Fungal infections in patients with COVID 19
Retrospective study on 65 cases

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Introduction

Patients hospitalized with COVID-19 have a high incidence of secondary infections. We sought to assess the occurrence of fungal superinfections in patients with severe COVID-19.

Methods

We conducted a retrospective observational study of COVID-19 patients who were tested for invasive fungal infections (IFI) between 2020 and 2021 in the laboratory of mycology at Farhat Hached teaching Hospital.

Results and discussion

We received a total of 188 samples collected from 65 patients admitted for severe COVID-19. The patients were predominantly male (n=41, 63.1%) and had a median age of 62.7 years (range 1-87 years).

The samples came mainly from the intensive care unit ICU (91.4%) followed by infectious diseases department (3.7%) and pediatric department (3.2%). The following predisposing factors for IFI were recorded: intensive care unit stay, broad-spectrum antibiotic therapy, diabetes and invasive procedures (Table 1).

Authors found that critically COVID-19 patients, especially those who were admitted in ICU and required mechanical ventilation or with immunocompromised state were more likely to develop fungal co-infection [1,2].

The majority of samples were referred for fungal colonization screen. This particular attention to the probability of fungal infections in COVID-19 patients was based on the experience of SARS in 2003 and the cases of invasive aspergillosis combined with severe influenza[1].

Only 18 samples were collected from deep sites to diagnose IFI, of which 7 were positive. These were pleural puncture (3), bronchoalveolar fluid (2), blood culture (1) and cerebrospinal fluid (1).

The rate of positivity of direct examination was 42.2%. Culture was positive in 67% of the samples with negative direct examination.

A total of 133 fungal isolates were found in the 126 positive samples. The species are represented in figure 2.

Only four patients (6.15%) had a mold positive culture of their samples. We identified 4 species of Aspergillus: A. flavus, A.oryzae, A.parasitosus and A.tereus.

As for Candida, C.albicans was the most frequently isolated species (55.9%) followed by C.tropicalis (31.5%), C.glabrata (5.5%), C.krusei (3.1%), C.dubliniensis (2.4%) and C.parapsilosis (1.6%). Other studies, found systemic candidiasis due to C.albicans to be the most frequent invasive fungal infection in COVID-19 patients. [3]

Antifungal susceptibility testing was performed on 21 strains of Candida. They were susceptible to Amphotericin B, Voriconazole and Fluconazole respectively in 100%, 70% and 60%.

Conclusion

Severe COVID-19 patients have multiple risk factors to develop fungal infections. Systematic screening seems to be necessary for the early diagnosis of invasive fungal infection.

References: