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Editorial MMCR special issue 'Covid-19 associated pulmonary aspergillosis'

Dear Colleagues,

The COVID-19 pandemic has resulted in the identification of a new clinical *Aspergillus* disease phenotype, COVID-19 associated pulmonary aspergillosis (or CAPA). This special issue aimed to collect and share early clinical experiences with this new disease and to create awareness for early recognition of this co-infection in critically ill COVID-19 patients.

There are several reasons why Sars-Cov-2 infection may predispose to aspergillosis. Direct viral induced damage to the airway epithelia may enable *Aspergillus* spp. to become invasive. Lymphopenia is a common finding in COVID-19, although the significance is unclear. In addition, immunomodulating treatment (e.g. tocilizumab, corticosteroids) employed to dampen the inflammatory response evoked by Sars-Cov-2 may result in friendly fire by disarming host immune responses that protect against fungal disease [this issue].

The case reports presented in this special issue can be characterized by the challenges encountered in diagnosing and treating CAPA, as well as a high case-fatality rate. A combination of host factors, clinical factors and mycological evidence are commonly used to make a diagnosis and predict the likelihood of the presence of invasive aspergillosis [1], but are not applicable to patients with severe COVID-19.

Diagnosing CAPA is more complex. Classic host factors, like immunocompromise, are frequently absent. COVID-19 patients usually deteriorate later in the course of disease (the inflammatory phase), even without superinfection, and so identifying patients in whom the diagnosis should be suspected is challenging. Specific abnormalities on the CT-chest are not easily differentiated from the abnormalities induced by Sars-CoV-2 and associated inflammation and the development of ARDS. Bronchoscopy, which could produce respiratory specimens to support or refute the diagnosis, is often avoided because of concern for aerosol generation. And discerning airway colonization from invasive disease, even with fungal cultures and biomarkers, is challenging [this issue].

Moreover, little data exists to guide treatment decisions. The right choice for empirical or pre-emptive antifungal therapy is not straight forward in the era of emerging azole-resistant *Aspergillus fumigatus* and the isolation of non-*fumigatus Aspergillus* species with different susceptibility patterns [this issue].

At the onset of the pandemic, a precise definition, diagnostic criteria and treatment guidelines for CAPA were lacking. The recently published consensus criteria to better define CAPA is an important first step for helping clinicians diagnose and study this disease [2].

We would like to take the opportunity to express our gratitude to our colleagues who contributed to this special issue resulting in a collection of excellent case reports summarizing the current clinical experiences with CAPA.

References

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[2] P. Koehler, M. Bassetti, A. Chakrabarti, S.C. Chen, A.L. Colombo, M. Hoenigl, et al., Defining and managing COVID-19-associated pulmonary aspergillosis: the 2020 ECMM/ISHAM consensus criteria for research and clinical guidance, Lancet Infect. Dis. (2020), https://doi.org/10.1016/S1473-3099(20)30847-1 [Epub ahead of print].

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