COVID-19-Associated Mucormycosis (CAM): Case-Series and Global Analysis of Mortality Risk Factors

Since the novel coronavirus disease (COVID-19) outbreak, the cases of COVID19 co-infections have been increasingly reported worldwide. Mucormycosis, an opportunistic fungal infection caused by members of the Mucorales order, had been frequently isolated in severely and critically ill COVID-19 patients. Methods: Initially, the anamnestic, clinical, and paraclinical features of seven COVID-19-associated mucormycosis (CAM) cases from Egypt were thoroughly reported. Subsequently, an extensive review of the literature was carried out to describe the characteristics of CAM cases globally, aiming to explore the potential risk factors of mortality in CAM patients. Results: Out of the seven reported patients in the case series, five (71.4%) were males, six (85.7%) had diabetes mellitus, and three (42.9%) had cardiovascular disease. All patients exhibited various forms of facial deformities under the computed tomography scanning, and two of them tested positive for Mucorales using the polymerase chain reaction (PCR) testing. Liposomal amphotericin B (LAmB) was prescribed to all cases, and none of them died until the end of the follow-up. On reviewing the literature, 191 cases were reported worldwide, of which 74.4% were males, 83.2% were from low-middle income countries, and 51.4% were aged 55 years old or below. Diabetes mellitus (79.1%), chronic hypertension (30%), and renal disease/failure (13.6%) were the most common medical comorbidities, while steroids (64.5%) were the most frequently prescribed medication for COVID-19, followed by Remdesivir (18.2%), antibiotics (12.7%), and Tocilizumab (5.5%). Conclusions: As the majority of the included studies were observational studies, the obtained evidence needs to be interpreted carefully. Diabetes, steroids, and Remdesivir were not associated with increased mortality risk, thus confirming that steroids used to manage severe and critical COVID-19 patients should not be discontinued. Lung involvement, bilateral manifestation, and Rhizopus isolation were associated with increased mortality risk, thus confirming that proactive screening is imperative, especially for critically ill patients. Finally, surgical management and antimycotic medications, e.g., amphotericin B and posaconazole, were associated with decreased mortality risk, thus confirming their effectiveness.