

عنوان مقاله:

Amino acid substitution mutations of gyrA and parC in clinical Enterococcus faecalis isolates conferring high level fluoroquinolone resistance

محل انتشار:

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خلاصه مقاله:

Introduction and Objectives: Enterococcus faecalis (E. faecalis) is known as one of the most important nosocomial pathogens causing various infections such as the urinary tract infection (UTI). Fluoroquinolones have been frequently used to treat E. faecalis UTIs, and the emergence of fluoroquinolone-resistant E. faecalis isolates has recently been considered as global concern. The objective of this study was to determine the amino acid substitutions of GyrA and ParC proteins in high level quinolone resistant isolates of Enterococcus faecalis from Kerman, Iran. **Materials and Methods:** Minimum inhibitory concentrations (MICs) of ciprofloxacin against 20 isolates of multidrug-resistant E. faecalis were determined using agar dilution method. Amino acid mutation profiles of GyrA and ParC amplicons of 20 high quinolone-resistant isolates were determined by DNA sequencing. Sequences were compared with the gyrA and parC genes reference sequence of E. faecalis V583 using Vector NTI Advance™. **Results:** Ciprofloxacin -resistant isolates exhibited MICs that ranged from 64 to $\geq 256 \mu\text{g/ml}$. The amino acid substitutions in GyrA and ParC were found in 65% and 75% of isolates respectively. Sequencing of gyrA gene showed 1 amino acid substitution, serine 83 to isoleucine, in 92.3% (n=12) isolates and serine 83 to tyrosine in 7.7% (n=1) isolate. Sequencing of parC gene showed 1 amino acid substitution, serine 80 to isoleucine in 86.6% (n=13) isolates and serine 80 to leucine in 13.3% (n=2) isolates. In one isolate (6.6%) tyrosine 84 was changed to Phenylalanine. In two isolates with MIC 64 and 128 $\mu\text{g/ml}$, only amino acid changes in ParC were observed. **Conclusion:** The results suggest that acquisition of mutations in certain positions of gyrA and parC genes confers high-level resistance to quinolones. However, since in some of resistant isolates of this study, there were no amino acid substitutions, other mechanisms such as efflux pumps may be involved in quinolone resistance.

کلمات کلیدی:

Enterococcus faecalis, Quinolone resistance gene, Sequencing, Mutations

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