

Contaminated oxygen cylinders for COVID-19 patients: A grave negligence?

Sundus Nasim,¹ Muhammad Taha Nasim,² Muhammad Tabish Nasim³

Madam, as of March 2021, COVID-19 has infected more than 93.3 million people worldwide.¹ Recently, health care providers in India have come across another menace infecting COVID-19 patients: mucormycosis (MCR). MCR is an opportunistic fungal infection that enters the body through the inhalation of fungal spores, and it can affect the skin, sinuses, and lungs. This letter aims to shed light on the rise of MCR due to substandard care of oxygen cylinders in Pakistan.

Immense immunosuppression and significant lymphopenia due to COVID-19 increases the patient's susceptibility to various opportunistic pathogens. Bhatt K. et al. noted that 85% of COVID-19 patient's laboratory findings showed a reduced number of lymphocytes, particularly the CD4+ and the CD8+ T cells. This increases their predisposition to opportunistic fungal infections such as MCR.¹ Additionally, free available iron due to low IL-6 and a hyperglycaemic state due to pre-existing diabetes provide favourable conditions for the growth of MCR. The anti-inflammatory use of steroids in COVID-19 is also another contributor to immunosuppression favouring MCR growth.²

In a systematic review of COVID-19-associated mucormycosis (CAMCR) patients by Singh AK et al., it was found that 101 cases have been reported worldwide, with 81.2% of them from India. The fungus was predominantly observed in male patients (78.9%), and the majority of the patients were known diabetics (80%). About 76.3% of the cases reported corticosteroid intake as a treatment for COVID-19 infection, and the overall mortality rate was 30.7%.²

After infecting 7,250 patients throughout India, MCR has made its way to Pakistan, putting additional pressure on Pakistan's already-fragile healthcare system.³ Dr. Arif Raza, ENT chief at Khyber Teaching Hospital, stated that 2 of his

12 patients who underwent sinus surgeries in the last two months were infected with MCR during or after their COVID-19 illness. He further stated that the source of this fungus were the oxygen cylinders used by the COVID-19 patients claiming that fungal spores were found at the bottom of the cylinder.⁴

It is feared that if the hygiene standards at the oxygen supply facilities remain subpar, Pakistan might experience devastating consequences. Therefore, it is essential to pay close attention to this emerging problem and take possible precautions, such as the use of dry oxygen, maintenance of good glycaemic control, and judicious use of steroids, to avoid opportunistic fungal infections.⁵ Furthermore, the concerned authorities should ensure that necessary measures are taken to avoid a possible shortage in the provision of antifungal medications.

Acknowledgements: We would like to extend our thanks to Dr. Shariq Haider Hashmi, MD for proof-reading the manuscript and providing his valuable feedback

Disclaimer: None to declare.

Conflict of Interest: None to declare.

Funding Disclosure: None to declare.

References

1. Bhatt K, Agolli A, Patel MH, Garimella R, Devi M, Garcia E, et al. High mortality co-infections of COVID-19 patients: mucormycosis and other fungal infections. *Discoveries (Craiova)*. 2021; 9:e126.
2. Singh AK, Singh R, Joshi SR, Misra A. Mucormycosis in COVID-19: A systematic review of cases reported worldwide and in India. *Diabetes Metab Syndr Clin Res Rev*. 2021; 15:102146.
3. "Black fungus": how dangerous is it? Dawn. [Online] [Cited 2021 Jun 5]. Available from: URL: <https://www.dawn.com/news/1625012>
4. 'Cases of Black Fungus emerge across Pakistan'. The News. [Online] [Cited 2021 May 12]. Available from: URL: <https://www.thenews.com.pk/print/834117-cases-of-black-fungus-emerge-across-pakistan>.
5. 'Black Fungus treatment Mucormycosis prevention doctors say Methylene Blue all you need to know | The Financial Express'. [Online] [Cited 2020 January 21]. Available from: URL: <https://www.financialexpress.com/lifestyle/health/black-fungus-infection-how-to-prevent-treatment-of-mucormycosis-methylene-blue-can-prevent-black-fungus-suggest-doctors/2258691/>

.....
¹Dr. Ruth K.M. Pfau, Civil Hospital, Karachi, ²1st year MBBS Student, Aga Khan University, Karachi, ³A-levels Student, Karachi Grammar School, Karachi, Pakistan.

Correspondence: Sundus Nasim. Email: sundusnasim9@gmail.com

DOI: <https://doi.org/10.47391/JPMA.4219>