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Paper Poster Session
Surveillance of carbapenemases: they will not stop!

Carbapenemase-producing Enterobacteriaceae isolates in Portuguese hospitals: results of the European survey on carbapenemase-producing Enterobacteriaceae (EuSCAPE)

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Background: Here we report data from a six-month prevalence study on carbapenemase-producing *Enterobacteriaceae* (CPE) performed with the collaboration of 10 Portuguese Laboratories participating in the European Survey on Carbapenemase-Producing *Enterobacteriaceae* (EuSCAPE).

Material/methods: This study included 104 clinical isolates (94 *Klebsiella pneumoniae* and 10 *Escherichia coli*) collected from 1st November 2013 to 30th April 2014. During this period the first ten carbapenem non-susceptible isolates obtained from blood, lower respiratory tract secretions, urine, puncture fluids and wound secretions, of single successive patients were considered. Successive carbapenem-susceptible isolates of the same species were also preserved as controls. Antimicrobial susceptibility was performed by disc diffusion method for 12 antibiotics, and by microdilution test for tigecycline, colistin and fosfomycin, using EUCAST recommendations. Clinical isolates with resistance or with decreased susceptibility to ertapenem were considered presumptively carbapenemase-producers so, in these isolates, PCR and sequencing were applied to detect and identify carbapenemase-encoding genes, as well as other *bla* genes coding to ESBL and PMAβ. Genetic relatedness of isolates was investigated by PFGE and multilocus sequence typing (MLST). *E.coli* ST subclones were analysed on the basis of sequence variation of the *E. coli* fimbrial adhesin gene *fimH*.

Results: During the study period, 67 isolates (61 *K. pneumoniae* and 6 *E. coli*) non-susceptible to carbapenems were identified in 9 Hospital Laboratories. Thirty-nine (58.2%) isolates (37 *K. pneumoniae*, 2 *E. coli*) were confirmed to be CPE. All isolates were multidrug-resistant. Furthermore, we identified 36 $bla_{\text{KPC-type}}$ (including one new variant: $bla_{\text{KPC-21}}$), 1 $bla_{\text{GES-5}}$, and 1 $bla_{\text{GES-6}}$ plus $bla_{\text{KPC-3}}$, alone or in combination with other *bla* genes. The remaining 28 isolates were non-susceptible to carbapenems due to association of PMAβ (CMY-2 and DHA-1) and/or ESBL (mainly CTX-M-15)-producing with porin deficiency. PFGE and MLST analysis showed an important diversity, with isolates belonging to distinct PFGE and STs profiles (for instance, ST14, ST23, ST131, ST405 in *E. coli* and ST17, ST34, ST231, ST348 in *K. pneumoniae*).

Conclusions: Portugal was one of the EuSCAPE participating countries that presented higher proportions of KPC-positive *K. pneumoniae*. However, although the percentage of CPE is still low in invasive infections (1.8% for *K. pneumoniae*, reported by EARS-Net 2014), with unrelated hospital outbreaks detected, the number of inter-institutional transmission is increasing.