

To Prevent A Mucormycosis Infection From Saline Water

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What is Brine?

A high-concentration solution of NaCl in water is commonly called as Brine solution. Alternatively, brine may call as salt solutions which is ranging from about lower 3.5% (a typical concentration of seawater up to about 26% (a typical saturated solution, depending on temperature).

What is Fungus?

Any member of the group of eukaryotic organisms that includes microorganisms such as yeasts and molds, as well as the more familiar mushrooms called as fungus¹. These are classified as different kingdom², which is separately from the other eukaryotic kingdoms such as Plantae, Animalia, Protozoa, and Chromist.

A uniqueness arises due to chitin in their cell walls a special characteristic that places fungi in a different kingdom from protists, plants, and bacteria.

What is Mucoromycetes?

The group of fungi i.e., Mucoromycetes, is the main cause of mucormycosis, present particularly in soil and in association with decaying organic matter throughout the environment.

What is Black Fungus?

Black fungus which is also known as Mucormycosis, is a serious fungal infection, with reduced ability to fight infections usually in people.

Alternatively, Mucormycosis relatively rare but is a type of fungal infection also very serious. Mucormycosis, formally known also as zygomycosis, this infection tends to occur most due to weakened immunity from an illness or health condition. Infection need treatment. If left untreated, it can be fatal.

What are the symptoms of mucormycosis?

Mucormycosis common signs of a related sinus or respiratory infection include:

- cough
- fever
- headache
- nasal congestion
- sinus pain

On skin, mucormycosis can be develop within any part of body. Initially it occurs at the site of skin trauma, but it can quickly spread to another area. These symptoms such as:

- blackened skin tissue
- blisters
- fever
- redness
- swelling
- tenderness
- ulcers

What causes mucormycosis?

Mucoromycete molds are mainly cause Mucormycosis. They mostly appears in:

- leaves
- piles of compost
- soil
- rotting wood

It can contract mucormycosis by breathing in affected mold spores in the air which is referred to as a sinus/pulmonary exposure. In turn, infection develops in:

- central nervous system (rarer)
- eyes
- face
- lungs
- sinuses

This can also infect skin via cutaneous exposure such a cut or burn. In such cases, the wound or burn ends up becoming the area of infection.

While these types of molds can naturally occur in the environment, not everyone exposed will get the fungal infection. An increased risk of contracting this type of infection arises with weakened immune system. Conditions that may increase risk includes.

- burns
- cuts and scrapes
- cancer
- recent organ transplant
- HIV or AIDS
- diabetes (especially if it's not being treated properly)
- surgery

How is mucormycosis diagnosed?

Initially, mucormycosis often not diagnosed. It may get diagnosed with the condition such as lung, sinus, or skin infection.

In Lab, Mucormycosis is diagnosed by looking at a tissue sample, sample of phlegm or nasal for sinus infection. In the case of a skin infection, wounded area.

Can mucormycosis cause other conditions to develop?

It spreads quickly throughout the body hence it found to be dangerous. If it left untreated, the infection can spread to the lungs or the brain. This can cause:

- a brain infection

- paralysis
- pneumonia
- seizures
- death

What is the outlook for mucormycosis?

However, mucormycosis is relatively rare. The chances for mucormycosis recovery depend greatly on early diagnosis and treatment. The infection has the potential to spread throughout the body. Death is a possibility with this type of severe infection.

Is it possible to prevent a mucormycosis infection from saline water?

Sea water is a saline solution which also contains sodium, chloride i.e., major cations and anions. Sea salt possess strong antifungal properties. So, it may be possible to prevent mucormycosis infection from saline water. Their mechanism of action is such like that, since, salts of saltwater can retain more water hence it damages leads to a higher rate of mold growth. Due to high salt, water activity reduces in the cells of fungi which leads to slows down the flow of transportation in and outside fungal cells which can lead to cell death.

1. REFERENCES:

- [1] Taxonomic proposals for the classification of marine yeasts and other yeast-like fungi including the smuts". *Botanica Marina*. **23**: 361–373.
- [2] "Fungal Diversity Revisited: 2.2 to 3.8 million Species". *The Fungal Kingdom. Microbiology Spectrum*. **5**. pp. 79–95.