International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

The Review on Mucormycosis

Keshav Tushar Sonawane[1], Prof. Rutuja S. Abhonkar[2]

[1,2] Swami Vivekananda Sanstha's Institute of Pharmacy, Mungase, Malegaon

ABSTRACT:

This presentation aims to provide a current perspective of the disease through an overview of mucormycosis, its basic introduction, signs and symptoms, and research progress.

Recent therapeutic advances may improve outcomes for mucormycosis. Lipid formulations of amphotericin B (LFAB) have emerged as the cornerstone of first-line therapy for mucormycosis. Although posaconazole may be useful as a salvage therapy, it cannot be recommended as first-line therapy for mucormycosis based on available data. more research is needed. Early initiation of treatment is critical to maximize outcome. Recent developments in polymerase chain reaction technology advance early diagnostic strategies. Randomized prospective clinical trials are needed to define the optimal treatment strategy for mucormycosis. The presentation will also focus on treatment, prevention of target areas, and disease prevention..

INTRODUCTION:

Mucormycosis (previously called zygomycosis) is a serious but rare fungal infection caused by a group of molds called mucormycota.These molds live throughout the environment. Mucormycosis primarily affects people who have health problems or who take drugs that reduce the body's ability to fight bacteria and disease. Spread by spores of Mucorales molds, most commonly by inhalation, contaminated food, or contamination of open wounds. , and is commonly found in animal manure, but usually does not affect humans. It is not contagious from person to person. Risk factors include diabetes with persistently high blood glucose levels or diabetic ketoacidosis, low white blood cell count, cancer, organ transplantation, iron overload, kidney problems, long-term steroid or immunosuppressant use, and to a lesser extent of which HIV/AIDS is included.

Diagnosis is by biopsy and culture, followed by medical imaging studies to determine the extent of disease. It may resemble aspergillosis. Treatment is generally with amphotericin B and surgical debridement. Precautions include wearing a face mask in dusty areas, avoiding contact with water-damaged buildings, and protecting the skin from contact with soil, including soil. B. Gardening and certain outdoor activities. It tends to progress rapidly and is fatal in about half of sinus cases and nearly all cases of the common type. Mucormycosis is usually rare, affecting less than 2 per million people in San Francisco each year, but is now about 80 times more common in India. People of all ages can be affected, including premature babies. The first known case of mucormycosis may have been described by Friedrich Kuchenmeister in 1855.

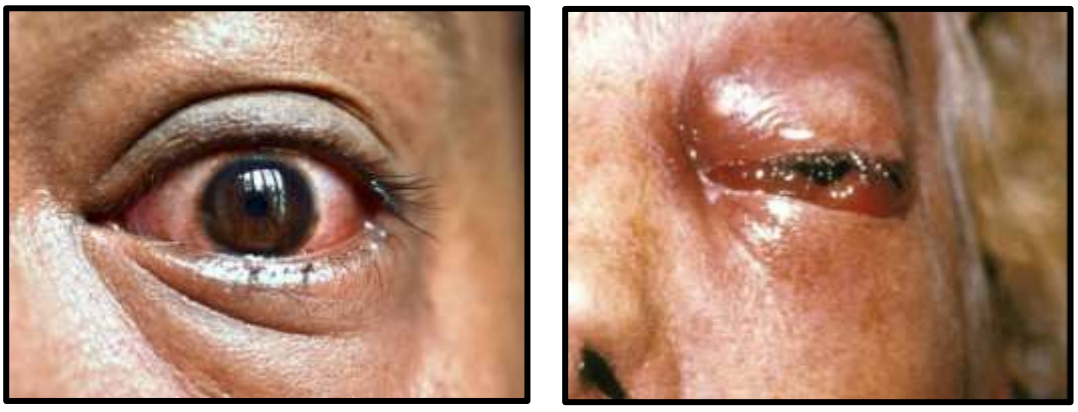
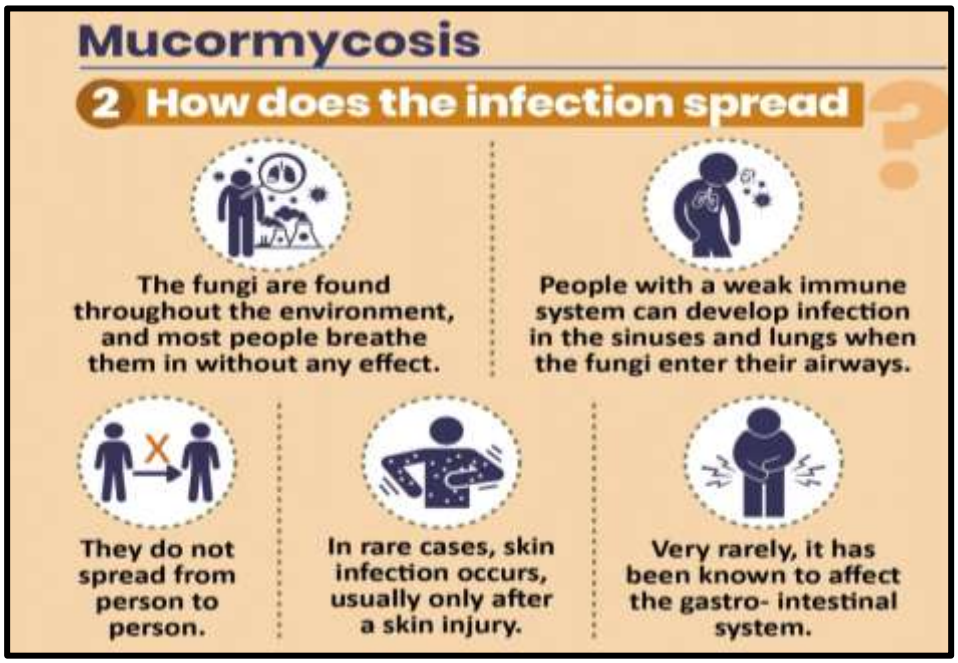


Fig.1 Mucormycosisinfection

How does the infection spread:

- The causative agent of mucormycosis is **R. Rizodoformis**.
- Mucormycosis is caused by group of mold known as mucormycytes.It often affects the sinuses, lungs, skin, and brain



Symptoms:

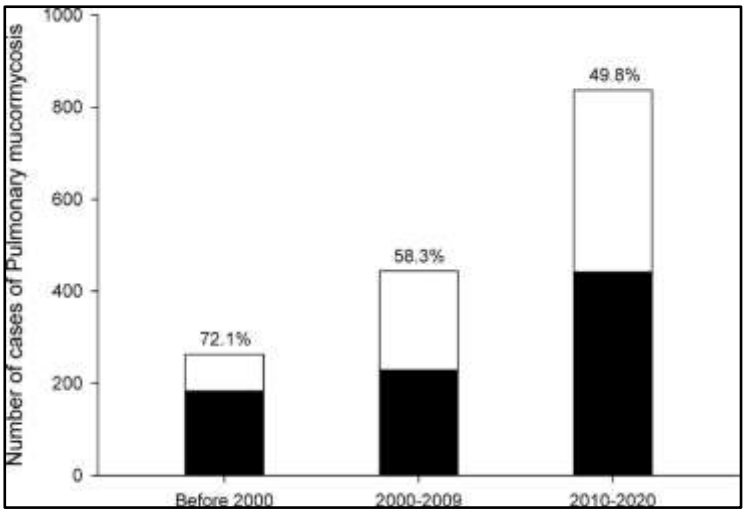
Symptoms of mucormycosis depend on the site of infection in the body. Infection usually starts in the mouth or nose and moves from the eyes to the central nervous system.When a fungal infection begins in the nose or sinuses and spreads to the brain, symptoms and signs may include unilateral eye pain or headache, facial pain, numbness, fever, loss of smell, and nasal congestion or nasal congestion. It may be accompanied by a runny nose. The person seems to have sinusitis. One side of the face appears swollen, and there are rapidly progressing "black lesions" on the upper part of the nose and mouth. One eye may appear swollen and bulging, and vision may be blurred.

Fever, cough, chest pain, difficulty breathing or hemoptysis may occur when the lungs are affected. Stomach pain, nausea, vomiting, and bleeding can occur when the gastrointestinal tract is affected. Affected skin may appear as dark, reddish, tender patches with dark centers due to tissue death. It can ulcerate and can be very painful. Penetration into blood vessels can cause thrombosis, and loss of blood supply can lead to death of surrounding tissue. Widespread (disseminated) mucormycosis usually occurs in people who already have other disorders, so it can be difficult to know which symptoms are related to mucormycosis. A person with dysentery may have an altered mental state or go into a coma.

History:

The first case of mucormycosis was probably described by Friedrich Kuchenmeister in 1855. Fürbringer first described lung disease in his 1876. In 1884 Lichtheim noted the development of the disease in rabbits and described two types.

Mucor corymbifera and he Mucor rhizopodiformis later became known as Lichtheimia and he Rhizopus respectively. In 1943, three cases with severe involvement of the sinuses, brain, and eyes were reported to be associated with poorly controlled diabetes. Saksenaeavasiformis was isolated from forest soils in India and in 1979 P. C. Mithra examined the soil of a mango plantation in India, from which Apophysomyces was isolated. It was later found to be the main cause of mucormycosis. Since then, several species of Mucorales have been described. When cases were reported in the United States in the mid-1950s, the authors attributed the new disease to the use of antibiotics, ACTH, and steroids. Potassium iodide was the only available treatment until the late 20th century. A review of cases of lung diagnosis after flexible bronchoscopy between 1970 and 2000 found higher survival rates in those who received a combination of surgery and treatment primarily with amphotericin B.



Graph.1: No. of cases of pulmonary mucormycosis

Treatment:

Treatment involves a combination of antifungal drugs, surgically removing infecting tissue and correcting underlying medical problems, such as diabetic ketoacidosis.

Medication

If mucormycosis is suspected, amphotericin B is given at an initial dose of 1 mg intravenously over 10-15 minutes slowly, then once daily based on body weight for 14 days. You may need to continue longer. Substituted by isavuconazole and posaconazole.

Surgery

Surgery can be very drastic, and, in some cases of disease involving the nasal cavity and the brain, removal of infected brain tissue may be required. Removal of the palate, nasal cavity, or eye structures can be very disfiguring. Sometimes more than one operation is required.

Other considerations

The disease must be monitored carefully for any signs of re-emergence. Treatment also requires correcting sugar levels and improving neutrophil counts. Hyperbaric oxygen may be considered as an adjunctive therapy, because higher oxygen pressure increases the ability of neutrophils to kill the fungus. The efficacy of this therapy is uncertain.

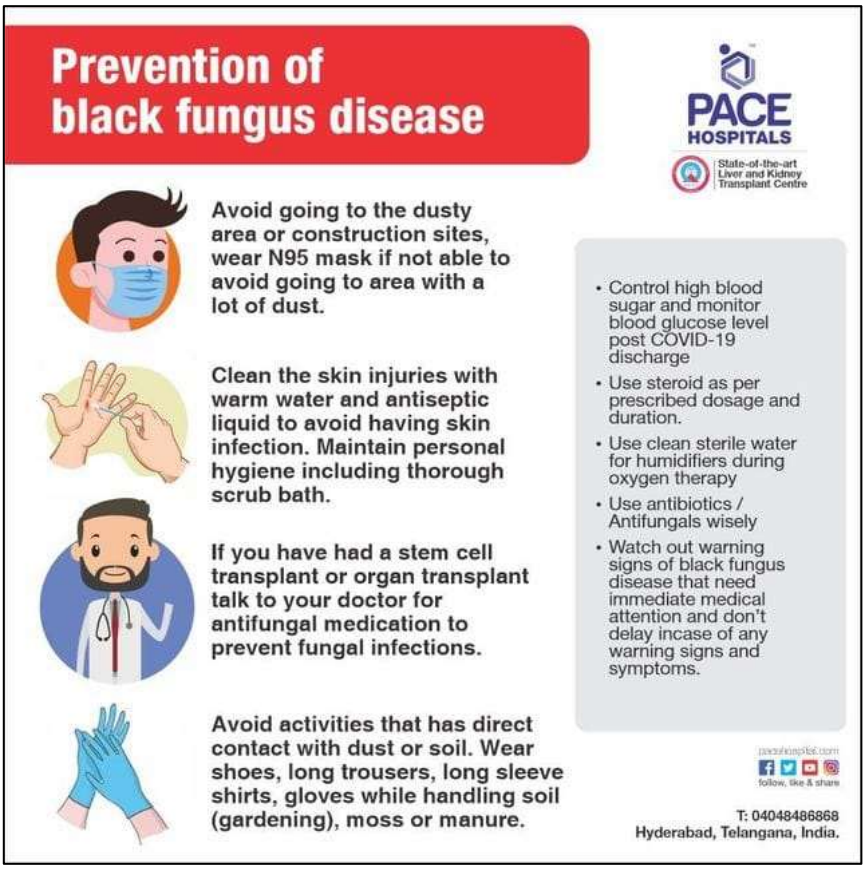
Prevention:

Precautions include wearing a face mask in dusty areas, washing hands, avoiding direct contact with water-damaged buildings, and protecting skin, feet, and hands when in contact with soil, fertilizers, etc. B. When gardening and certain outdoor activities. In high-risk groups such as B.

Organ transplant recipients, prophylactic antifungal drugs can be administered. The actual incidence and prevalence of mucormycosis may be higher than it appears. Mucormycosis is rare, with less than 1.7 He per million in San Francisco each year. It is about 80 times more common in India, with an estimated incidence of about 0.14 cases per 1000 population, and an increasing incidence. The causative bacteria are highly location dependent.

Diabetes is the most important underlying disease in low- and middle-income countries, and the most common underlying diseases in developed countries are blood cancers and organ transplantation. The development of new immunomodulators and diagnostic tests has changed mucormycosis statistics. The numbers change as new genera and species are identified and new risk factors such as tuberculosis and kidney problems are reported

.



Conclusion:

- Early diagnosis means early treatment and leading to less mortalityrates
- Reversal of underlying factors, Surgery and Liposomal amphotericin B increases cure rates
- Duration of treatment is highly individualized
- Posaconazole, Isuvaconazole can also be tried
- Salvage therapy in refractory or intolerant pts
- Adjunctive therapies need to proved in large trials and standardized
- More common in immunocompromised
- Suspected in patients already on anti-aspergillustreatment
- No specific clinical or radiological features makingdiagnosis more difficult and challenging
- Diagnostic options are limited with variable results
- Invasive diagnostics have more yield which is notpossible in some patients

References:

1. "https://www.who.int/mucormycosis" (Surf on 29 October 2022).
2. Hindustan times news paper(Surf on 23july2022).

3. "26. Mucormycosis". Textbook of Medical Mycology (4th ed.).Jaypee Brothers Medical Publishers Ltd.
4. "Orphanet: Zygomycosis". www.orpha.net. Archived from the original.
5. Dyer O "Covid-19: India sees record deaths as "black fungus" spreads fear".
6. Quarterly Current Affairs Vol. 4 - October to December 2020 for Competitive Exams. Vol. 4.
7. Grossman ME, Fox LP, Kovarik C, Rosenbach M (2012). "1. Subcutaneous and deep mycoses: Zygomucosis/Mucormycosis". Cutaneous Manifestations of Infection in the Immunocompromised Host (2nd ed.).
8. "Symptoms of Mucormycosis". www.cdc.gov.
9. Spellberg B, Edwards J, Ibrahim A (July 2005). "Novel perspectives on mucormycosis: pathophysiology, presentation, and management". Clinical Microbiology Reviews.
10. "Mucormycosis". NORD (National Organization for Rare Disorders). Archived from the original.
11. “http://scholar.google.com/future” science group.