TAMILNADU
OPHTHALMIC ASSOCIATION

GUIDELINES
FOR RHINO ORBITAL MUCORMYCOSIS MANAGEMENT (ROCM)

When to suspectROCM ?

OCULAR :

- Profuse lid edema and discharge
- Acute proptosis or ptosis
- Severe chemosis and congestion
- Acute onset nerve palsy
- Reduction of vision
- Double vision
- Ophthalmoplegia
- Bloody discharge from nose/eye

OTHERS:

- Black eschar in nose , palate, lids
- Bad odour in nasal or Oral Cavity
- Cheek/facial swelling
- Perialar numbness
- Dull pain in cheek/nose/eye – especially progressive
- Worsening headache

History of Recently treated (<6 weeks) past and current COVID infection, undiagnosed fever, uncontrolled diabetes/ sudden diabetic spike with steroids, steroid therapy, long term immunosuppressants, post transplant, cancer patients.

What to do?

- Handle patient with PPE
- Early identification and initiation of treatment

What not to do?

- Do not attempt to treat with topical, oral or parenteral antibiotics (condition may deteriorate rapidly)
- Do not send for multiple investigations and ask for multiple visits (every hour counts)

Investigations:

- CT or MRI [covering PNS, ORBIT AND BRAIN]– Contrast Enhanced.
- Complete blood counts (CBC), LFT, RFT, Blood Sugars with Electrolytes.
- If suspicious of fungal infection – NASAL SWAB for fungal stain [KOH AND GMS]
- Histopathology HPE from sinuses is confirmatory (HE, PAS)& preferred over swab

DIAGNOSIS :

POSSIBLE ROCM: Patients with **TYPICAL SIGNS AND SYMPTOMS WITH H/O COVID** treatment, DM, steroids, supplemental oxygen, ventilator support

PROBABLE ROCM:Signs & Symptoms **+ Diagnostic Nasal Endoscopy Findings /Or/ Contrast Enhanced MRI or CT.**

PROVEN ROCM:Clinico - Radiological Features + **Microbiological Confirmation** (On Direct Microscopy) **Or Culture/ HPE / Molecular Diagnostics**

STAGING :

Stage 1 : Involvement Of Nasal Mucosa
Stage 2: Involvement Of PNS
Stage 3: Involvement Of ORBIT
Stage 4: Involvement Of CNS

Management(ECMM-MSG-ERC guidelines)*:

All Mucormycosis patients to be admitted in a separate Mucor ward and managed by multidisciplinary team comprising department of ENT, Medicine , Oral and maxillofacial surgeon, Ophthalmology, Neurosurgery and microbiology.

MEDICAL :

INDUCTION THERAPY :

- DRUG OF CHOICE: LIPOSOMAL AMPHOTERICIN – INTRAVENOUS
- Dose : For SINOORBITAL – 5 mg/kg/day

For cerebral involvement – 10 mg/kg/day

INJ MODE AND MONITORING :

- TEST DOSE: Inj. Liposomal Amphotericin B 1 vial (50mg) to be diluted in 12 ml of the diluents and 0.25 ml (1mg) of solution made, to be mixed in 100ml Dextrose and to be infused in 30 minutes . check for fever and reactions.
- PRE – HYDRATION : 500 ml NS over 30 minutes + 1 amp (20mmol) KCL
- THERAPY : 5mg -10mg /kg/day Amphotericin B in 500 ml DS with 10 units HIR over 3 hrs (to be covered in black sheet.
- POST HYDRATION : 500 ml NS over 30 minutes
- POST DOSE : RFT with serum electrolytes after Every dose of Amophotericin B.

Alternate choices :

If liposomal Amphotericin unavailable:

- Amphotericin B Deoxycholate or Amphotericin B lipid complex

(Less expensive but Less Effective And More Toxic)

If Amphotericin contraindicated – (Renal impairment)

1. Isavuconazole IV 200mg thrice daily for 2 days → 200 mg once from day 3 (or)
2. Posaconazole IV 300 mg twice daily on day 1 → 300 mg once from day 2

RETROBULBAR TRANSCUTANEOUS AMPHOTERICIN :
Indicated In :- Mild Orbital involvement, Good vision, Without Apical/ CNS spread
– along with intravenous Amphotericin.
Dose :1 ml of 3.5 mg/ml

FOLLOWUP THERAPY :
IV Liposomal Amphotericin B 5-10 mg/kg/day for minimum 4 weeks

Followed by →
STEP DOWN THERAPY→
DRUG :Isavuconazole IV 200mg thrice daily for 2 days → 200 mg once from day 3**[Or]**
Posaconazole IV 300 mg twice daily on day 1 → 300 mg once from day 2
DURATION : For 3-6 months
(or) for minimum 6 weeks following clinical /radiological regression

SURGICAL :

1. **PREDOMINANT SINO NASAL WITH NO/LIMITED ORBIT INVOLVEMENT/ VISION PRESERVED**→Clearing fungal load from Sinuses by FESS ± SINUS irrigation with Amphotericin B I mg/ml±Turbinectomy ± Palatal Resection ± Medial Orbital Wall Resection

2. **DISEASE PROGRESSION, WORSENING OF ORBITAL COMPONENT IN < 72 HOURS**→ORBITAL EXENTRATION

3. **NO OR LIMITED CNS INVOLVEMENT**→ Orbital Exentration + Aggressive Debriment Of Paranasal Sinuses ± Turbinectomy ± Palatal Resection ± Orbital Wall Resection With Clean Margins

4. **EXTENSIVE CNS INVOLVEMENT**→ If systemic condition permits →Orbital Exentration + Aggressive Debriment Of Paranasal Sinuses ± Turbinectomy ± Palatal Resection ± Orbital Wall Resection with clean margins

PREVENTION :

1. Judicious And Supervised Use Of SYSTEMIC CORTICOSTEROIDS/TOCILIZUMAB
2. Aggressive monitoring and control of Diabetes Mellitus
3. Strict aseptic precaution while administering oxygen
4. Personal and environmental hygiene.

NB:

1. In Exercise of the powers conferred by section 62 of the Tamilnadu Public Health Act, 1939 (Tamilnadu Act III of 1939), the Governor of Tamilnadu hereby declares that MUCORMYCOSIS is a **notified disease**in the state of

Tamilnadu for the purpose of part II in chapter VII of the said Act. (BY THE ORDER OF THE GOVERNOR).

2. https://covidwarriors.gov.in/covid_NSS_district_nodal_officers.aspx
-This is the Link to order Liposomal Amphotericin from government through the zone/area nodal officer.

FAQ's:

1. When to suspect Mucor at early stage?
   Presenting symptom of facial pain in a recently recovered COVID patient.
2. Is there a role for Steam inhalation in mucor?
   Excessive use of steam inhalation is harmful (inhalation cause scalding of nasal passages making it vulnerable for mucor infection and also use of poor quality of water for inhalation predispose to infection)
3. Is steroid the culprit?
   No. Appropriate use of steroid is life saving in the current COVID pneumonia. But self use of steroids without physician prescription can turn lethal.
4. Will use of mask prevent mucor spread?
   While use of mask is the golden rule in preventing spread of COVID, reusing same mask many times without proper cleaning can lead to spread of mucor in COVID recovered patients. WASH MASK PROPERLY AND REUSE
5. Whether there is any preventive medication for mucor?
   Use of prophylactic medication is uncommon.
6. Why is there this sudden surge of mucor infections?
   The new mutant strain of the coronavirus potentially has a greater suppressive effect on TCELL immunity leaving the body defenceless in the face of secondary infection.
7. Will it spread from person to person?
   Unlikely. Mucormycosis is not a contagious disease. But it is safer to wear clean mask always.
8. What is the prognosis of Mucor ?
   Complete recovery is possible only if identified much earlier even before clinical signs occur and only Imaging shows suspicion of Mucor. Otherwise, by literature, it carries a mortality of 34%.
9. Which is better CT or MRI?
   MRI (of PNS, ORBIT and BRAIN)with contrast is the choice. But CT gives a better understanding of the bony invasion.
10. What are the precaution to be taken ?
    1. Always wear a clean mask everytime.
    2. Maintain social distancing always
    3. Keep your diabetic level well under control
    4. Never use OTC steroids
    5. Avoid steam inhalation, especially Diabetic patients.
    6. Three weeks post COVID is crucial. If had steroid/O2 therapy watch for early signs of Mucor. Do not neglect the early signs. EARLY DIAGNOSIS IS THE KEY TO COMPLETE RECOVERY.

7. Always maintain clean / hygiene practice – WASH HANDS REGUALRLY.

REFERENCES:

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*** Honovar SG. Code Mucor : Guidelines for the Diagnosis, Staging and Management of Rhino- Orbito-cerebral Mucormycosisin the setting of COVID-19. Indian J Ophthalmol2021;69:1361-5.

https://www.uptodate.com/contents/mucormycosis-zygomycosis?source=history widget.

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