Guideline for management of Mucormycosis in Covid – 19 patients

Background:

There are reports that there has been a significant increase in in number of cases of Mucormycosis in Covid – 19 patients during treatment in hospitals and after discharge in different parts of the country.

Scope of this document:

The scope of this document is to provide a guidance to clinicians (physicians/ respiratory physicians/ intensivists/ ENT surgeons etc.) to detect Mucormycosis at an early stage in patients who are hospitalised for treatment of Covid – 19 (as well as those discharged after treatment) and treat such patients optimally.

Time of presentation: variable but usually around 3rd week of onset of symptoms of Covid – 19.

Reasons for increase in mucormycosis in Covid – 19 patients:

1. Hyperglycemia due to uncontrolled pre-existing diabetes and high prevalence rates of mucormycosis in India per se.
2. Rampant overuse and irrational use of steroids in management of Covid – 19.
3. New onset diabetes due to steroid overuse or severe cases of Covid – 19 per se.
4. Prolonged ICU stay and irrational use of broad spectrum antibiotics
5. Pre-existing co-morbidities such as hematological malignancies, use of immunosuppressants, solid organ transplant etc.
6. Breakthrough infections in patients on Voriconazole (anti – fungal drug) prophylaxis.

Signs and symptoms:

1. Facial pain, pain over sinuses, pain in teeth and gums
2. Paraesthesia / decreased sensation over half of face.
3. Blackish discolouration of skin over nasolabial groove/ alae nasii.
4. Nasal crusting and nasal discharge which could be blackish or blood tinged.
5. Conjunctival injection or chemosis.
6. Periorbital swelling.
7. Blurring of vision/ diplopia.
8. Loosening of teeth/ discoloration of palate/ gangrenous inferior turbinates.
9. Worsening of respiratory symptoms, hemoptysis, chest pain, alteration of consciousness, headache.

Investigation:

i. NCCT PNS (to see bony erosion).
ii. HRCT chest (≥ 10 nodules, reverse halo sign, CT bronchus sign etc.) and CT Angiography.
iii. MRI brain for better delineation of CNS involvement.

Diagnosis:

i. KOH staining and microscopy, histopathology of debrided tissue and culture
ii. MALDI-TOF if available
iii. Presence of Ribbon like aseptate hyphae 5-15 µ that branch at right angles.

Treatment:

- One should have a high index of suspicion of invasive fungal infection such as Mucormycosis in the presence of predisposing conditions as mentioned above. Timely initiation of treatment reduces mortality. Multidisciplinary Team approach is required. Treatment of Mucormycosis involves combination of surgical debridement and antifungal therapy.
- Liposomal Amphotericin B in initial dose of 5mg/kg body weight (10 mg/kg body wt in case of CNS involvement) is the treatment of choice. Each vial contains 50 mg. It should be diluted in 5% or 10% dextrose, it is incompatible with normal saline/ Ringer Lactate.. It has to be continued till a favourable response is achieved and disease is stabilized which may take several weeks following which step down to oral Posaconazole (300 mg delayed release tablets twice a day for 1 day followed by 300 mg daily) or Isavuconazole (200 mg 1 tablet 3 times daily for 2 days followed by 200 mg daily) can be done.
- The therapy has to be continued until clinical resolution of signs and symptoms of infection as well as resolution of radiological signs of active disease and elimination of predisposing risk factors such as hyperglycemia, immunosuppression etc, it may have to be given for quite long periods of time.
- Conventional Amphotericin B (deoxy cholate) in the dose 1-1.5mg/kg may be used if liposomal form is not available and renal functions and serum electrolytes are within normal limits.

Control of Blood glucose:

Refer to MoHFW guidelines for screening and management of hyperglycemia in Covid - 19 available on website of MoHFW:

https://www.mohfw.gov.in/pdf/ClinicalGuidanceonDiabetesManagementatCOVID19PatientManagementFacility.pdf

Do's for Doctors:

- Use steroids judiciously- correct evidence based dose, right timing and for recommended duration.
- Rational use of antibiotics.
- Timely initiation of Amphotericin B therapy.
- Strict monitoring as well as control of blood glucose in admitted as well as post discharge patients.
- Use Insulin in patients with Diabetes Mellitus who are admitted for Covid – 19 treatment.
- Keep high index of suspicion in presence of risk factors, daily examination of eyes, nose and mouth for detecting signs
- Use clean sterile water for humidifiers

Don'ts for Doctors:

- Don't miss the early warning symptoms and signs.
- Blocked nose doesn't always means bacterial sinusitis, don't forget Mucormycosis.
- Don't lose crucial time, you may have to initiate therapy in relevant cases even before diagnosis is made.

Do's for Covid – 19 patients:

- Keep the doctor informed about all your co - morbidities such as diabetes, hypertension, heart disease, any malignancy etc.
- Tell the doctor about all medicines being taken especially if under medication with immuno – suppressant drugs for any immune related disorder/ disease.
- Use masks and maintain personal hygiene.
- Immediately inform the doctor if you develop blocked nose with nasal discharge, unilateral facial pain/ numbness, any eye swelling, difficulty in vision, any discoloration around eyes, nose or mouth

Don'ts for Covid – 19 patients:

- Don't self medicate, especially don't take steroids on your own
- Don't ignore warning signs detailed above.