

The Essential Guide to Antibiotic Use during COVID-19

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Background

The virus “Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2)” was first reported to cause human disease in the Wuhan region of China towards the end of the year 2019 [1]. The disease was named CORONA virus disease 2019 (COVID-19). In March 2020, the World Health Organisation General Director characterized COVID-19 as a pandemic. Like patients with other viral diseases, patients with COVID-19 should not be treated with antibiotics unless there is evidence of bacterial superinfection [1-9].

Discussion

Although evidence suggests that bacterial superinfection is rare in COVID- 19 cases (3.5% - 14%) [1-3], antibiotics, including wide spectrum antibiotics, are widely prescribed (50 - 75%), even in patients with mild disease [2-4]. This is alarming because it could cause a rise in multidrug resistant bacteria to antibiotics further complicating the existing pandemic of bacterial resistance [1-9,11]. This concern has led WHO and other global societies (NICE, NIH, HCSP, ERS, SPLF) to publish guidelines and recommendations regarding when and how to use antibiotics during the COVID 19 pandemic [5-9]. Following is a summary of some of these recommendations.

In essence, antibiotics should not be considered except in patients with specific characteristics:

- First, patients should present with all or some of the following symptoms: fever, sore throat, dry cough, dyspnoea, fatigue, muscles discomfort.
- Second, there should be a suspicion that the condition may progress to multiorgan dysfunction and severe acute respiratory syndrome (SARS) with a cytokine storm.
- Third, radiologic features should demonstrate unilateral consolidation with or without bilateral ground glass opacities.
- First of all RT-PCR, or rapid antigen test should be performed when available for all respiratory infections and at least for suspected COVID19 cases, the earliest is the best.

In these patients, the following recommendations for antibiotic are proposed:

Community care

- Patients with mild symptoms who are managed at home or in the community while awaiting the results of COVID-19 testing should not receive antibiotics.
- Patients suspected of harboring a pneumonia especially if there is a compatible radiologic abnormality should receive anti-

biotics with de-escalation if the PCR for COVID-19 is positive or the evidence for bacterial superinfection is refuted.

- If the symptoms worsen, admit to the hospital and administer antibiotics.

Hospital care

Hospital admitted patients should receive COVID-19 PCR test as well as radiologic imaging, blood counts and microbiologic tests, including blood culture, sputum gram stain and culture. Only 8% will have bacterial superinfection:

- If symptoms are mild, withhold antibiotics.
- In patients with moderate symptoms and other findings such as consolidation on chest XR or CT Scan, or polynucleosis, superinfection is suspected. Antibiotics are administered then de-escalated if the PCR for COVID-19 is positive or the evidence for bacterial superinfection is refuted including no polynucleosis or low serum procalcitonin.
- If the signs and symptoms are severe, including low oxygen saturation, sepsis or septic shock, then superinfection is presumed, and wide spectrum antibiotics are advised for 5 - 7 days. In these cases, de-escalation is recommended if the PCR for COVID-19 is positive or the evidence for bacterial superinfection is refuted.

The choice of antibiotics should be governed by local hospital or community data and guidelines [1,4-9]. This is important to avoid overuse of wide spectrum antibiotics, including carbapenem, which may be available without prescription in some developing countries [10]. It is also important to avoid the use of Azithromycin for COVID as it does not have any antiviral, immunomodulatory or anti-inflammatory effect [11].

Conclusion

COVID19 pneumonia is viral and does not require the use of antibiotics for prevention or treatment. COVID-19 PCR should be performed for all respiratory infections if available. Bacterial superinfection is rare. When present, we should give antibiotics following local guidelines.

We prefer the use of Amoxicillin, macrolides or vibramycin in the community in patients with no comorbidities and co-Amoxiclav if comorbidities exist.

In hospitalized patients, wide spectrum may be needed followed by de-escalation as describe above. In all cases, especially in developing countries, antibiotic stewardship as recommended by WHO, should be adapted to local availability of tests of CT scan and antibiotics.

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