

Treatment options for recurrent rhinoorbital cerebral mucormycosis – A study on 50 cases**Perla Ambika***Assistant Professor, Department of ENT, Head and Neck Surgery, Gandhi Medical College/ Gandhi Hospital, Telangana, India***Received: 07-11-2021 / Revised: 28-12-2021 / Accepted: 01-01-2022****Abstract**

Background: Mucormycosis also called as zygomycosis infection caused by infection with fungi belonging to the order of mucorales. Infection itself is life threatening and in recurrence it is more worse prognosis, risk factors for ROMM are diabetes mellitus, pancytopenia, immune compromised individuals. At present scenario recurrence of ROMM is due to lack of awareness in using treatment available for ROMM and also resistant nature of fungi. **Aim:** To know the various treatment modalities available for recurrent ROMM (medical,surgical), to see the most curable treatment option to avoid repeated recurrence ,to see the commonest presenting symptoms and signs of ROMM. **Materials and methods:** 50 cases of previously treated ROMM cases (medical or surgical) were taken into study with symptoms of recurrent ROMM sent for radiological and dental examination according to the need came to one treatment conclusion and patients were hospitalized and treated accordingly with various treatment options as per patient need. Patients attending to Gandhi hospital ENT OPD after completion of Covid 2nd wave over a period of 4 months consequently taken for study'. **Observations and results:** It is a hospital based study conducted in Gandhi hospital, ENT department, sample size is 50, most common cause for recurrence is diabetes and immune compromised status, resistant nature of fungi to multimodality of treatment, as per this study most common treatment option is medical (oral posaconazole, inj. Liposomal amphotericin B), antifungals, most curable treatment option for recurrence is surgical(FESS with maxillectomy, debridment). **Conclusion:** Study conducted over a period of 4 months in patients with recurrent ROMM symptoms, out of 50 sample >50% were previously surgically treated during the 2nd wave of covid 19(black fungus period) conclusions are male predominance,diabetics,40-60 age ,necrotic bone and pus discharge ,loose tooth are presenting complaints, radiologically positive, common treatment option is medical oral posaconazole, surgical FESS with maxillectomy, Debridment, Plain FESS.

Key words: ROMM, ENT OPD, FESS, COVID 19.

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Introduction

Mucormycosis is a fungal infection caused by mucorales order of fungi most common species is rhizopus, seen in individuals with weak immune system, other causes are burns and trauma. The term mucor is first described by "Paltauf" in 1885 termed as mycors mucoronia, rhinomaxillary form is rare entity due to rich vascular supply of maxilla but in immunocompromised patients common due to necrosis of maxilla maggots found in this site also not uncommon. Various clinical forms of mucormycosis are available they are rhinoorbital more common type, pulmonary, cutaneous, gastrointestinal, disseminated, uncommon types. Mode of spread of through the inhalation of spores ,wound contamination, consumption and direct inoculation, also through open wounds of dental infection, also common in covid positive patients due to over zealous usage of steroids without proper clinician guidance , improper sterilization of O2 masks and supply portals, ventilators usage etc. Estimated prevalence of mucormycosis is around 70 times higher in India , in renal transplants it varies from 0.05 to 2.7% , 25% of cases of ROMM were diagnosed in India within 7 days of covid 19 infection, and is 0.27% in hospitalized patients as per estimation of 2020 to 2021 year. Inj.liposomal amphotericin B, oral posaconazole , surgery is the treatment option for ROMM as well as for recurrence .Mucormycosis is also called as black fungus because it causes tissue necrosis and this leads to eschar formation which is black in color. Pathologically mucormycosis is broad ,non septate hyphae branch irregularly , angioinvasion is common and elicit intravascular thrombosis, marked inflammatory response more in immunocompromised individuals,

further more acidic hypoglycemic presence is favorable environment for fungi to grow it becomes lethal and fatal combination. Common symptoms of recurrence are nasal obstruction, nasal discharge, necrotic bone, loose tooth, unilateral facial pain, proptosis etc. Common structures involved are turbinates, maxillary sinus, ethmoids, lamina, maxilla bone, hard palate, orbit etc. Investigation of choice is CT paranasal sinuses.

Aims

1. To know the various treatment options available for recurrent ROMM.
2. To know the most curable option (medical/surgical),to see the common treatment option available for recurrent ROMM
3. To see the common presenting symptom and signs of recurrent ROMM.

Materials and methods

Patients attending to ENT OPD of Gandhi hospital with symptoms of recurrent ROMM (like necrotic bone, eschar, pus discharge, loose pain etc) from them 50 cases were selected in study sent for radiological and dental examination as per the need and those patients were admitted on inpatient basis and different treatment options (medical/surgical) given as per the pt findings and requirement. This study conducted over a period of 4 months after the completion of covid 2nd wave from November 2021 to February 2022.

Inclusion criteria

1. Patients above the age of 15 years were included.
2. Patients of both sexes with symptoms of ROMM were included.
3. Patients who are covid negative were selected

Exclusion criteria

1. Patients with chronic illness (DKA, CVA etc) were excluded.
2. Patients below the age 15 years were excluded.

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3. Patients with covid positive during the study period were excluded.

Observations and results

Patients who were attending to Gandhi hospital ENT OPD with symptoms and signs who were covid positive previously during the 2ND wave and treated for ROMM symptoms were selected in study from them patients who require radiological investigation sent for CT paranasal sinuses showed multiple erosive lesions, sent for dental examination and confirmed for treatment option and 50 cases were admitted and selected in the study further evaluation done for

comorbid conditions and other multi system involvement, treated with medical and surgical options like inj.liposomal amphotericin B 150mg IV in 150ml of 5% dextrose, oral posaconazole 100mg in three divided doses for maximum period of 10 days as inpatient, in between patients who require surgical intervention were taken for surgery like nasal endoscopy(DNE), with debridment,with synaechiae release, endoscopic sinus surgery (FESS), with maxillectomy, with orbital exentration etc. In follow up oral posaconazole given for 6 months, frequent endoscopic evaluation was done in between .And the results were tabulated for above said procedures, and summerised.

Tables and charts

Age incidence

Age in years	Recurrent ROMM cases	Percentage
20-40	5	10%
40-60	36	72%
>60	9	18%

Sex incidence

Sex	Recurrent romm cases	Percentage
Male	33	66%
Female	17	34%

Presenting symptoms and signs

Symptomatology	No of cases	Percentage
Necrotic bone	20	40%
Dental pain/loose tooth	18	36%
Nasal obstruction	17	34%
Erosion/ulceration hard palate	14	28%
Pus discharge	13	26%

Radiological examination index

CT PNS	No of cases	Percentage
Positive findings	23	46%
	27	54%

Comorbid conditions index

Condition	No of cases	Percentage
Diabetes	34	68%
Hypertension	32	62%

Treatment options index

Surgery		
Previously operated	33	66%
Non operated	17	34%

Various surgical treatment modalities index

Surgery	No of cases	Percentage
Diagnostic nasal endoscopy	13	26%
FESS with maxillectomy	10	20%
Plain FESS	7	14%
Rev FESS with maxillectomy	5	10%
Debridment	5	10%
DNE with biopsy	3	6%
Rev FESS	2	4%
Rev FESS ,maxillectomy &orbital exentration	2	4%
DNE & synachiae release	2	4%
Rev FESS with flap dehiscence repair	1	2%

Various medical treatment modalities index

Treatment of choice	No of case	Percentage
Oral posaconazole	48	96%
Inj. liposomal amphotericin B	42	84%
Antidiabetic drugs	34	68%
Anti hypertensive drugs	32	64%
Anti HTN & anti DM drugs	16	32%
Inhalational o2 therapy	5	10%

Discussion

Rhinoorbital cerebral mucormycosis is sudden unexpected disease previously rare disease of entity but after the period of covid 1st wave pandemic most probably due to over zealous usage of corticosteroids without proper guidance by clinician , ventilators, o2 therapy (mask) leads to growth of fungi in nose in covid positive cases, this leads to sudden surge of ROMM cases(covid 2nd wave) to Gandhi hospital (as it is covid care centre),with symptoms of nasal obstruction, headache, discharge, unilateral facial pain and swelling, loose tooth etc all those patients were treated in covid care wards with proper evaluation and medical and surgical treatment options, those patients were discharged in stable condition in covid negative stage. But unknowingly patients were returning back to ENT OPD after completion of covid 2nd wave with symptoms of recurrent ROMM those symptoms are necrotic bone at surgical site, loose tooth, hard palate erosion, pus discharge , nasal obstruction due to synechia formation etc. those patients were again hospitalized in covid negative status investigated with CT PNS, dental examination, came to one probable conclusion for recurrence , 50 cases were selected in present study and treated with oral posaconazole and inj.liposomal amphotericin B(antifungals), surgically by doing revision in previously operated , endoscopic surgery for presently non operated cases, in this study we came to one conclusion that most of the previously operated cases needs revision FESS with maxillectomy, as per results of present study male predominance (66%), 40 -60years age group is more common with (72%), according to symptoms necrotic bone (40%), loose tooth (36%), positive CT findings in (46%), co morbid conditions are diabetics(68%), previously operated cases (66%), main part of study treatment option is FESS with maxillectomy (20%), Plain FESS (14%), nasal endoscopy with minimal procedure(26%), radically treated are oral posaconazole (96%), inj. liposomal amphotericin B (84%).

Conclusion

This study conducted in Gandhi hospital ENT department during the period of November 2021 to February 2022 after completion of covid 2nd wave. Sample size is 50. Symptoms are related to recurrent ROMM ,main conclusions as per this study were recurrence male

predominance, diabetics are more vulnerable , 40-60 years were more effected, most of patients(.50%) were previously treated(medical/surgical), more than 90% are treated with oral posaconazole, >75% were treated with inj. Liposomal amphotericin B, surgically recurrence is treated with plain FESS, FESS with maxillectomy in >50% of patients, debridment in 30% of cases, at the main conclusions as per this study are most curable treatment option for recurrence is surgical(FESS, Maxillectomy ,debridment), most commonly available treatment option is medical(oral posaconazole, inj. liposomal amphotericin B(anti fungals) , supportive treatment options are diagnostic nasal endoscopy , anti diabetics ,anti hypertensives , inhalational o2 therapy. Rare entities are orbital exenteration , dehiscence repair.

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