



MUCORMYCOSIS AFTER COVID-19 RECOVERY

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ABSTRACT

Mucormycosis represents a group of life-threatening infection caused by fungi of the Order of Mucorales of the Subphylum Mucormycotina also called as Zygomycete, that the fungal infection associated with global COVID - 19 might be missed mucormycosis Surge with the Second wave of COVID -19 in India has been cases of mucormycosis. Complications of vision loss, brain abscess & stroke mucormycosis is an opportunistic fungal infection associated with high mortality" We Summarise mucormycosis occurs in patients who are immuno compromised because of diabetic ketoacidosis, neutropenia and increased Serum level of available iron. mucormycosis patients with history of COVID-19 the most common infection rate was the sinuses (100%) intra orbital dilation was observed in 43.471. of cases while intracranial dilation was Seen only in 8.69 1.Diabetes mellitus occurred in over 91% of cases and was not controlled in over 52% of Cases. In this review article Sicks we study the character treatment and how to prevent the mucormycosis infection which is maiming the patients.

KEYWORDS: Mucormycosis, COVID 19, Immunocompromise, diabetic ketoacidosis, Rhino - orbito cerebral, pulmonary mucormycosis.

INTRODUCTION

Coronavirus disease 2019 (COVID-19), caused by-Acute Severe respiratory Syndrome Coronavirus 2 SARS-COV-2) We Surmise that the fungal to infections associated with global COVID 19 might be missed. Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus. Most people who fall sick with COVID-19 will experience mild to moderate symptoms and recover without special treatment. The virus that causes COVID-19 is mainly transmitted through droplets generated when an infected person coughs, sneezes, or exhales. These droplets are too heavy to hang in the air, and quickly fall on floors or surfaces. You can be infected by breathing in the virus if you are within close proximity of someone who has COVID-19, or by touching a contaminated surface and then your eyes, nose or mouth. COVID-19 affects different people in different ways. Most infected people will develop mild to moderate illness and recover without hospitalization. There are few publications, covid -19 patients, especially Severely ill or immune compromised have a higher probability of suffering from invasive mycotic. Mucormycosis or black fungus infection is a Severe medical condition caused by a group of moulds called mucormycetes. The infection usually affects the sinus cavity, brain or lungs and therefore can be quite common in people Suffering or recovering from COVID-19 In with the raise in the number of Mucormycosis cases in India, people have entered yet another State of panic &

Chaos. Mucormycosis can commonly affect areas such as the nose, eyes, brain and sinuses.

Besides that, people who suffering from pulmonary mucormycosis can experience symptoms like fever, cough, chest pain and shortness of breath, which are also prevalent in COVID-19 patients. While COVID-19 was already a matter of great concern the fungal infections associated with it has raised a sense of alarm in the country. In INDIA pandemic situation of COVID-19, the month of may and june the number of fungal infection patients increases. India has reported more than 8,800 cases of deadly black fungus in a growing epidemic of disease. In that 80% patients need surgery immediately In that their vision 20% of patients lost and 60% of patients can give the surgery and remove the infected body part. The black fungus infection has become more now challenging than COVID-19 Patients. If patients While disease takes a toll on people with Compromise immunity & those with high blood sugar levels, it is important to understand what mucormycosis is how exactly is & how it impact the body. A fungal pathogen called Aspergillus causes devastating disease in immune-compromised hosts. Triple strain corona is considerably high on patients who are in need of ICU furthering them to suffer from mucormycosis. Hence fatality rate is estimated to be high. Mucormycetes, commonly found in the environment. They can affect easily those people who are suffering from COVID-19.

Because of their immunity was too low during COVID-19 recovery. Though this condition is rare and attacks individuals with compromised immune systems, not treating it in time can be potentially life falling prey to this fungal infection. COVID-19 patients with uncontrolled diabetes and weaker immune systems are particularly threatening. This is why recovering COVID-19 patients have been at a higher risk of developing this condition. Mucoraceae are the most frequent cause of mucormycosis. After inhalation of airborne spores, or in rare cases after percutaneous inoculation or ingestion, the fungi reach the lungs or the subcutaneous tissues. Mononuclear and polynuclear phagocytes are able to kill the spores in healthy individuals. Patients with impairment in phagocytosis (e.g., as a consequence of hyperglycaemia) are accordingly at higher risk for developing mucormycosis. Deferoxamine treatment and neutropenia are risk factors for the development of disseminated disease. The most common predisposing illness for gastrointestinal infection is severe malnutrition, rhinocerebral mucormycosis is often associated with diabetic keto-acidosis, and cerebral mucormycosis has been diagnosed in AIDS patients and drug addicts. Mucorales are unique among filamentous fungi in their greater ability to cause infections in a broader, more heterogeneous population of human hosts than other opportunistic moulds.

Diagnosis of Mucormycosis

If patient have seen any infection in skin or any part of body was infected then doctors may collect the sample of phlegm or nasal discharge. If we have suspected nasal infection by looking at a tissue sample in lab we diagnose the mucormycosis.

Can mucormycosis cause other conditions to develop?

Mucormycosis is particularly dangerous because it spreads quickly throughout the body. Left untreated, the infection can spread to the lungs or the brain. This can cause:

- a brain infection
- paralysis
- pneumonia
- seizures
- death

Complications

Apart from mucormycosis other complications it means other infections creates other serious conditions, this conditions are.

- Anaerobic Cellulitis
- Periodontitis.
- brain, liver abscesses
- aspiration pneumonia Sepsis
- Chronic Sinusitis

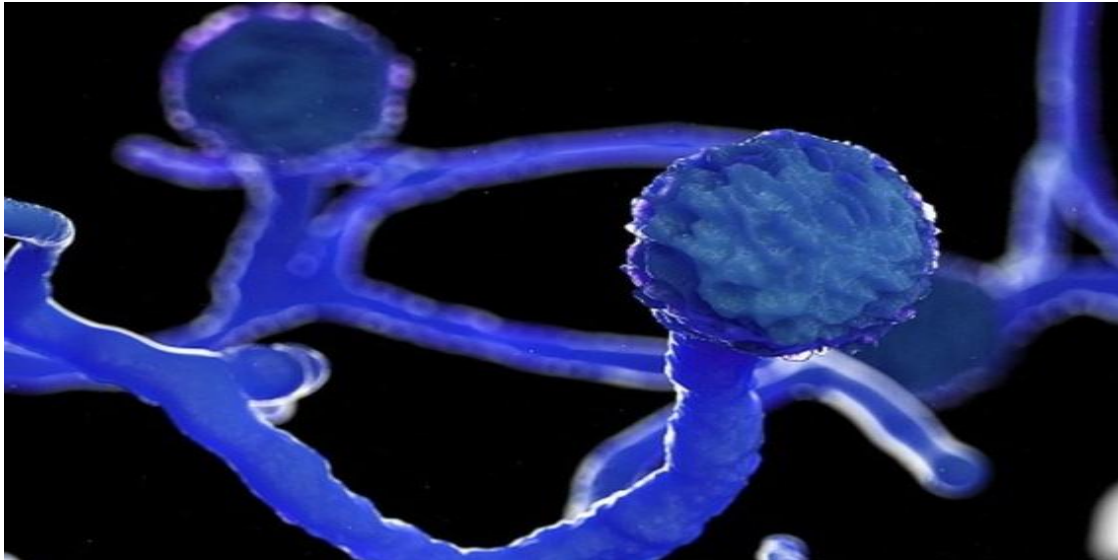
All these conditions have their own symptoms and also we called complications. In that involve organ failure, tooth loss, fatigue. Apart from this in few cases last step is death. In cases where your infection is very severe or

has spread, you'll likely need to be hospitalized. This way, care staff can monitor your treatment and recovery more carefully. While you are hospitalized, you'll likely receive fluids and medications by IV. Some infections, such as Ludwig's angina, may require surgical drainage.

History

1885, the German pathologist *Paltauf*, reported the first case of mucormycosis of described it mycosis Mucorina. During 1919 and 1990 mucormycosis was increasingly seen among immunocompromised individuals based on the prevalence rate, a study carried out in France reported amplification by 7.4% per year. Coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS - CoV-2) has been associated with a wide range of opportunistic bacterial & fungal infections. *Phycomycosis* or *Zygomycosis* was first described in 1885 by Paltauf + later coined as mucormycosis 1957 by Baker an American pathologist for an aggressive infection caused by *Rhizopus*. The term mucormycosis encompasses a distinctive group of infections caused by fungi belonging to genera within the taxonomic order *Mucorales*, usually *Rhizopus*, *Absidia*, *Mortierella* & *Mucor*. These fungi are widespread in nature, subsisting on decaying vegetation & diverse organic materials. Fungi & spores of mucorales show minimal intrinsic pathogenicity toward normal person they can initiate aggressive + fulminant infections under certain clinical conditions.

- Mucormycosis surge with the second wave of COVID-19 in India, has been in cases of mucormycosis and associated complications of vision loss, brain abscess & stroke.
- A very important issue is the high incidence of mucormycosis in India, which is about 0.14 cases per 1000 inhabitants.
- Mucormycosis patients with history of COVID-19 the most common infection rate was the sinuses (100%), intra orbital dilation was observed in 43.47%. Of cases, while intracranial dilation was seen only in 8-69).
- Patients with poorly controlled diabetes mellitus or those that are increased risk of developing mucormycosis that are immunocompromised are at an increased risk of developing mucormycosis.
- Our aim to conduct review of literature to find out the patients characteristics having mucormycosis and what's the how we cover the patients of
- All patients had a history of steroid use during their corona virus treatment.



Characteristics of mucormycosis which is observed to the patients of mucomycosis

- Recently the Indian Council of medical Research (ICMR) recommended that doctors & medical facilities should pay special attention to sign of mucomycosis like an sinus pain, nasal obstruction on one side of the face, one-sided headache Swelling numbness toothache & loosening of 07 teeth.
- Its leads to decolouration of the nose, Liurred vision, Chest pain coughing up blood & difficulty breathing like Covid-19
- According to the world Health Organization, and 2% of all deaths in India are due to only main season is diabetes. Diabetes, being Closely related to mucormy cosis infection.

Causes of mucomycosis in COVED –19 patients

People with pre-existing medical Condition or those taking immunosuppressant medications to fight off deadly environmental pathogens are most likely to develop fungal infections. The said critical COVID-19 patients, who are either diabetic or are under strong immune suppressent medication, may develop fungal infections.

Causes

uncontrolled blood sugar levels of poor glucose control may also encourage the fungi to thrive in the body. Apart from that, unclean and environments where the patients are treated oxygenated Source of infection, too much may be. As per experts, usage of industrial grade oxygen tap water in humidifiers and antibiotic overuse trigger the possibility of mucormycosis with a skin in may also fection, mucormycosis can develop within any part of your body. Its have some symptoms like, fever, swelling, redness and all. In that Some other Conditions which is increase risk like Cancer, HIV,, diabetes Surgery, burns recent organ transplant they may leads to mucormycosis infection.

Types of mucormycosis associated with COVID-19

There are many types of fungi that cause mucormycosis such as *Rhizopus* species & *muco* species, *Rhizomucor* species, *Synccephalastrum* species, *Cunninghamella bertholletiae*, *Apophysomyces* species & *Lichtheimia* (formerly *Absidia*) Species. That said, when it comes to COVID -19 there are two types of mucormycosis observed in patients

- Rhino - Orbito-cerebral mucoamy Cosis (Rocm)*.
- Pulmonary Mucomycosis*

a. *Rhino- orbito- cerebral mucormycosis (Rocm)*

According to doctors, mucormycosis infection that - infects the nose, eyes & brain & leads to certain distinct facial deformity is associated with Rhino Orbito-Cerebral mucormycosis (Rocm). The infection begins from the naval Cavities & Spreads along the Sinus passage to infect the orbit, which is the bone Cavity that encircles the eye & brain.

b. *Pulmonary mucomycosis*

Pulmonary mucormycosis primarily affects people who are immune compromised unlike Rocm. it affects the lungs of the respiratory system. Those who develop pulmonary mucormycosis develop Symptoms such a feaver, caough, shortness of breath and chest pain.

Treatment

It is treated with antifungal mucormycosis may eventually dequire Surgery. It has spread significantly mucormy cosis requires Surgery to cut away the infected tissue process known a debridement which in some of large parts of tissue. Musormycosi's treatment is need to be quick to deduce the effects of the disease. This is the first step in treating mucomycosis is intra venous antifungal medication and remove the surgical infected tissue Then antifungal medicines are most commonly daug used in the treatment of mucormy cosis and the drug is Amphotericin B. But this drug Shortage is the latest worry for India with an increase in the number of people contracting the rare fungal infection. Then it is

the most important and also in our hands along this medication to control diabetes · reduce steroid use immunadulating drugs and also discontinue. Then person have also anerabic infections are treated with antibiotics but this antibiotics depend on tipe of infection. This type of infection in mouth, throat. In that infection infection medications or lungs are amoxicillin, metronidazole, clindamycin like amoxicillin, metronidazole, clindamycin. Then if person have an infection in stomach also called gastrointestinal it means type of infection mostly Common LOT We GI tract, Such Seen in womens. On this infection doctor give the medication Such as moxifloxacin, tigecycline, Carbapenems, metronidazole.

Drainage

Drainage of pus is also necessary to treat the infection. The infection or abscess may need to be surgically removed in some cases. This is known as debridement, the removal of unhealthy tissue from a wound. Then, your doctor will make sure that blood is circulating normally to the area. They will look for anything blocking your tissues from healing. They will also monitor the area until it's free of infectious bacteria and functioning normally.

CONCLUSION

Mucormicosis is a very rare disease. It is rarely affects a healthy individuals. If you suspect a mucormicosis infection. It is important to consult your doctors. If Some patient was recocer from COVID-19, that patients have a risk of mucormicosis. However, the actual etiopathogenesis remains varied throughout the world diagnosis of this disease remains a challenge for the clinicians. As this disease is associated with high mortality, strict blood sugar control along with the judicious use of steroids and personal hygiene holds the key. Mucormicosis affect those people who have been # treated with Steroids and other drugs for covid-19 reduce, inflammation.

RESULT

Blindness, organ dysfunction, loss of body tissue due to infection and debridement, and death. Complications of **mucormycosis**. The prognosis (**outcomes**) of **mucormycosis** infections range from fair to poor; there is about a 50% death rate that rises to about 85% for rhinocerebral and GI infections.

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