Evaluation of antibiotics resistance in Southern Iran in light of COVID-19 pandemic: A retrospective observational study

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Abstract

Background and Aims: Antimicrobial resistance (AMR) was taken as one of the high-priority long-lasting public health issues, although it might have been underrated in terms of COVID-19 pandemic emergence. Regarding limited data on assessing the pandemic effect on AMR trend in Iran, this study aimed to describe the epidemiology of antibiotics resistance during the COVID pandemic in southern Iran.

Methods: This descriptive study was conducted on 2675 patients' samples collected and processed in a referral COVID-19 center hospital in southern Iran from March 21, 2019, to February 18, 2020 (prepandemic), and February 19, 2020, to March 21, 2021 (pandemic). Susceptibility test results in sensitivity and resistance levels were compared in prepandemic and pandemic periods.

Results: Compared to prepandemic, the inpatient number has increased almost three times. On the other hand, there are around four times fewer outpatients now. More than 85% of the specimens were found in urine samples. In all, 92.22% of all bacteria samples were Gram-negative isolates, with Escherichia coli accounting for 59.19% of them. The change rate of Gram-negative bacteria resistance to antimicrobials is an average of 7.74% ($p < 0.001$). On the other hand, the average change rate of Gram-positive bacteria resistant to antibiotics has decreased by 19.3% ($p = 008$). As a forerunner among other Gram-negative bacteria, the average change rate for Pseudomonas aeruginosa and Klebsiella pneumonia resistance to monitored antibiotics was 89% and 66.3%, respectively ($p < 0.001$).

Conclusion: During the Covid-19 pandemic, the increase in AMR among Gram-negative bacteria, particularly P. aeruginosa and K. pneumonia, was observed compared to the prepandemic. This further limits treatment options, and endangers global public health.

Keywords: *antibiotic resistance, COVID-19, Gram-negative bacteria, nosocomial infection, outbreak*