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Diagnosing Bacterial Infections in Covid-19 Patients

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Editorial

Coronavirus disease 2019 (COVID-19), caused by the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), was first identified in late 2019 and quickly escalated into a pandemic, according to the World Health Organization on 11 March 2020. While the majority of COVID-19 cases present with mild to moderate respiratory illnesses, patients may develop complications such as coinfections, acute respiratory distress syndrome, or sepsis. The yet-unknown magnitude of the effect size of coinfection rates between SARS-CoV-2 and other respiratory diseases, combined with the virus's rapid global spread and variants, necessitates the development of a long-term diagnostic technique that is both efficient and sustainable [1].

Coinfections are common in patients with viral respiratory diseases such as influenza, and current recommendations advocate empiric antibiotic therapy and coinfection testing in patients with a severe clinical history of influenza infection, despite the fact that coinfections and superinfections appear to occur at a higher rate in patients with influenza than in those with SARS-CoV-2. Nonetheless, coinfection rates in COVID-19 may be higher than predicted, and variations may occur depending on the variant involved, posing a significant diagnostic and therapeutic challenge for physicians. Numerous studies have revealed a wide range of coinfection frequencies in SARS-CoV-2 patients, ranging from 3% to more than 20% depending on the population studied; however, precise information on community-acquired bacterial coinfections is lacking [2].

Coinfections occur concurrently with the initial SARS-CoV-2 infection, whereas superinfections develop later in the disease's course. However, these two entities are frequently not explicitly described in the literature, resulting in inconsistent reporting of coinfection and superinfection rates in COVID-19 patients. According to one meta-analysis, 3.5% of COVID-19 patients had a bacterial coinfection prior to admission, and 14.3% developed a bacterial superinfection during their hospital stay, while more than 70% of all patients received empirical antibiotic therapy. According to observational data, COVID-19 patients treated in the intensive care unit (ICU) had a higher prevalence of bacterial superinfections than patients treated in conventional wards. Intriguingly, ventilator-associated pneumonia rates in COVID-19 patients range from 16% to 78%, compared to non-COVID-19 patients, where the incidence is 5% [3-4]. According to current research, co-infections with other respiratory viruses may worsen the illness course, resulting in increased disease severity and death. As a result, it is critical to identify the pathogens in COVID-19 coinfected individuals and assess their impact on clinical outcomes.

Multiplex polymerase chain reaction (PCR) panels can detect respiratory infections quickly and help define antimicrobial indications and medication selection. Whenever possible, upper and lower respiratory tract secretions, such as nasopharyngeal or oropharyngeal exudate, bronchoalveolar lavage fluid, or endotracheal aspirate samples, must be sampled in COVID-19 patients who develop complications such as hospital-acquired pneumonia or ventilator-associated pneumonia [5]. Recent multiplex PCR-based or array-based multipathogen detection tests, as well as, in some cases, antibiotic resistance gene detection assays, aid in the diagnosis of bacterial infections in patients with COVID-19 who have been infected with SARS-CoV-2.

Conflict of Interest

None.

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