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Letter to the Editor

## Critically ill patients with COVID-19 and candidaemia: We must keep this in mind



**Keywords:**  
 COVID-19  
 Aspergillosis  
 Candidaemia

Dear Editor,

Approximately seven months have passed since the pandemic caused by COVID-19 and there are definitely still many questions to be resolved and above all, much to learn.

We have carefully read the editorial titled “Invasive fungal diseases during COVID-19: We should be prepared” [1] and congratulate Pr. J.-P. Gangneux and rest of the authors for such an interesting initiative. As well described in the manuscript, invasive fungal infections are beginning to be described in some series but unfortunately many remain undiagnosed and the actual impact on mortality, hospital stay and other complications is unknown. In this unprecedented situation in which we are involved, early microbiological diagnosis is decisive.

In recent months some articles have been published that refer to fungal co-infections developed in critically ill patients COVID-19. How the authors describe, there seems to be an association between COVID-19 and the presence of invasive pulmonary aspergillosis (IPA). Koehler et al. [2] have published a retrospective review of five patients (without known immunosuppression) with COVID-19 and ARDS finding association with IPA. Isolates and/or cultures positive for *Aspergillus fumigatus* were found, in addition to biomarkers and compatible chest CT images. Three patients died. The authors suggest an increased risk for critically ill COVID-19 patients to develop coinfection with *Aspergillus sp.* with an associated increase in mortality. Prattes et al. [3] and Blaize et al. [4] described in two different case reports the association between coronavirus disease and IPA. Both patients died.

With the data discussed above, we decided to perform a retrospective analysis from February 28th to June 28th of critically ill patients diagnosed with COVID-19 viral pneumonia admitted to our ICU and the association with fungal infections.

Of 139 critically ill patients admitted, *Aspergillus fumigatus complex* was isolated in the culture from broncho-pulmonary samples obtained by broncho-alveolar lavage fluid in 2 patients. *Candida sp.* in urine culture in 6 patients, and what caught our attention was the diagnosis of 15 candidaemia (*C. albicans*: 9, *C. parapsilosis*: 4, *C. glabrata*: 2). The mean age of the patients with candidaemia was  $58.7 \pm 17.5$  years and at the time of diagnosis all were under mechanical ventilation, requiring vasopressor therapy, were carriers of central venous catheters, had received parenteral

nutrition, broad-spectrum antibiotic therapy and received corticosteroid treatment for ARDS. The mortality was 40%.

This overwhelming incidence of candidaemia in 4 months (10.8%) contrasts with the data that we recently published about candidaemia in an observation period of seven years [5]. Usually and in relation to our local epidemiology, the annual incidence rate is 1.07 – 2.19 candidaemia for every 1000 patients admitted to the ICU and they exhibit predisposing risk factors similar to those mentioned above. *C. albicans* is the most commonly isolated species (50%) in blood cultures, followed by *C. parapsilosis* (20%), *C. glabrata* (13%), *C. tropicalis* (10%) and *C. krusei* (7%).

Therefore, these results logically need to be confirmed in future clinical trials and to determine the potential role of invasive candidiasis in patients with COVID-19 but according with the data that we currently have and to our series of patients, we share with the authors same recommendations and goals such as epidemiological vigilance (periodically perform colonization screening for *Candida sp.*; take risk factors into account and re-evaluate them daily), optimizing early diagnosis and the introduction of treatment protocols. Furthermore, with these findings and in case of septic worsening of the patients, perhaps we should consider starting empirical antifungal treatment depending on each local epidemiology.

Finally, we believe that part of the measures to successfully overcome this pandemic is to share experiences and information, which is why we support all initiatives aimed at that purpose.

### Disclosure of interest

The authors declare that they have no competing interests.

### Authors' contributions

AA conceived the letter and drafted the manuscript. LC, JCF, JMA, and AG drafted the manuscript. All authors read and approved the final manuscript.

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Received 28 June 2020

Received in revised form 30 June 2020

Accepted 1st July 2020

Available online 4 July 2020