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Mucormycosis as a renewed threat following COVID 19

The College of Otorhinolaryngologists and Head and Neck surgeons of Sri Lanka (CORLHNS) wishes to express our deep solicitude regarding the potential for the emergence of rhino- cerebral mucormycosis among COVID 19 patients. Further to, All India Institute of Medical Sciences state that mucormycosis could surge during the acute illness or during the initial weeks following recovery. Whilst, the CORLHNS raises awareness we would also like to emphasize that mucormycosis is a disease which has been there in Sri Lanka for decades and there is no evidence of increased incidence of the disease up to now. The CORLHNS is confident that Sri Lankan ENT surgeons have the necessary skills and experience in managing rhino-cerebral mucormycosis with surgery and antifungal therapy.

❖ What is mucormycosis?

Mucormycosis is a life-threatening fungal infection occurring in humans, which is caused by the ubiquitous saprophytic fungi of order Mucorales[1]. The commonest sites of involvement are nose and paranasal sinuses. The danger of the disease is its invasive nature which could lead to life threatening complications or severe morbidity including blindness and other neurological complications. A case series in Sri Lanka shows 27% mortality compared to 49% mortality rate in India[2]

❖ The reasons for increased risk of mucormycosis among patients with COVID 19

1. Pre-existing diseases such as Diabetes mellitus, hematological malignancy, HIV. In a Sri Lankan study100% association of Diabetes mellitus was observed among patients with sinonasal mucormycosis[2].
2. Steroids - Many guidelines recommend the use of steroids in the treatment of COVID 19 infection especially when complicated by pneumonia. Whilst steroids are proven to be effective in improving the cytokine storm in COVID 19 it could lead to immunosuppression and secondary infections.
3. Severity of the COVID 19 infection as it suppresses or alters the systemic immune response to secondary infections[3,4,5].

Hence, the CORLHNS urges to have a high degree of suspicion of mucormycosis among COVID 19 patients with above risk factors.

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❖ How to detect sinonasal mucormycosis early[6]?

1. Headache with nasal obstruction – Especially if it not responding to simple analgesics.
2. Nasal discharge – Brownish or blood stained. There might be blackish discoloration in the nasal cavities during anterior rhinoscopy/ nasal endoscopy.
3. Fever
4. Facial pain or facial numbness
5. Swelling +/- discoloration of the face/ Periorbital oedema
6. Swelling +/- discoloration of the palate
7. Loosening of teeth.

Please be vigilant for above clinical features and refer to ENT early as early detection could lead to reduction in morbidity and mortality.

❖ Diagnosis

1. Contrast CT is preferred but non-contrast CT would also helpful when renal function precludes contrast administration. CT may show sinus opacification, bone destruction and fat stranding outside the sinus. Fat stranding is an important early radiological finding that should be specifically looked for[7].
2. Nasal endoscopy (may need sinostomies under GA depending on imaging findings)
   There can be instances where nasal endoscopy findings are equivocal. In these instances, CT findings guided sinus surgery should be carried out to open involved sinuses and take urgent samples for fungal studies
3. Fungal studies (Microscopy and Fungal culture)
4. Biopsy and histopathological diagnosis.
5. MRI – May show necrotic tissues, fat stranding, helps to assess complications.

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❖ How to treat a patient with mucormycosis?

CORLHNS recommends involvement of a multidisciplinary team including the Responsible Consultant Physician of the patient, Consultant ENT surgeon, Consultant Microbiologist, Consultant in Critical care/Intensivist, Consultant Anaesthetists and Consultant Nephrologists
What are the treatment options – Depending on the patient's overall condition, available resources and expertise following treatment options could be used in the treatment of the patient. In cases with high degree of suspicion CORLHNS recommends to initiate treatment pending results of the confirmatory tests.

1. Antifungal therapy – Systemic
   a. IV Amphotericin[8,9] - (Discuss with Microbiologist regarding best choice e.g. Lipid based or Liposomal considering renal functions, availability of drugs etc.)
   b. IV/Oral Posacanazole[8,14]–good alternative with better tolerance and for long term use/for chronic cases
   c. Flucanozole and Voriconazole are found to be not effective for Mucormycosis. (CDC)
2. Surgical debridement- Surgical debridement during acute stage of COVID should be carried out carefully after assessing risks and benefit. It is important to highlight that surgery during active COVID stage carries high mortality and debridement is highly aerosol generating.
3. Topical antifungal therapy – topical injections – e.g.- Retrobulbar injections of Amphotericin B, topical application in the form of Amphotericin B nasal packing[7]
4. Low molecular weight heparin may be beneficial at this context.
5. Supportive therapy[7]
   a. Strict blood glucose control.
   b. Adequate hydration and strict fluid balance during Amphotericin treatment (refer guidelines/product leaflet)
   c. Strict monitoring and repletion of the electrolytes (especially, K^+, Mg^{++}, Ca^{++}, PO_4 and Na^+)
   d. Nutritional supplementation
   e. Review steroid doses and the possibility of reduction of the dose.

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❖ **How to prevent/ minimize morbidity and mortality**

1. Tight control of blood sugar levels especially if on steroids. Patient may not be a previously diagnosed diabetic.
2. Optimum management of electrolytes.
3. Assess the best dose of steroids depending on his general status and blood sugar levels.
4. Have a high degree of suspicion regarding mucormycosis in high risk patients.
5. Educate/ Be alert for early identification symptoms/signs
6. Prompt referral and involvement of a multidisciplinary team.
7. Treatment package has to be tailor made for each patient after discussion with the MDT.

Thank and regards,

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