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Upregulation of Mucormycosis in COVID-19: a retrospective study in a tertiary care hospital in Pune

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Objectives: Coronavirus disease 2019 (COVID-19), caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), is a highly contagious but usually benign infectious disease. Mucormycosis have been known to cause the main fungal pathogens to exist as co-infection with COVID-19. Factors that contribute to a higher incidence of Mucormycosis or Mucorales to germinate in COVID-19 patients are high glucose levels in their blood (shock), severe-induced hypoglycemia, low oxygen (hypoxia), high iron levels, and decreased phagocytic activity of neutrophils due to immunosuppression because of cytokine storms in SARS-CoV-2 infection. Mucormycosis is an angioinvasive disease caused by Mucorales and germinated in COVID-19 patients. There are no specific diagnosis tests for these rare infections.

Methods: A retrospective study was conducted at Christian Medical College and Hospital, Ludhiana from May 1, 2021 to February 28, 2022 for a duration of 10 months. All the samples were obtained from neonate, bone marrow or from the trachea central part. The obtained sample was inoculated on Sabouraud’s Dextrose Agar (SDA) or 2% (w/v) followed by 40% KOH examination. The tubes were routinely checked once in a week and Lactophenol Blue (LPB) preparation was made from the isolates then it became culture positive.

Results: Out of 29 samples, 18 (62.06%) were positive for COVID-19 (either RT-PCR positive, TrueNat PCR positive, or Rapid Antigen positive), 5 patients were COVID-19 negatives and COVID-19 testing was not done in 6 patients. Out of 29 positive samples, 17 (58.62%) were culture positive for Mucorales, 7 (24.13%) grew contaminants namely Aspergillus species (mainly Aspergillus flavus, Penicillium species, bacterial contaminations, and 5 (17.24%) were culture negative. Among 17% of Mucorales, Rhizopus species (6.9%), Rhizopus stolonifer, 4.2% were mucor species and 2.8% were Rhizomucor species. Among the culture-positive cases for Mucorales, 13 (72.22%) were culture positive COVID-19 patients. Two patients were asymptomatic and suggestive of rhinocerebral Mucormycosis.

Conclusion: COVID-19 has thriven the entire globe amid chaos, and there is still no specific cure for this deadly illness. Patients are susceptible to secondary fungal infections such as Mucormycosis as a result of the induction, immunosuppression, previous comorbidities, and medications. Mucormycosis infection is severe because of its rapid disease progression and angioinvasive nature. Therefore, the patient's life is at risk, and severe morbidity and mortality are common in these cases. The infection is caused by the growth of pathogen. There are no specific diagnosis tests for these rare infections.