

Mucormycosis

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Date of Submission: 01-09-2021

Date of Acceptance: 15-09-2021

Mucormycosis is a devastating infection with high mortality rates despite recent advances in diagnosis and treatment. It caused by zygomycetes infection by a filamentous fungi of the murales class.

This is preferentially affecting patients with diabetes, neutropenia , malignancy ,chronic renal failure , AIDS ,it can affect the immunocompromised hosts. It occurs mainly through skin, trauma ,with contaminated soil or intravenous drug administration. Lipid formulations of amphoterecin b are the mainstay of its treatment with aggressive surgical therapy.

The most important underlying disease associated with it are diabetes mellitus, hematological malignancy had ALL and only had acute myelocytic leukemia.

Hypokalemia and creatinine elevations appeared in few patients after its treatment.

These species have special ketone reductase system and due to which they are able to thrive in high glucose and acidic conditions. These patients also have a decreased phagocytic activity because of impaired glutathione (which is a free radical pathway).

In Italian series ,rhinoorbitalcerebral involvement is the most common site of infection . These are the symptoms of fever, rhinorrhoea(nasal discharge), headache,with blindness. It is often associated with burns , malnutritionblood dyscrasias. It usually leads to spread facial cellulitis or sinusitis and palatal perforation. Its extension occurs through vascular channels which involves the ophthalmic and internal carotid arteries with highly fatal rhinoorbitalcerebral form and rhino maxillary form which involves sphenopalatine arteries, resulting in thrombosis of the turbinate and necrosis of the palate culture on sabroud's agar is preferred revealing long, broad, branching, non separate with H&E staining , pas and giemsa stains.

Often this disease diagnosed with local pain ,swellings, epistaxis, nasal discharge with diplopia or numbness. Its differential diagnoses can be chronic granulomatous infection with similar reaction as diseases like tertiary syphilis ,midline lethal granuloma,Wagner's granulomatosis, radiographically ,it is seen as sinus necrosis,sinus opacification without fluid level and spotty destruction of paranasal sinus. Through CT scan level of destruction of palatal bone and may delineate the extent of disease.

Its treatment part is followed by the investigational tests like monitoring of BUN level, creatinine and blood sugar levels. Treatment modalities involves nose endoscopy , performed with amphoterecin-b, palatal closureby a construction of a prosthetic appliance like obturator through which feeding of semi solids and liquid food can be facilitated . Insulin therapy can be initiated in such patients, nutritional supplementation , triazole derivative like psocanazole , hyperbaric oxygen therapy with respiratory problems like sinusitis can be given along with G-CSF can be given as a supplementation as a defensive mechanism.

Generally the patients with this disease on general examination are found to be lethargic, tachypneic, with congestive cardiac failure , raised jugular venous pressure, bibasal pulmonary crackles, pitting oedema to the knees with high glycosylated hb level.ECG on examination may show a T wave inversion. There may be symptoms of chest pain and suspend on bronchoscopy and generally revealed a cheesy Endobronchial material culture from Bronchoalveolar lavage samples grew R. Microspores and methicillin sensitive staphylococcus aureus. Gastroscopy could may reveal findings of oesophageal candidiasis. There could be findings of troponin elevations, hypophosphatemia, high anionic gap,with high plasma ketones findings and raised serum potassium levels. The patients on CT scan in order to study the extent and location of disease thickening of maxillary antrum lining with destruction of anterior maxillary walls occurs, from the nasal walls to the zygomatic bone and superoinferiorly from the maxillary alveolus to just below the infra orbital rim

Identification of mucormycosis include test kits used for 1D32C combined with positive melezitose assimilation detects *L.ramosa* . Another one is the matrix assisted laser desorption/isolation time of flight along with mass spectrometry . Serology used as ELISA assays immuno blots and immuno diffusion tests that are invasive towards them. Specific T cells are surrogate diagnostic markers for further research. PCR restriction fragment length polymorphism analysis ,DNA sequencing of defined Gene's and meet curve analysis were part of assays that help in analysis of mucorales. They targeted internal transcribes of 18r RNA Genes For

diabetic patients sodium bicarbonate (with insulin) to reverse ketoacidosis regardless of whether acidosis is mild or severe has the ability to reverse mucorales to invade hosts. Drugs such as corticosteroids should help in early diagnosis such as to stop the tissue invasion.

The use of hyperbaric oxygen therapy to enrich cytokine environment to lower fungal cell area works usually as the oxygen helps stimulating granulocyte-macrophage colony giving way of interferon response to fight with mucorales. Final treatment could be done by the use of the drug VT-1161 an inhibitor with selective activity against the fungus. The ergosterol synthesis inhibitor proved an additional asset for the same. Another method for aggressive lab technique to identify the fungus is positron emission tomography-CT with fluorodeoxyglucose endobronchial ultrasound guided injection is the best diagnostic tool.

1. Caused by asexual spores formation
2. Tiny spores (airborne) land on nasal and oral mucosa
3. immunologically compromised host
4. Germination occurs
5. Hyphae invade blood vessels (pulmonary vessels)
6. It causes thrombosis, anaemia, infarction with dry gangrene and necrosis.

Last modified: 23:50