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Fecal carriage of carbapenem resistance *Enterobacteriaceae* among inpatients in a university hospital in Iran

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Objectives: Fecal colonization by carbapenem-resistant *Enterobacteriaceae* (CRE) could serve as a reservoir for transmission of these pathogens to clinical settings, which subsequently increases clinical infections. The aim of this study was to evaluate the prevalence and risk factors associated with CRE fecal colonization among inpatients.

Material &Methods: Rectal swabs from 50 patients in a university hospital were collected. CRE screening was performed by using selective media. Carbapenemase production was detected by phenotypic tests. PCR assays were used to detect carbapenemases genes. Clonal relatedness was investigated by pulsed-field gel electrophoresis (PFGE).

Results: The prevalence of fecal colonization was 56% (28/50). Overall, 41 CRE isolates were identified, of which 38 were carbapenemase-producers. Eleven patients (39.3%) were co-colonized with CRE isolates. ICU hospitalization, prior antibiotic therapy, and mechanical ventilation were significant risk factors. The *blaOXA-48* was the most frequent carbapenemases followed by *blaNDM-1 and blaNDM-7* enzyme. Nine carpapenemase producing *Enterobacteriaceae* (CPE) isolates co-harbored blaNDM-1 and *blaOXA-48*. Also, six CPE isolates co-harboredblaNDM-7 and *blaOXA-48*.We did not detect *blaKPC, blaGES, blaIMP and blaVIM*. PFGE analysis showed that *E. coli* clones were diverse, while *K. pneumoniae* categorize in 3 clusters. Cluster I was the major clone carrying *blaOXA-48and blaCTXM-15* genes.

Conclusions: Our study as the first investigation in Iran showed CRE not only had high prevalence in fecal carriages, but also harbored varied antimicrobial resistance elements.

Biography

Fereshteh Shahcheraghi is the Head of the Bacteriology Department of Pasteur Institute of Iran. She obtained her PhD in Medical Microbiology in 1996 and joined the Institute Pasteur in 1997 as Assistant Professor. From 2002-2003, she went to Japan for studying and researching on antibiotic resistance. Her main field is antibiotic resistance especially on Gram Negative Bacteria. She has several projects and papers on CRE (carbapenem Resistance *Enterobacteriaceae*) in outpatients and in patients in Iran. She is the Head of Pertussis National Reference Lab of Pasteur Institute; this lab has collaboration with CDC of Iran for diagnosis of suspected patients to Pertussis and research on isolated strains. Also she has international project on Pertussis. She has authored more than 60 articles in international peer-reviewed journals and several national and international projects she is also actively involved in research, directing studies of post-graduate students, post-doctoral research workers and trainees.

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