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Abstract (oral session)

**Enterobacteriaceae isolates and KPC-3 carbapenemase in Portugal: overview of 2010-2011**

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**Objectives:** We conducted a surveillance study of carbapenem-resistant Enterobacteriaceae isolates in order to investigate the KPC-3 carbapenemase dissemination in Portugal. **Methods:** A PCR-based, hospital surveillance study of carbapenem resistance in Enterobacteriaceae isolates was conducted in Portugal from January 2010 to July 2011 in a tertiary care Group of Hospitals, in Lisbon. Antimicrobial susceptibility testing was performed using disk diffusion method and interpreted following the CLSI. The presence of genes encoding metallo-beta-lactamases (IMP, VIM, NDM), KPC-type and OXA-48 and others ESBL enzymes were screened by PCR method using specific primers. All amplified products were then subjected to direct nucleotide sequencing. **Results:** Since the first description in Portugal in 2009, 43 unique and multi-resistant isolates were identified. 48% of the isolates were from surgical wards, 21% from intensive and intermediary care units and 9% from surgical outpatients follow-up. The KPC-3 carbapenemase was detected in all carbapenems-resistant isolates (n=43), namely: 31 *K. pneumoniae*, 7 *K. oxytoca*, 2 *Enterobacter aerogenes*, 2 *Escherichia coli* and 1 *Citrobacter freundii*. The blaKPC-3 gene is part of a plasmid associated to Tn4401 however different genetic environments especially for *Enterobacter aerogenes* and *E. coli* isolates were found. The *E. aerogenes* isolates harbour KPC-3 and TEM-type although *E. coli* and *C. freundii* simultaneously showed KPC-3+TEM-type+SHV-type. A combination of different ESBL genes was found to KPC-producing *K. pneumoniae*, namely: KPC-3+TEM-type (5/34, 15%), KPC-3+ SHV-type (2/34, 6%), KPC-3+TEM-type+SHV-type (16/34, 47%) and KPC-3+TEM-type+SHV-type+CTX-M-15 (5/34, 15%). Novel association was described with DHA, namely KPC-3+TEM-type+DHA-type (2/34, 6%) and KPC-3+TEM-type+SHV-type+DHA-type (1/34, 3%), both patterns isolated in *Klebsiella oxytoca*. **Conclusions:** To our knowledge, is the first report of *Citrobacter freundii* isolate KPC-3 producer in Portugal and a novel association of KPC-3 with DHA in *Klebsiella oxytoca*. These results suggest a diversity and widespread dissemination of the KPC-3 gene in clinically significant nosocomial isolates. Therefore, prompt detection of carbapenemases-producing Enterobacteriaceae isolates, active antibiotic resistance surveillance, and strict implementation of infection control measures in surgical wards are critical to avoid the spread of these isolates.