TITLE: PREVALENCE OF FUNGAL ISOLATES IN RESPIRATORY MATERIAL AND BLOOD CULTURES FROM HOSPITALIZED PATIENTS WITH AND WITHOUT COVID-19 DIAGNOSIS

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ABSTRACT:

Opportunistic fungal infections are a matter of concern for hospitalized patients and the COVID-19 pandemic brought new challenges. The risk of opportunistic infections for these patients is high since they are exposed to several procedures, such as mechanical ventilation, use of catheter, broad-spectrum antibiotic therapy, and use of corticosteroids. This study aimed to compare the prevalence of fungal species from respiratory material and blood cultures from patients with and without COVID-19. Positive cultures for fungi being 66 blood cultures (63 patients), 27 bronchoalveolar lavages (BAL) (27 patients), and 158 tracheal aspirates (TA) (132 patients) collected from patients admitted to the University of Campinas Clinical Hospital (April/2020 - August/2021) were analyzed to describe the species found and compare them between patients with and without COVID-19. Blood cultures were processed by Bactec FX®, BAL with quantitative method, and TA by semiquantitative cultures. Fungal species were identified by Mass spectrometry (MALDI-TOF MS). Sixteen (25%) of the 63 patients with positive blood culture for fungi were COVID-19 positive, and 12 of these died (75%). The main fungal species found in the blood of COVID-19 patients were *C. glabrata* and *C. parapsilosis* with 28% each, followed by *C. albicans* (22%), *C. krusei* (11%), *C. lusitaniae* (6%) and *C. orthopsilosis* (6%). In patients without COVID-19, the most common fungus species in blood were *C. albicans* (30%), followed by *C. parapsilosis* (18%), *C. tropicalis* (18%), *C. glabrata* (14%) and others (< 5% each). Of the 158 isolates from TA, 131 were from 110 COVID-19 patients (83%), and, of these, 52 died (47%). The main fungal species found in the TA of COVID-19 patients were *C. albicans* (46%), followed by *C. tropicalis* (18%), *A. fumigatus* complex (14%), and others (< 5% each), including a *Rhizopus* sp. isolate. The same pattern concerning the main species found was observed in patients without COVID-19. From 27 samples of BAL positive for fungal culture in the period, only four were from COVID-19 patients, three *C. albicans* and one *C. tropicalis*, and two of these patients died. This poor sampling may be due to the risk of collecting BAL from COVID-19 patients. Two COVID-19 patients had the same fungus grown in TA and blood, one being *C. albicans* and the other *C. glabrata*. These findings corroborate evidence of a high risk of fungal co-infection, with high mortality, in patients with COVID-19.

Keywords: fungal infections, COVID-19, coinfection

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