

CORRESPONDENCE

A more appropriate use of antibiotics in COVID-19 infection

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In the COVID-19 context, the inappropriate use of antibiotics, to which the authors alluded,¹ is compounded by the fact that ‘Signs, symptoms and laboratory abnormalities (including radiographic abnormalities) in patients with SARS-Co-V-2 pneumonia are (in some cases) identical to those of bacterial community-acquired pneumonia’ (parenthesis mine).² In one example, a 60-year-old man had a chest X-ray which demonstrated bilateral patchy infiltration. On that basis, although he had a history of close contact with a COVID-19 patient, he was prescribed antibiotics immediately after admission.³ In another example, a 51-year-old man presented with cough, dyspnoea and fever. Auscultation of the chest revealed bilateral wheezing and rhonchi. According to the authors, ‘since pneumonia was suspected’ the patient was started on treatment that included ceftriaxone and vancomycin.⁴ These are examples of radiographic³ and clinical⁴ mimicry of bacterial pneumonia by COVID-19. These examples also illustrate how easy it can be to fall into the trap of antibiotic misuse during the course of the COVID-19 infection.

Chong *et al.* documented the incidence of COVID-19-related secondary pulmonary infection from a literature search comprising 49 studies. Twenty-eight studies were observational ones done on hospitalized patients. Secondary bacterial infection was defined as new micro-organisms identified 48 h after admission using respiratory tract specimens with corresponding blood cultures for similar micro-organisms thought to be respiratory in origin. Respiratory tract cultures were defined as cultures obtained from sputum, endotracheal aspirates and bronchoalveolar lavage. In that review, 78.6% of the 28 studies were retrospective studies, and 21.4% were prospective. The incidence of secondary bacterial infection varied from 7.7% to 42.8%.⁵

Keeping the above observations⁵ in mind, the following are the recommendations for antibiotic use:

World Health Organisation recommendations for clinical management of severe acute respiratory infection when novel coronavirus (nCoV) is suspected include the recommendation to ‘Give empiric antimicrobials to treat likely pathogens causing SARI’ and to give antimicrobials within one hour of critical patient assessment for patients with sepsis. Blood cultures should be collected for bacteria that cause pneumonia, ideally before antibiotics but antibiotics should not be delayed to collect blood cultures.⁶

The Dutch Working Party on Antibiotic Policy recommended a restrictive use of antibacterial drugs in patients with proven or a high likelihood of COVID-19. ‘This especially applies for patients upon admission who are mild to moderately ill’.⁷

As with the WHO working party advice, they recommended maximum efforts to obtain, not only blood for culture, but also pneumococcal urinary antigens, before starting antibiotic therapy. In case of suspected bacterial co-infection, empirical treatment against atypical pathogens should be avoided. Legionella urinary antigen testing should be performed beforehand. For other suspected secondary bacterial infections, national guidelines should guide the choice of antibiotics.⁷

Neither of these two pieces of advice^{6,7} was followed in the context of the management of the first two patients.^{3,4} Replication of those two lapses of due diligence might be the underlying cause of complications such as the one reported by the authors.¹

Bearing in mind the reality that the distinction is especially difficult to make between bilateral pulmonary infiltrates attributable to the sole diagnosis of COVID-19 pneumonia vs. bilateral patchy pulmonary infiltrates attributable to secondary bacterial pneumonia, the following were some of the suggestions made by Huttner *et al.* to reinforce the principles of good antimicrobial stewardship:

Submitted: 23 August 2021

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- i. Antibiotics should be reserved for patients with the most severe presentations
- ii. Microbiological tests should be obtained beforehand
- iii. Antibiotic treatment should be rapidly re-evaluated and stopped as soon as possible if the probability of bacterial super-infections considered low
- iv. If antibiotic treatment is continued, an oral switch should be performed rapidly if the patient is able to take oral medication, and the absence of fever should not be required as a criterion since patients with COVID-19 often show persistent fever over several days.
- v. Antibiotic duration should not exceed 5 days.

Five further recommendations are made in that article.⁸

Conflict of interest. None declared.

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