

TITLE: Monitoring of fluoroquinolone resistance among ESBL-positive and ESBL-negative *Escherichia coli* strains isolated from urinary tract infections: an alert to empirical treatment

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ABSTRACT:

Bacterial resistance is present worldwide and Extended-Spectrum Beta-Lactamases (ESBL) play a relevant role. Empirical antibiotic therapy is often needed, and the use of fluoroquinolones, such as ciprofloxacin and norfloxacin, is common. In the present work, were analyzed the results of 2,680 urine cultures carried out in January of 2019, 2020, 2021 and 2022 with bacterial counts above 100,000 CFU/mL and *Escherichia coli* as the etiological agent. The aim was to monitor the resistance to ciprofloxacin and norfloxacin in ESBL-positive and ESBL-negative strains over the years, evaluating the behavior of resistance rates. The frequency of resistance to ciprofloxacin and norfloxacin was evaluated in 1,340 ESBL-positive (335 per year) and 1,340 ESBL-negative (335 per year) *E. coli* strains. Thus, the frequency of fluoroquinolones resistance in the group of ESBL-negative strains was 28.7% (n=96) in 2019, 26.9% (n=90) in 2020, 29% (n=97) in 2021 and 37.6% (n=126) in 2022. In relation to the group of ESBL-positive strains, the resistance verified was 82.1% (n=275) in 2019, 77% (n=258) in 2020, 83.6% (n=280) in 2021 and 89.6% (n=300) in 2022. Using the chi-square test, it was found that the increase in rates between ESBL-positive and ESBL-negative strains is considerable and confirmed by $p < 0.0001$, in each of the years considered individually. The comparison of rates only among ESBL-negatives obtained p values of 0.302 for 2020 in relation to 2019, of 0.363 for 2021 in relation to 2020 and of 0.017 for 2022 in relation to 2021. Similarly, for the ESBL group -positive, this comparison between 2020 and 2019 showed a p value of 0.051, between 2021 and 2020 of 0.016 and, finally, between 2022 and 2021 of 0.023. Therefore, it is clear that the increase in resistance in ESBL-negative strains, more frequent in the community, should be monitored and this scenario of increasing elevation is a warning for empirical treatment. Monitoring may contribute to lower possibilities of therapeutic failures and a lower spread of multidrug-resistant strains.

Keywords: Fluoroquinolone; Urinary Tract; *Escherichia coli*; Drug Resistance, Microbial

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