Assessment of risk factors of post COVID-19 Rhino-orbital Mucormycosis

CODE: 1381129

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FINANCIAL DISCLOSURE
NO CONFLICT OF INTEREST

Introduction

- Mucormycosis, once a rare disease has now come to the forefront of many clinical dilemmas & professional discourse owing to the prevailing covid pandemic.
- It is caused by a group of molds called mucormycetes which are ubiquitous in our environment. However, only individuals with immunocompromised states or with chronic debilitating disease beget the disease.
- Orbit is the most common extra sinus area involved. Hence careful examination is of paramount importance.
- Early suspicion, rapid diagnosis and initiation of treatment is crucial to determine the outcome of the disease.

AIM:

- To assess the possible risk factors for development of post COVID-19 Rhino-orbital Mucormycosis.

OBJECTIVES:

- To diagnose mucormycosis early in post COVID patients.
- Better understanding of the disease to administer appropriate treatment.
- To counsel high risk individuals for early diagnosis.

MATERIALS & METHODS:

- Study design: Hospital based Cross sectional observational study.
- Study period: June 2021- August 2021 (3months).
- Study setup: Study was conducted in Andhra Medical College among patients diagnosed with Rhino orbital Mucormycosis.
- Sample size: 50.
- Inclusion criteria: All patients diagnosed with Rhino orbital mucormycosis within 3 months from diagnosis of COVID-19.
- Exclusion criteria: Post COVID-19 patients not diagnosed with rhino-orbital mucormycosis & who have not consented to the study.

METHODOLOGY:

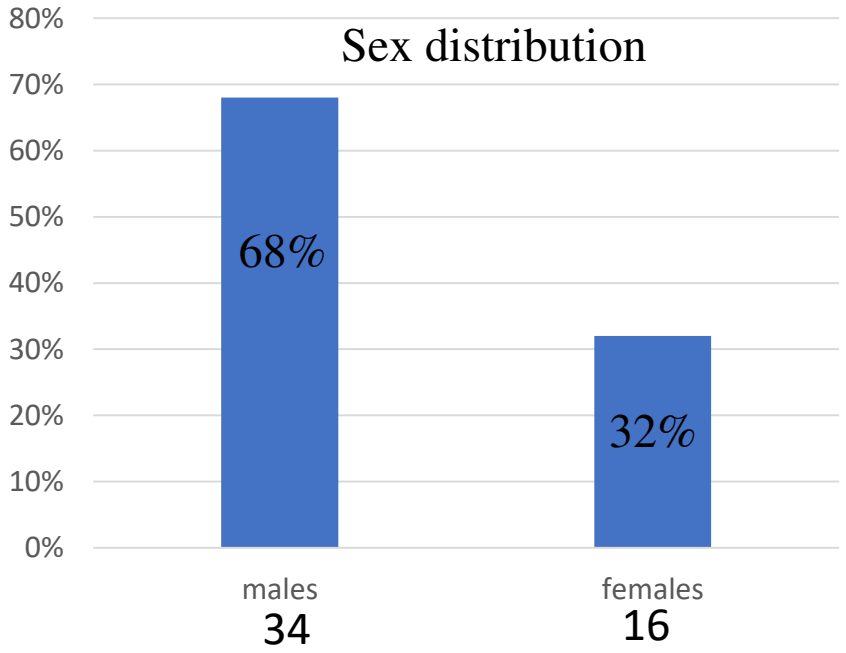
- Patients with positive radiological findings (CE-MRI) confirmed by histopathology are taken as study subjects.

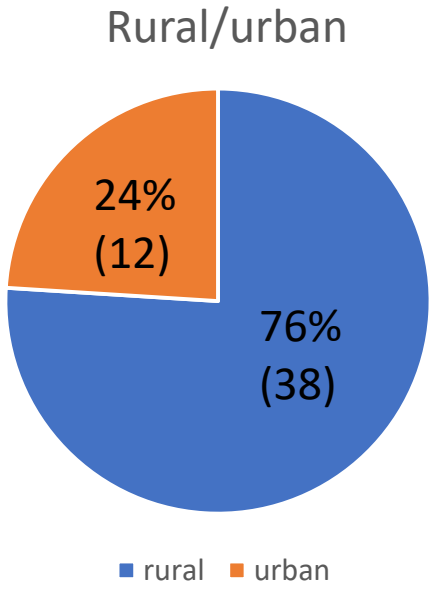
The following data was collected:

- Demographic details like Name, age, sex, rural/urban.
- Presenting symptoms, history of presenting symptoms, COVID 19 history, associated co morbidities are noted.
- COVID 19 history such as date of diagnosis, confirmatory tests, CT-SS, treatment history such as dose & duration of steroid usage, duration of oxygen therapy & others were noted.
- History of Diabetes & other co morbidities are carefully noted.
- Inflammatory markers such as serum ferritin, D-dimer, CRP are noted.

RESULTS

DEMOGRAPHIC DATA





Age distribution	Study population	percentage
<40 years	9	18%
40-60 years	25	50%
>60 years	16	32%

COVID-19 HISTORY

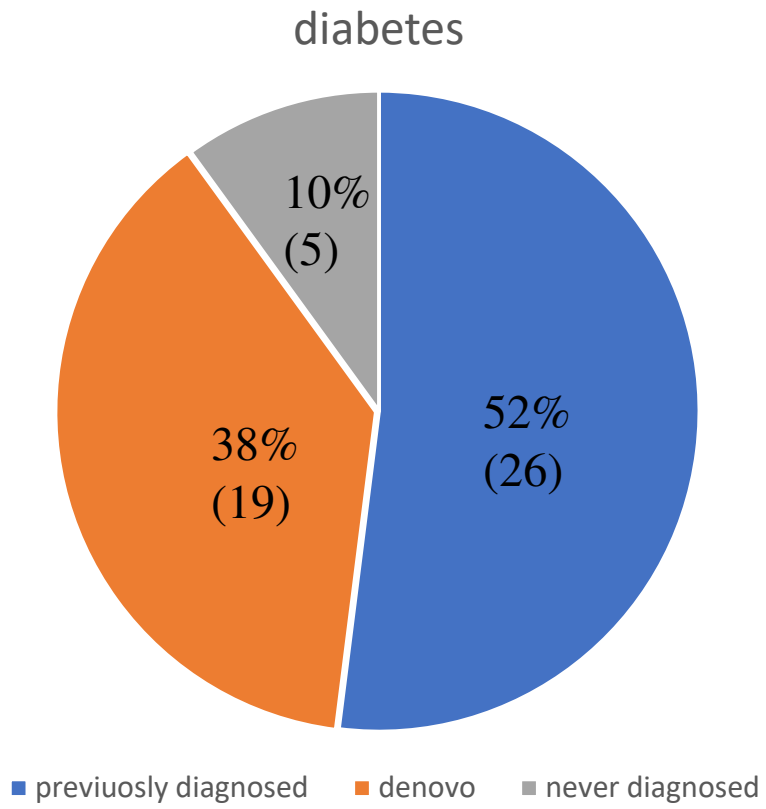
Onset of symptoms of mucormycosis from diagnosis of Covid 19	Number of study population	percentage
<3 weeks	11	22%
3-5weeks	29	58%
>5 weeks	10	20%

Steroid therapy	Study population	Percentage
High dose	19	38%
Regular dose	27	54%
none	4	8%

CT severity score	Study population	Percentage
Mild (<7)	9	18%
Moderate(8-17)	29	58%
Severe(>17)	12	24%

Oxygen therapy	Study population	Percentage
On ventilator	4	8%
On O2 supplementation	24	48%
none	22	44%

CO MORBIDITIES

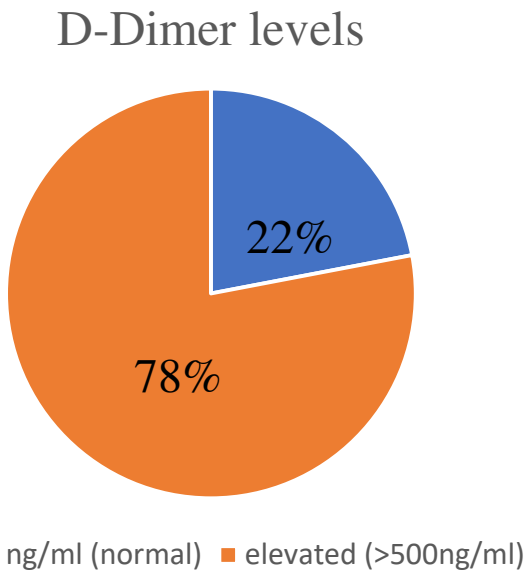


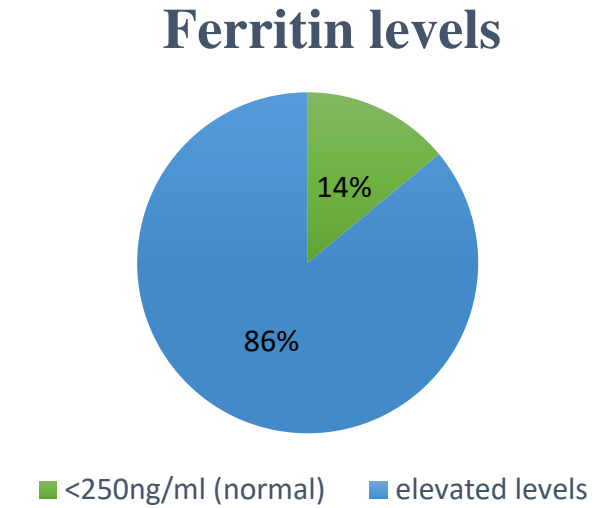
Total % of study population with diabetes is **90%**

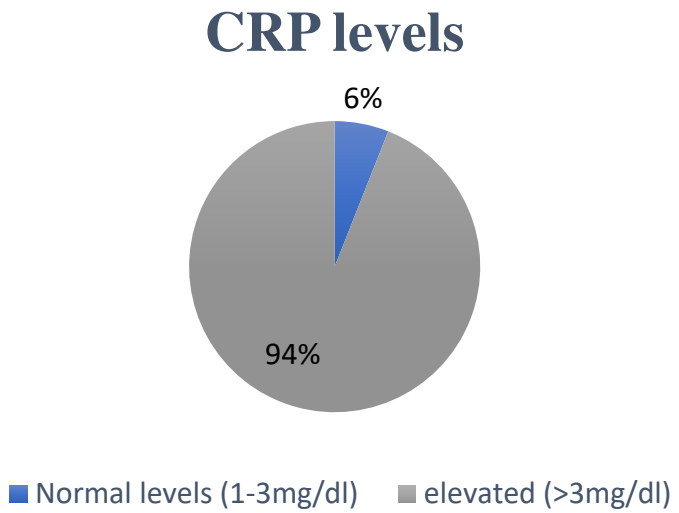
Other co morbidities	Study population	Percentage
Hypertension	17	34%
CKD	1	2%
CVA	4	8%
Chronic lung diseases	9	18%
Alcohol usage	12	24%
Smoking history	9	18%
HIV/ HBsAg	2	4%

LABORATORY INVESTIGATIONS:

Diabetic status based on HbA1C values	Study population	percentage
Non diabetic (4-5.6%)	2	4%
Controlled diabetes(5.7-6.4%)	6	12%
Uncontrolled diabetes (>6.4%)	42	84%







DISCUSSION:

- Mucormycosis has emerged as an epidemic owing to the ongoing pandemic.
- Majority of the affected were males (68%), peaking in the age group of 40-60 years (50%) showing similarity to a study by Sen M et al (71% males & mean affected age of 55 years).
- Also, around 58% of the study population had their first symptom within 3-5 weeks from the day of diagnosis of COVID-19.
- Vast majority of the patients had uncontrolled diabetes (84%)with 42% of the study population having other co-morbidities in addition to hypertension.

- This is similar to a study conducted by K Bhanuprasad et al in CMC, Vellore where the percentage of uncontrolled diabetes is 95.1%.
- Systemic Steroid use (oral or intravenous) was common (92%) and was strongly associated with post COVID-19 mucormycosis.
- More than half of the patients (56%) needed some form of oxygen supplementation showing some ambiguity in it's association.
- Ferritin levels, a marker of immune dysregulation were markedly elevated among the cases.
- In addition to hyperglycemia & steroid use, COVID-19 infection with alterations in iron metabolism might had predisposed to mucormycosis as proposed by Lammaert et al & Kentaro et al.
- Other inflammatory markers like D-dimer & CRP were also significantly elevated in the patients.

CONCLUSION:

- COVID-19 associated mucormycosis mostly affects middle aged men with majority developing symptoms between 3-5 weeks.
- Diabetes and steroid usage are independent strong risk factors & good glycemic control is of paramount importance in mitigating the disease.
- Though steroids are an important part of treatment of COVID-19, careful & judicious use, balancing both risk and benefit is recommended.
- COVID-19 affected patients at high risk should be identified & counselled about good glycemic control, proper use of steroids, good hygiene & recognition of symptoms of mucormycosis.

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