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Bacterial Coinfections in COVID-19 Patients without a Positive Microbiologic Result: a Word of Caution

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Dear Editor,

following the publication of the retrospective study by Baghdadi and colleagues about bacterial infections and antibiotic use among COVID-19 patients, we have some concerns that we would like to report you (1).

The Authors estimated the incidence of bacterial coinfections on admission and secondary infections after admission in COVID-19 patients using discharge diagnosis codes rather than microbiological results. The Authors justify this approach with the relatively low sensitivity of cultures and the low propensity of clinicians to send specimens for bacterial cultures. Even if we are aware of the low diagnostic yield of respiratory cultures in community-acquired pneumonia (2), we think that obtaining blood cultures or other microbiological specimens cultures (as clinical appropriated) in COVID-19 patients admitted to hospital is important because of the risk of secondary infections in viral pneumonia (3), and the importance of cultures in drive and tailor antibiotic prescriptions. In particular, negative cultures obtained before antibiotic therapy may accelerate the antibiotic discontinuation/de-escalation, given the widespread use of antibiotic empirical coverage in COVID-19 patients (4, 5).

The Authors found a surprisingly high incidence of bacterial coinfections (18.5%) upon hospital admission (in contrast to 3.9% of secondary infections), which is not consistent with previously published data (1, 6, 7). Moreover, the most common bacterial coinfections on admission seems to be urinary tract infections which do not have a clear causal path with viral pneumonia to justify an increased incidence. Furthermore, unspecified bacterial pneumonia reported as the second most common coinfection poses serious concerns related to the challenge in the differential diagnosis in patients with COVID-19 due to the unhelpfulness of radiological and clinical findings to discriminate between viral and bacterial pneumonia.

It is likely that the use of diagnosis codes to identify bacterial infections led the Authors to overestimate the true incidence of bacterial coinfections in COVID-19 patients. The same Authors

disclose this suspicion in the discussion section, nevertheless, in our opinion they do not enough underline the potential detrimental effect of such an overestimation in term of antibiotics over prescription. According to the Author's results, clinicians might be legitimated to increase antibiotic prescriptions in COVID-19 patients, at home or early during the hospital stay, in absence of solid evidence of bacterial coinfections. This approach could have deleterious consequences in terms of antibiotic-related adverse events and antimicrobial resistance development. We do agree that the constellations of signs and symptoms in COVID-19 may easily mimics bacterial infections, but we also believe that the clinical suspicion alone is not enough to diagnose a bacterial coinfection in COVID-19 patients and consequently an appropriate microbiological workup before the incept of an antibiotic prescription in the case of a definite diagnosis of viral pneumonia, such as the case of COVID-19, should be advocated.

Observational studies with well-defined diagnostic criteria are required to define the exact burden of bacterial infections in COVID-19 patients. Clinicians should be aware of the importance to reserve antibiotic therapy to patients in whom there are solid clinical and microbiological data to support the presence of bacterial infections.

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