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The Unseen “Fungal Infections” – An Extra Thrust Aggravating COVID Second Wave in India

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Abstract

India is witnessing a second wave of COVID-19 pandemic. According to a report of the money-control website on 22nd May 2021, so far the country has recorded over 2.62 crores confirmed COVID-19 cases, including 2,95,525 deaths. A total of 2,30,70,365 people have recuperated from COVID-19 so far. There are 29,23,400 active cases in the country as of date, which comprises 11.12 percent of the total caseload, the data stated. Amidst a rise in coronavirus cases in India, there have been several cases linked to the black fungus infection, or mucormycosis, which is known to have an extremely high fatality rate. Several confirmed cases have been reported across states, which many believe to be the newest endemic on the rise. However, even though black fungus catalysing post-COVID complications continue to loom, there is a newfound threat that is baffling medical experts. According to reports, cases linked to ‘white fungus’ infection have been traced in Bihar, which health experts believe to be even scarier than the black fungus threat.

Introduction

As the central government asks states to notify black fungus or mucormycosis, an epidemic, an infection called white fungus or Candidiasis has also been found to affect some people (Figure 1). Covid-19 patients are more prone to white fungus as it affects the lungs and similar symptoms are created like that of Coronavirus. Black fungus is a serious but rare fungal infection caused by a group of moulds called mucormycetes, which is abundant in the environment. There is little evidence available as to what exactly makes this new infection more threatening. However, doctors have issued a warning saying that, unlike the black fungus, the white fungus infection spreads more easily to the vital organs, including the lungs, kidneys, intestines, stomach, private parts and even the nails and causes widespread infection. The black

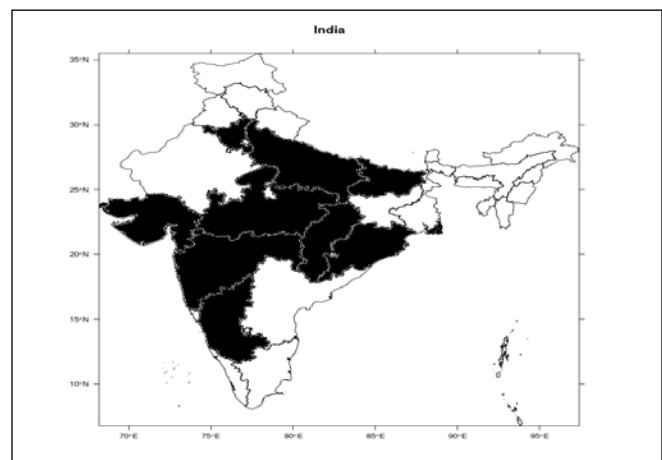


Figure 1: Fungal infection states (Indicated in Black Colour) aggravating COVID second wave in India (Maharashtra, Gujarat, MP, Hariyana, Delhi, UP, Bihar, Chhattisgarh, Telangana, Odisha)

fungus infection in India is known to have a high mortality rate. Whether or not the white fungus is just as fatal is unknown. The key points regarding white fungus are:

- White Fungus or Candidiasis is a fungal infection caused by a yeast (a type of fungus) called Candida.
- Candida normally lives on the skin and inside the body, in places such as the mouth, throat, gut, and vagina, without causing any problems.
- Candida can cause infections if it grows out of control or if it enters deep into the body (for example, the bloodstream or internal organs like the kidney, heart, or brain).
- The most common species that cause infection is Candida albicans.

Black Fungus Case Studies in India

Covid-triggered black fungus infection is rising in India. So far, over 7,000 people have been infected with the disease and over 200 have lost their lives. Maharashtra has reported the highest number of cases of Mucormycosis (Figure 2), also known as a black fungus. The state has reported the highest number of deaths due to black fungus, a new cause of concern for the health authorities. The Hindustan Times reports (Figure 2) that at least 7,250 people have been infected with Mucormycosis. It has so far killed at least 219 people in the country. Gujarat is the second worst hit state in terms of

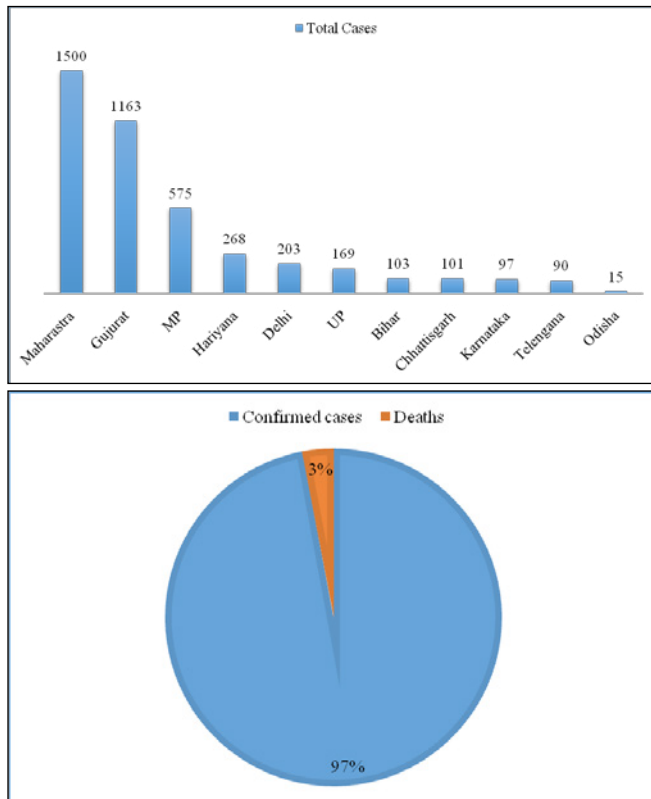


Figure 2: Black fungus statistics till 21st May 2021 in India (<https://www.livemint.com/>)

fungus infection followed by Madhya Pradesh. Gujarat has reported 1,163 cases and 61 deaths whereas Madhya Pradesh has recorded 575 infections and 31 deaths. Haryana has reported 268 cases and eight deaths while Delhi has recorded 203 cases and one death. In Uttar Pradesh, 169 cases of mucormycosis and eight deaths due to it have been reported. Its neighbouring state Bihar has recorded 103 cases and two deaths. Chhattisgarh has reported 101 infections and one death, Karnataka reported 97 cases and no death, Telangana has 90 cases and ten deaths. Intestinal mucormycosis is a very 'rare disease', and most commonly involves the stomach or large intestine. According to the recent report of News18 India on 23rd May 2021, rare cases of small intestine Black Fungus infection were found in Patients at Delhi Hospital.

White Fungus Case Studies in India

Amid concerns over rising cases of Mucormycosis or 'Black Fungus' in Covid recovered patients, several cases of 'White Fungus' have been reported in Bihar. Medical experts say 'White Fungus' is deadlier than Mucormycosis as it affects other organs of the body apart from the lungs. At least four patients of 'White Fungus' have been detected in Bihar's capital Patna. Dr. S.N. Singh, Head of Patna Medical College and Hospital's Microbiology Department, told India TV that there could be many more cases of such infection. Dr. Singh said that people with low immunity, diabetes, AIDS patients, those who have undergone kidney transplant are more susceptible to this disease. He also pointed out that negligence while using oxygen cylinder for Covid patients can put them at risk of 'White Fungus'. "People use tap water in the humidifier attached to the oxygen cylinder. Tap water may contain 'White Fungus' which can be a source of chest infection in the person on oxygen support," Dr. Singh said.

Symptoms and Preventive Measures of White Fungus Infection

Both White and Black fungus prey on people with low immunity. Along with this, people suffering from diabetes, cancer, critical illness or a patient admitted in ICU are more prone to black fungus. At the same time, the white fungus attacks people with comorbidities. People with cancer, excess blood sugar are more prone to white fungus. According to AIIMS professor Dr. Kaushal Verma, the white fungus begins from the tongue or private parts due to which, it makes the tongue white. It then spreads to other organs along with lungs, brains, food pipes. According to Dr. Pankaj Aggarwal, the first one has to avoid getting Covid infection. Therefore it is important to strengthen the immunity. Do not overuse steroids during Covid treatment. Steroids should be given only when the oxygen levels go down and pneumonia occurs. When the condition is stable, reduce the number of steroids so that there is no problem of blood sugar fluctuation.

White and black fungus infections can be avoided in these ways. According to AIIMS Dr. Rakesh Malhotra, if even after one week of recovering from Covid, a person is witnessing fever and breathlessness, then these are red flag signs. Steroids may therefore be required. In such a situation, you should immediately contact the doctor.

The first week after the Covid recovery is very important. It is advised to stay clear of steroids at this time. Again, as cases rise, it's important to be aware of symptoms and any danger signs from the very beginning. From what is known, white fungus infection could affect vital functioning of the body, in comparison to the black fungus, which affects just the sinus and lungs. It was also observed that patients who had white fungus infection (Table 1) did showcase COVID-like symptoms but were found to be negative. Medical experts have also suggested that just like severe COVID-19 cases require additional scans, a test similar to the HRCT scan may be required to trace the white fungus infection.

Table 1: Comparison of symptoms of White Fungus and Black Fungus

White Fungus Symptoms	Black Fungus Symptoms
a. Cough	a. Facial Deformity and headache
b. Fever	b. Facial pain and nasal congestion
c. Diarrhoea	c. Loss of vision or pain in the eyes
d. Dark spots on lungs	d. Altered mental state, confusion
e. Reduced oxygen level	e. Swelling in cheeks and eyes
	f. Toothache, loosening of teeth
	g. Black crusts in the nose

As with the black fungus infection, the risk of catching the disease is the highest for those with frail immunity, suffering from pre-existing medical issues, including diabetes, and/or using steroids. Those put on high oxygen support are also at

risk. Additionally, the white fungus infection may be risky for pregnant women and children, as per reports. Hence, proper emphasis should be laid on sanitisation and cleaning of supplies, environment since molds can be directly inhaled by a suspected patient. Corona pandemic is rising since days but now we know so much more about the virus, what happens and what are the implications to the human body from the infection and that is where we have hope. We also have vaccines now of several types. But to save yourself from the devastating consequences of the infection the understanding of the disease is very useful.

Conclusion

Mucormycosis and Candidiasis are the serious but rare fungal infection that has been developing in Covid-19 patients. These fungal diseases are commonly being observed in patients who were given steroids for a long time, who have been hospitalised for a long time, were on oxygen support or ventilator, faced poor hospital hygiene or those who have been taking medication for other illnesses such as diabetes. The Covid medications can leave the body weak and low on immunity. They can also escalate the blood sugar levels in both diabetics and non-diabetic Covid-19 patients. If not treated on time, the black fungus and white fungus infection can turn fatal.

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