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Editorial

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To Prescribe, or Not to Prescribe, That Is the Question

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Antibiotics have been frequently prescribed in respiratory clinical practice. Antibiotics are often prescribed empirically especially in severely ill patients. The pandemic caused disruptions to healthcare systems.[1] During the coronavirus disease 2019 (COVID-19) pandemic, empirical antibiotic treatment has been prevalent. There have been pros and cons regarding the empirical antibiotic treatment in respiratory diseases. However, there are several potential reasons against the empirical antibiotics in patients with COVID-19.

First, the overuse of antibiotics can induce antibiotic resistance. Dambroso-Altafini and colleagues[2] assessed the possible causes and consequences of rapid increase of carbapenem-resistant Gram-negative bacteria in a teaching hospital. Overuse of empirical antibiotics in a COVID-19 intensive care unit led to the spread of resistant bacteria.[2] Kang et al.[3] collected metagenomic data of fecal samples from COVID-19 patients who received empirical antibiotics. The abundance of antibiotic-resistant genes increased significantly in intestinal flora.

Second, the empirical antibiotic treatment may result in unnecessary adverse events. In a retrospective cohort study, 533 (59.6%) patients were given antibiotics during the first 48 hours of admission among the patients with COVID-19 admitted. Only 60 (15.3%) patients had bacterial coinfection. On the other hand, the prevalence of antibiotic-associated adverse events was 46.9%.[4]

Third, the prevalence of bacterial coinfection was relatively low in patients with COVID-19. According to the survey performed in Japan, the complication incidences of community-acquired pneumonia and hospital-acquired pneumonia (including ventilator-associated) were 2.86% and 5.59%.[5] In a retrospective observational cohort study performed in London, only 2.7% had clinically important bacterial co-infection within 48 hours of admission.

Fourth, inadequate empiric antibacterial therapy may result in poor outcomes. In a multicenter retrospective study, Puzniak and colleagues[6] investigated the effect of inadequate antibiotics treatment in patients with COVID-19. Inadequate empiric therapy was defined as antibiotics not active against the identified bacteria or no antimicrobial treatment in the 48 hours following culture. Patients with inadequate treatment had 21% higher mortality and stayed 16.1 days longer in hospital.

Recently, Park and colleagues[7] reported an important result regarding the empirical antibiotics. In a propensity score-matched case-control study, empirical antibiotics therapy did not improve any of clinical outcomes including mortality. This study is valuable in that this is a first study to evaluate the relationship between empirical treatment and prognosis.

What is the solution to overuse of empirical antibiotics in patients with COVID-19? Stewardship interventions can be a good answer. Pettit et al.[8] assessed the impact of stewardship of empiric pneumonia antibiotics treatment in patients with COVID-19. The percentage of empirical antibiotics decreased from 74.5% to 42.0% after the intervention. The medial duration of treatment was 1.3 days shorter.[8]

In conclusion, there are several reasons for saving empirical antibiotics treatment in patients with COVID-19. To prescribe, or not to prescribe, that is still the question. However, clinicians should make an effort to decrease inadequate and unnecessary empirical antibiotics in patients with COVID-19.

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