

What is causing the Black fungus menace?

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Submission: 05-04-2021

Revision: 19-07-2021

Publication: 01-08-2021

ABSTRACT

Even with the weaning of second wave of covid 19 epidemic the cases of Mucormycosis or black fungus, a rare but potentially life-threatening condition is on rise. By the order of central health ministry all states have put it in the list of notifiable disease under the Epidemic Diseases Act, 1897. This sudden familiarization of the term black fungus both in media as well as in literature has causes a huge outcry and phobia in most certain terms. This is not only unjustified in most instances and added flavor to already panic-stricken minds of common people. We are noticing an effort of overnight infrastructure building as well as a rising demand for a superspeciality set up by ignoring the very basic needs of our overburden health care sector. Here we have tried to share our perspective regarding this menace by searching the facts and myths and suggested hypothesizes.

Key words: Covid 19; Black Fungus; Steroid abuse

Access this article online

Website:

<http://nepjol.info/index.php/AJMS>

DOI: 10.3126/ajms.v12i8.37866

E-ISSN: 2091-0576

P-ISSN: 2467-9100

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INTRODUCTION

A frantic phone call in the middle of the night by a Covid patient in home isolation “I have black fungus. I am going to die”.

The first thing that came to my mind “I had a chat with the patient in the morning. She is a patient suffering from mild Covid with no comorbidities. So how did she have Mucor?” Turns out she has pain around her nose and mild headache. And she has arrived at the diagnosis of Mucormycosis based on her Google search and the multiple TV channels and social media platforms who have a new story up their sleeves. Their favorite headlines “doctors using too much steroids”, “steroids causing black fungus”, “new epidemic: black fungus”, “Patients dying of black fungus”. As if the people who have got infected with Covid are not already panic-stricken enough that media is adding to their anxieties.

So, let us try getting some facts. As on date there have been over 170 million Covid cases all over the world, out

of which 3.5 million have died.¹ In India there is 28 million confirmed cases and 3.29 lakh deaths so far.² Till now, India has reported some 9000 cases³ of Mucormycosis. There is reason to be afraid as it has a documented mortality of 50% even if treated as per guidelines, and can go up to 90% if not treated on time. There has been a call to declare it an Epidemic, but do we need to panic? Statistically, it means that 0.03% of Covid patients might develop Mucormycosis in India and may eventually die. But these same patients have a much higher chance of dying (1 to 2%) from the Covid itself (or immediate complication) (which is 50 times more). So, if we are going to panic, then let it be for Covid itself.

The next myth that needs to be looked at “huge amount of steroids”. Please note, that the doses of steroids (Dexamethasone or Methylprednisolone) that doctors in India are using are exactly what their colleagues in any other country is using. Of course, there are exceptions. There are people who are using it too early and in much

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higher doses than in the guidelines. There are quacks recommending it and we even have patients who have started self-medication with steroids. The reason is that, till a few weeks back, steroids were all over the media (especially social media) as the magic drug for treatment of Covid. Nearly 5 to 10% of the world population suffers from autoimmune disorders⁶ out of which quite a sizable population exists in India. What is noteworthy is that many of these patients have received or are receiving quite a high dose of systemic steroids (upto 1-2 mg/kg of prednisolone or equivalent) for quite a prolonged period of time, sometimes along with other immune suppressants. Similarly, recipients of organ transplants also take quite a heavy dose of steroids along with other immune suppressants. But thankfully, we have not seen a Tsunami of Mucormycosis in this category of patients as yet.

Please remember, that Mucor is ubiquitous in nature, and might be present even in our normal nasal flora. So why is it that other continents are not seeing such cases, after all the possibility of these fungi invading the tissues and causing damage after Covid and steroids have suppressed the immune system remains the same worldwide? It can't be that we, Indian physicians, are diagnosing a disease that no-one else in the world is diagnosing? Or is it a disease that is indigenous or unique in our country? Recently however, Bangladesh, Nepal and Pakistan have started reporting cases as well. This leads to a suspicion that it might have something to do with this subcontinent: either the climate or the cultural practices or something that we have not been able to pinpoint as yet.

We would like to propose a few hypotheses

1. In the Indian subcontinent, we are obsessed with “steam inhalation” and “vapor”. There are reports of patients who have presented with burns as they have subjected themselves to close contact with steam for recurrent or prolonged periods⁴. So, is steam killing the normal nasal flora and/or damaging the nasal mucosa to such an extent that a bystander Mucor is taking advantage of the damaged mucosa and altered milieu to invade the tissue?
2. Patients using the same nasal-cannula or oxygen mask for indefinite periods. Most manufacturers recommend that these equipments could be used for up to 4 weeks. But there is no consensus of opinion as to whether they should be cleaned or autoclaved during this period. Most parts of India are currently hot and humid. And we all know this is the perfect combination for growth of fungus. In addition, patients are using masks (3 ply or cloth) to prevent spread of disease to others. How frequently these are changed or washed is anybody's guess. After all, we are a country with limited resources. So, could it be possible that Mucor is colonizing these dirty nasal cannulas, oxygen masks and face masks. And on the first opportunity they are invading the nasal cavity?
3. Water in the humidifiers. Although there are guidelines as to how much humidification is needed and the equipment have to be used, most of the staff taking care of these patients are not adequately trained in this area. Many a times you will find that the water in the humidifier has been left standing for prolonged periods without changing it. Many a times, RO water or even Mineral water is used inadvertently in place of distilled water. Naturally there will be contaminants; which are likely to invade a damaged mucosa as soon as they get an opportunity.
4. Personal hygiene. Nasal stuffiness and nasal blockage are common symptoms of Covid. Whereas in the Western countries, nose-picking is frowned upon, here in this subcontinent, we are actually not so bothered. Could it be possible that these dirty fingers are actually causing micro-injuries in the nasal mucosa as well as sowing the fungi into the nasal cavity?
5. How much zinc is too much zinc? Indian protocols for treatment of Covid19 did not include zinc last year. But many institutions have included 50mg of zinc in the treatment protocol this year. This may just be a coincidence, but there had been reports that Fungi take up zinc for their own metabolism⁷. So, are we inadvertently helping the Mucor to grow? Nutritional supplements are sold over-the-counter in India. With reports that zinc helps in boosting immunity, we have seen a huge increase in sale of multivitamins that have zinc amongst their ingredients.
6. Oxygen. With a sudden spike in oxygen demand industrial grade oxygen had to be rerouted for use in medical setups. But we all know that industrial oxygen may contain impurities. As such, this difficult decision in this difficult situation could have also lead to such point source epidemics.

CONCLUSION

To summarize, we are skeptical regarding blaming steroids as the only/main cause of the rise in Mucormycosis cases in India and believe that it is due to multiple adverse factors working together and as such, it needs to be evaluated further. We also emphasize the proper utilization of our very scarce resources to utilize very precisely rather than running behind the hype of the time which in our experiences always given compromise to our already burdened healthcare sector. The unsupported hypothesizes during pandemic will do more harm than doing a favor.

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Author's Contribution:

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Sources of Funding: None, **Conflict of Interests:** None.