

The First Fungal Identification from Mini-BAL of Critical COVID-19 Patients

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Abstract : Background: Coronavirus disease 2019 (COVID-19) has become a worldwide issue due to its high prevalence and rapid transmission. Fungal infections have been detected in COVID-19 patients, leading to increased morbidity and mortality. Objectives: This study aimed to isolate *Aspergillus fumigatus* and *Mucor* spp. on mini-bronchoalveolar lavage samples obtained from children with COVID-19 hospitalized in an Iranian children's hospital. Methods: A cross-sectional descriptive study was performed on mini-bronchoalveolar lavage samples from children confirmed positive for COVID-19 admitted to ICU with a ventilator from April 2021 to February 2022. Demographic characteristics were recorded, and fungal DNA was extracted from mini-BAL samples taken from children. Nested PCR was made with two primers for *Aspergillus fumigatus* and *Mucor* spp. Results: Out of 100 children with COVID-19, all samples were negative for *Aspergillus fumigatus*; however, 12 cases were positive for BAL PCR for *Mucor* spp. Among the 12 patients, fever, shortness of breath, cough, and decreased level of consciousness were reported in 8.3% (n: 1), 16.6% (n: 2), 25% (n: 3), and 25% (n: 3), respectively. Most cases (41.7%; n: 5) suffered from heart disease, followed by underlying malignancy (33.4%; n: 4). All positive BAL PCR for *Mucor* spp. cases had significantly higher chest CT scan scores and spent more time under a ventilator. Conclusions: The identification of COVID-19 with *Mucor* spp. was observed among 12% (n: 12) of children hospitalized in a COVID-19 ICU. When dealing with pediatric COVID-19 patients, clinicians should consider the differential diagnosis of fungal co-infections and have a low threshold to begin treatment. Moreover, it is highly advisable to take prophylactic measures, such as properly using corticosteroids and shortening the intubation time.

Keywords : aspergillosis, COVID-19 identification, mucormycosis, paediatrics

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