonly infects the nose, sinuses, eye, and brain resulting in a runny nose, one side facial swelling, pain, headache, fever, blurred vision, bulging, or displacement of the eye. But, owing to the overuse of immune suppressants and corticosteroids, the susceptibility to fungal infection has been enhanced. Mucormycosis is an infection that is caused by a group of molds containing filaments belonging to the phylum Zygomycota(3-4). This kind of fungus is mainly growing on decaying vegetables, bread, soil, and dust. After infection, they produce lesions of black color due to which Mucormycosis is also known as a black fungus. Data from the last two decades revealed that Mucormycosis emerge as a terrifying fungal infection with higher mortality rates. The most common causative organism associated with Mucormycosis is the Rhizopus species. It is a rare terminal complication of uncontrolled diabetes and another chronic debilitating disease. The various risk factors associated with Mucormycosis are diabetes mellitus (poorly controlled and ketoacidosis), organ transplantation, autoimmune disorders, immunosuppressive therapy, HIV, burns, and iron excess.

Mucormycosis is a life-threatening hostile fungal infection that rises particularly in diabetic patients with or without other underlying conditions such as hematological malignancies or the need for solid-organ transplantation. Zygomycetes are the class of fungi that causes fatal infection commonly known as zygomycoses and both the Mucorales and Entomphthalates belong to the Zygomycetes class of fungi. Rhino cerebral (sinus and brain) Mucormycosis is an infection in the sinuses that spread to the brain. This is most common in people with uncontrolled diabetes and in people who have a kidney transplant (5-6).

Pulmonary (lung) Mucormycosis is the most common type of Mucormycosis in people with cancer and in people who have an organ transplant or a stem cell transplant.

Gastrointestinal Mucormycosis is most common in young children than adults. Infants less than one month of age are at risk if they had antibiotics, surgery, or medications that lower the body's ability to fight germs (7-8).

The main aim of present work To study the incidence and prevalence of Mucormycosis in covid 19 patients with comorbid disease conditions who are admitted in the particular ward in aware Gleneagles global hospital and govt. ENT hospital, Koti, Hyderabad, India. The objectives are to detect the prevalence of mucormycosis in covid 19 patients with comorbid conditions like DM and HTN, to detect the incidence of mucormycosis in covid 19 patients with comorbid conditions like DM and HTN, to analyze the age group of the people who are more prone to the disease condition, to prioritize the gender of the people who are more prone to the disease condition, to check the class of drugs which are exacerbating the disease condition, to check the comorbidity which exacerbates the developing disease condition.

METHODOLOGY:

Study design–This is a retrospective observational study conducted in the In-patient department of the covid-19 ward at Aware Global hospital and Govt. ENT Hospital, Koti. All relevant patient data will be collected in a suitable designed proforma.

Study Period- 6 months

Study criteria

Table :- 1 Inclusion & Exclusion Criteria

INCLUSION CRITERIA	EXCLUSION CRITERIA
Age	Pregnant & Lactating mothers
Gender	Paediatrics
Post covid-19 infected patients	HIV patients
Comorbid conditions	Patients in critical conditions

COLLECTION OF DATA

The data was collected from the patients who met the inclusion criteria. To study the incidence and prevalence of Mucormycosis in covid 19 patients with co-morbid disease conditions were collected in suitably designed Proforma. The relevant data on the drug prescription of each patient was collected from the medical records department.

Source of data:

All the relevant and necessary data will be collected from

1. Patient case notes.
2. Treatment charts.
3. Laboratory and diagnostic reports.

Designing data collection format:

A suitable data collection format was designed to collect, document, and analyze the data.Data collection format included the provision for collection of information related to demographic details of the patient (name, age, and sex) and family history, past medical history, smoking, and alcohol history, diagnosis, and co-morbid conditions, and medication usage during the patient stay in medical wards and laboratory details.

Method and collection of data:

It is a retrospective and observational study

- The cross-sectional study was conducted in a tertiary care hospital for some time of 6months.
- The study is mainly observing the prevalence, prescribing patterns, and the method of treatment used for the treatment of covid-19 associated Mucormycosis.
- The patient from the hospital department is below 60 years, and pregnant and lactating women are excluded from this study.
- The patient who was selected for the study has a history of diabetes mellitus and hypertension disease.
- The study mainly observed the patient data like age, sex, previous and current medical profile, and the various classes of treatments.
- About 1/2 of the population was suffering from diabetes, which increases the risk of covid-19 associated mucormycosis disease.
- The study revealed that hypertension is the second leading factor for covid-19 associated mucormycosis disease.

- About 1/8th population has no comorbidities.
- About 1/4th patients have developed the new onset of diabetes due to the administration of steroids.
- About 1/5th patients have both diabetes and hypertension.
- The data were obtained from patient profile medical records.
- Patients with the co-morbid conditions:

RESULTS:

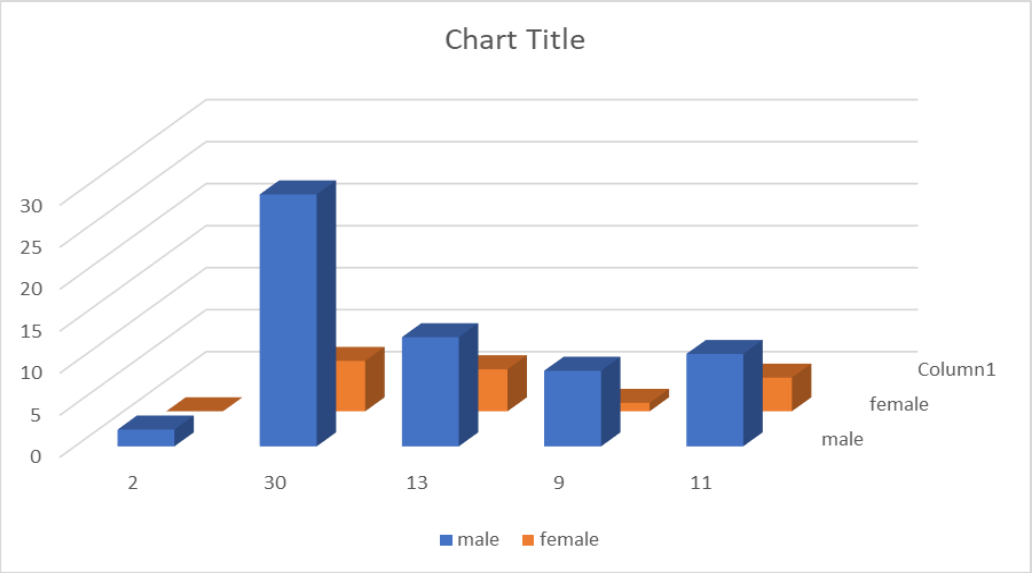

Figure No 1: Disease condition of the patients

AGE OF THE PATIENTS:

S.no	Age	Population	Percentage
1	10-20	1	1%
2	21-30	5	5%
3	31-40	23	23%
4	41-50	29	29%
5	51-60	33	33%
6	61-70	9	9%

Out of 100 patients, 01 patients were present between age group 10-20, 05 patients present between the age group 21-30, 23 patients present between age group 31-40. 29 patient presents between the age group 41-50. 33 patient presents between the age group 51-60.09 patients present between the age group 61-70.

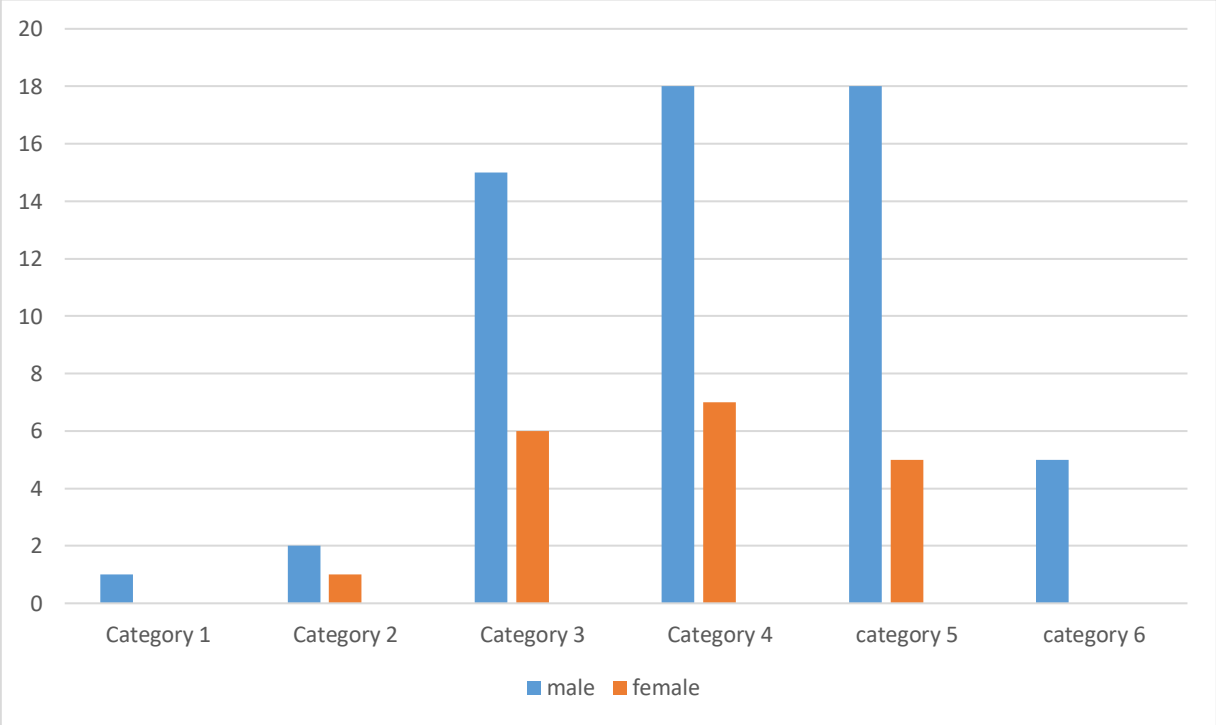

Figure No 2: Age of the patients

GENDER OF THE PATIENTS:

Details of patients enrolled in the study: 100

A total number of 100 patients were enrolled in the study, of which 80 were male patients and there were 20 female patients.

TABLE 3. Gender wise distribution of total sample

S.no	Gender	Population	Percentage
1	Male	80	80
2	Female	20	20

GENDER OF THE PATIENTS

Male Patients are more prone to Post Covid Mucormycosis when compared to the female patients. The Ratio was found to be 4:1.

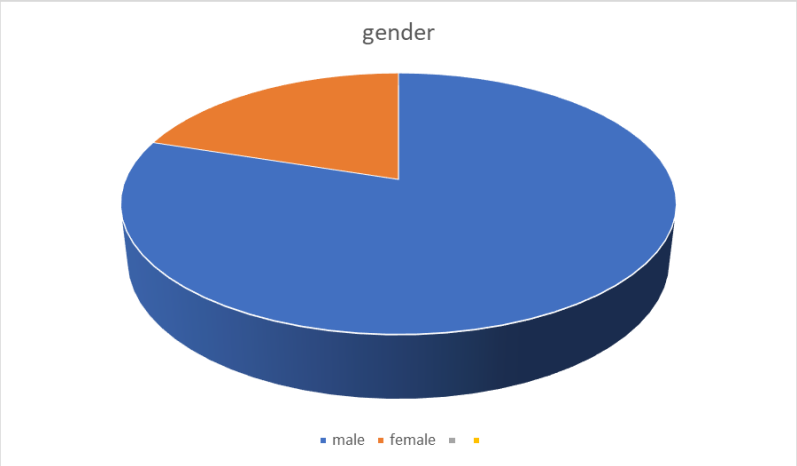

Figure No 3: Gender of the patients

DISCUSSION:

Mucormycosis (formerly known as zygomycosis) is an uncommon but serious angio-invasive infection caused by micromycetes, a fungus family.

Mucormycosis primarily affects immunocompromised individuals or those who have been afflicted with other diseases. People with diabetes (particularly diabetic ketoacidosis), solid organ transplantation, neutropenia (few neutrophils), long-term systemic corticosteroid usage, and iron overload are all high-risk categories (hemochromatosis). People living with HIV and those on immune-modulating drugs, such as the antifungal voriconazole in select high-risk categories, are at a higher risk.

Patients with severe COVID-19 or those recovering from the condition have been documented to develop fungal infections such as mucormycosis, aspergillosis, and invasive candidiasis, which have been linked to serious sickness and mortality.

At the outset, ethical committee clearance was obtained from the institutional review board of Global Aware Hospital, Hyderabad. Informed consent was obtained from the Covid-19 patients who met the inclusion criteria and were willing to enroll themselves in the study. The study was carried out at the in-patient department of the Covid-19 ward at Aware Gleneagles Global Hospital and Govt. ENT hospital.

In an observational retrospective study, that has been conducted there are more male patients (80) compared to female patients (20). In the data, we have collected there are more occurrences of mucormycosis in males compared to females.

Our study also found a higher incidence of Covid-19 Associated Mucormycosis (CAM) in the age group between 41-60years 74(66.07%) as shown in TABLE-2.

The majority of the participants in the study had diabetes disease, according to the findings.

CONCLUSION:

- The Patients who are more prone to the covid-19 associated Mucormycosis are between the age group of 40-60 years. 29 patient presents between the age group 41-50. 33 patient presents between the age group 51-60.
- The Study Concluded that most of the patients in the study were suffering from Diabetes Disease.
- The Prescribing pattern was rational and it follows the standard treatment guidelines so, the treatment was effective because of recovery of the normal life of the patient may not be according to their data to other generalized hospitals.
- Over Usage of steroids can cause Denovo Diabetes in a few patients.
- The patients who are undergoing treatment for covid 19 infection with corticosteroids like

dexamethasone are more prone for fungal infections like mucormycosis in the post therapy. Males are more vulnerable especially at the age of 40-60yrs.

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