VOLUME - 11, ISSUE - 03, MARCH - 2022 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper

ENT

"A PROSPECTIVE STUDY OF MUCORMYCOSIS IN COVID-19 111 PATIENTS"

Dr.VP Narve	Professor And Head Department of Ent Grmc Gwalior.
Dr.Deepak parmar*	Senior Resident Department of Ent Grmc Gwalior. *Corresponding Author
Dr.Jyoti Sharma	Resident Department of Ent Grmc Gwalior.
Dr.Megha Saluja	Resident Department of Ent Grmc Gwalior.

ABSTRACT

Mucormycosis or zygomycosis or rhino-orbito cerebral mucormycosis is a fungal disease caused by order mucorales. It was 1st described by Paltauf in 1865 as zygomycosis [1] later coined as mucormycosis in 1957 by baker. [2]

Globally, the prevalence of mucormycosis varied from 0.005 to 1.7 per million population, while its prevalence is nearly 80 times higher (0.14 per 1000) in India compared to developed countries, in a recent estimate of year 2019–2020 [3,4,5]

It is being seen in covid-19 patients associated with diabetes mellitus, diabetic ketoacidosis, steroids, drug therapy, Hiv, immunosuppression, malignancy or hematological disorders including iron overload state or chronic respiratory disease, mechanical ventilation.

KEYWORDS :

CLINICAL FEATURES:-

Pt of mucormycosis presents with clinical symptoms like Ptosis,periorbital swelling,facial swelling,pain and facial numbness,nasal obstruction,epistles,loosening of teeth, palatal ulcer, palatal eschar,nasal eschar.

OBJECTIVE :-

To find association between covid-19 infection and mucormycosis and to demonstrate the various medical and surgical interventions.

METHODOLOGY:-

It is a prospective study conducted at ENT Department Gajra raja medical college gwalior. It includes patient diagnosed with acute invasive fungal rhinosinusitis after covid-19 infection and in non covid patients also.

Following investigations were done Diagnostic Nasal endoscopy, swab for KOH mount, fungul culture, biopsy for histopathological examination, radiological -CECT PNS and GADOLINIUM ENHANCED MRI PNS,ORBIT and BRAIN.

*CECT and MRI ORBIT,PNS and BRAIN s/o involving of maxillary,ethmoid ,frontal and sphenoid sinuses with orbit involvement in 80% patients .

In 20 % patients involvement of All paranasal Sinuses with orbit and CNS.

***KOH report suggestive of:-**

Broad hyaline aseptate hyphae and rizopus on culture after 3 days.

In some patients Broad healing septate fungal hyphae with wide angle branching seen suggestive of aspergillosis.

*Treatment based on Medical management including

Amphotericin B injection and Posaconazole tablet and Syrup. Surgical treatment include deridement by FESS, CALD WELL LUC,Maxillectomy and combined approach.

Surgical management restricted to COVID-19 RTPCR negative patient's only.

For complete eradication of disease,follow up of patients are done weekly for 1st month than monthly for 3 months.

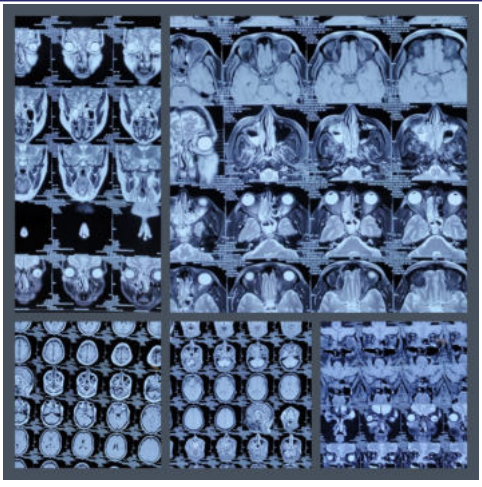


Fig.1.MRI BRAIN,ORBIT and PNS

Involvement of all paranasal sinuses with right orbital cellulitis.

RESULTS:-

1.SEX RATIO

Male-76
Female 35
Total 111

2.Age distribution

20-30 year -5 patients [4.5%]
31-40 year -19 patients[17.1 %]
41-50 year-27 patients [24.3%]
51-60 year -38 patients [34.2%]
61-70 year – 18 patients [16.2%]
71-80 year -03 patients [2.7%]

#Most patients are between 51-60 year age group (38 patients =34.2%)

Followed by 41-50 year age group (27 patients =24.3%).

3.KOH positive/negative

Koh positive 93 patients
koh negative 18 patients
In Koh negative 18 patients they are positive on biopsy.

4.COVID-19 positive/Negative status
Covid +ve 80 patients
Covid -ve 31 Patients
Total 111

5.history of steroid received/not received
Steroid received 71 patients
No history of steroid received 40 patients
Total 111

6.history of diabetes mellitus
Diabetes +ve 83 patients [46 are old diabetic and 37 are newly diagnosed]
Diabetes-ve 28 patients

7.history of hospitalization.
H/o hospitalisation 69 patients
No H/o hospitalisation 42 patients

8.History of oxygen support by nasal prong,face mask, ventilator in hospitalised patients.
Oxygen support +ve 52 Patients
Oxygen support -ve 17Patients
Total hospitalized 69 patients

9.history of covid 19 vaccination
Total vaccinated patients out of 111 are 16 patients
In 16 vaccinated patients -14 patients took 1st dose only and 2 patients took 1st and 2nd dose both.

10.management
Surgical debridement (CWL/FESS) 102 patients
Non operated 09 Patients

11. Mortality rate
Total patient survive 100.
Total mortality 11 (2operated,9 non operated)

DISCUSSION:-
The present prospective study includes 111 patients of mucormycosis reported from may 2021 to August 2021.

Majority of cases reported from India due to high prevalence of diabetes mellitus in India which is a major risk factor for mucormycosis. [6,7,8,9]

Most patients are male with underlying history of diabetes mellitus and received steroids for treatment.

It has been seen that multiple mechanism have been implicated in genesis of mucormycosis, cytokine storm of IL-6 and islet cells damage causes hyperglycemia which further leads to phagocyte dysfunction, impaired chemotaxis, defective intracellular killing. Ketoacidosis causes impaired phagocytosis, raised ferritin and endothelitis promotes mucorale adhesions. All these predisposed to mucormycosis. The use of glucocorticoids is a Known risk factor for development of mucormycosis [10]

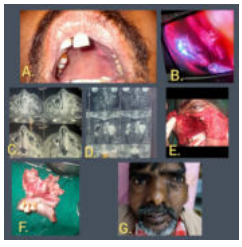
It causes immunosuppression,hyperglycemia and lymphopenia leading to pathogenesis of mucormycosis.

Recent studies also stressed on the fact that COVID 19 infection leads to an incompetent innate immune system. [11,12.]

Another indirect association depicted is dissemination of fungal spores via water used in oxygen humidifiers. It was found that most cases of mucormycosis had a prior history of covid 19 so, necessitates continued vigilance and regular follow up even after recovery from covid-19 with the proper use of antifungal therapy and debridement surgery survival rates are higher.

Fig.2

A) Patients of mucormycosis showing ptosis with pus discharge B)nasal endoscopy showing white fungus.
C) CT PNS showing involvement of fungus in maxillary and ethmoid sinuses.
D) intra operative picture of cald well luc procedure showing white fungus.
E)F)G) picture of patient showing recovery after surgery and antifungal medication.



A) figure showing palatal ulcer B)nasal endoscopy showing black eschar of turbinatae and nasal mucosa.
c) & d) MRI PNS showing involvement of para nasal sinuses.
E) intra operative picture of Maxillectomy.
F) specimen of Maxillectomy.
G) post operative recovery.

CONCLUSION –
This systemic review study provides a collated summary of mucormycosis patients reported at ENT DEPARTMENT, GRMC Gwalior between may 2021 to August 2021.

*A total of 111 patients were reported out of which 80 patients are covid positive and 31 are covid negative.

* Demographically 76 pt were Male and 35 pt were female with high male > female ratio.

*Most common age group 51-60 years (38 patients) followed by 41-50 years age group (27 patients).

*Investigations are done , swab taken for KOH mount which shows fungal hyphae with positive result in 93 pt and negative in 18 pt, which were later taken for biopsy for confirmation.

*In 83 pt diabetes mellitus detected (46 old cases , 37 newly diagnosed) 28 pt are diabetes negative.

*69 pt were hospitalised out of which 52 pt are on oxygen support , favoring unsterile oxygen humidifiers uses and infection by fungal spores. 42 pt were not hospitalized and are on isolation at home.

*On past history of covid-19 treatment, 71 pt are on steroid drugs and 40 are not on steroids. Showing association between steroid use and mucormycosis.

*All the pt were medically treated with injection Amphotericin B and tablet Posaconazole. Only 1 pt received syrup Posaconazole (pt allergic to Amphotericin B injection) .

* RTPCR negative patient's are taken for surgical management, 102 pt are surgically operated by cald well luc , FESS and Maxillectomy or combined approach.

*Vaccination plays an important role for prevention of mucormycosis, out of all pt only 16 pt were vaccinated (14 patients received 1st dose and 2 patients received both doses of covid vaccine).

*Fortunately pt with mucormycosis a lesser mortality rate, 11 pt died out of 111 pt. The use of antifungal therapy and adjunct surgery was associated with improved clinical outcome.

REFERENCES –

1. Paltauf A. Mycosis mucorina. Virchows Arch Pathol Anat Physiol Klin Med. 1885;102:543–564. [Google Scholar]
2. Baker R.D. Mucormycosis-a new disease? J Am Med Assoc. 1957; 163: 805–808.[PubMed] [Google Scholar]
3. Skiada A., Pavleas I., Drogari-Apiranthitou M. Epidemiology and diagnosis of mucormycosis: an Update. J Fungi. 2020;6(4):265. [PMC free article] [PubMed] [Google Scholar]
4. Chander J., Kaur M., Singla N., et al. Mucormycosis: battle with the deadly enemy over a five-year period in India. J. Fungi. 2018;4(2):46. doi: 10.3390/ jof 4020046.[PMC free article] [PubMed] [CrossRef] [Google Scholar]
5. Prakash H., Chakrabarti A. Global epidemiology of mucormycosis. J Fungi. 2019;5:26. [PMC free article] [PubMed] [Google Scholar]
6. Prakash H, Chakrabarti A. Global epidemiology of mucormycosis. J Fungi. 2019;5:26. 10.3390/jof5010026 [PMC free article] [PubMed] [CrossRef] [Google Scholar]
7. Prakash H, Ghosh AK, Rudramurthy SM, et al. A prospective multicenter study on mucormycosis in India: Epidemiology, diagnosis, and treatment. Med Mycol. 2019;57:395– 402. 10.1093/mmy/myy060 [PubMed] [CrossRef] [Google Scholar]
8. Corzo– León DE, Chora– Hernández LD, Rodríguez– Zulueta AP, Walsh TJ. Diabetes mellitus as the major risk factor for mucormycosis in Mexico: epidemiology, diagnosis, and outcomes of reported cases. Med Mycol. 2018;56:29– 43. 10.1093/mmy/myx017 [PubMed] [CrossRef] [Google Scholar]
9. Bhansali A. Presentation and outcome of rhino– orbital– cerebral mucormycosis in patients with diabetes. Postgrad Med J. 2004;80:670– 674. 10.1136/pgmj.2003.016030[PMC free article] [PubMed] [CrossRef] [Google Scholar]
10. Ibrahim AS, Spellberg B, Walsh TJ, Kontoyiannis DP. Pathogenesis of mucormycosis. Clin Infect Dis. 2012;54:S16– S22. 10.1093/cid/cir865 [PMC free article][PubMed] [CrossRef] [Google Scholar]
11. Schulte-Schrepping J., Reusch N., Paclik D., Baßler K., Schlickeiser S., Zhang B., et al. Severe COVID-19 is marked by a dysregulated myeloid cell compartment. Cell. 2020;182(6):1419–1440. e23. [PMC free article] [PubMed] [Google Scholar]
12. Parackova Z., Zentsova I. Disharmonic inflammatory signatures in COVID-. Cells. 2020;2:1–17. (December 2019) [Google Scholar]