Abstract (poster session)

**Diversity of carbapenemases in clinical isolates of Enterobacteriaceae from Croatia; preliminary results of a multicentre study**

B. Bedenic*, E. Kocsis, A. Mazzariol, M. Barisic, Z. Bosnjak, V. Plecko, V. Atalic, S. Sardelic, M. Vranic-Ladavac, M. Mijac, I. Jajic, G. Cornaglia (Zagreb, HR; Verona, IT; Osijek, Split, Pula, HR)

Background and aim: The aim of the study was to characterize at molecular genetic level the carbapenem-resistant Enterobacteriaceae strains isolated in Croatia in the frames of the multicenter study. Material and methods: In total 31 carbapenem non-susceptible strains of Enterobacteriaceae were collected during 2011-2012 from five hospital centers located in different geographic regions in Croatia. MICs were performed by microdilution method and interpreted by the EUCAST criteria. The transferability of resistance determinants was tested by conjugation (broth mating method). Investigation of genes encoding for beta-lactamases (ESBL, KPC, MBL, OXA-type and plasmidic AmpC), plasmid-mediated quinolone resistance determinants (qnrA, qnrB, qnrS, qnrC, qnrD, qepA, aac(6’)-Ib-cr variant) was performed by PCR. Strains were typed by PCR-based replicon typing (PBRT) and multi locus sequence typing (MLST). Genotyping of the strains was performed by PFGE. Results: The isolates were uniformly resistant to amoxycillin alone and combined with clavulante, piperacillin, cefazoline, cefuroxime, ceftazidime, cefotaxime, ertapenem, piperacillin/tazobactam and gentamicin but uniformly susceptible to colistin. They were intermediate susceptible or resistant to cefepime, imipenem meropenem and amikacin. Imipenem resistance was not transferred to E. coli recipient strain. 22 strains harboured VIM MBL most of them (16 strains) were Enterobacter spp, 3 Klebsiella spp, and 3 Citrobacter freundii. Noteworthy, there was a strong correlation between VIM positive strains and qnrB determinant (14 Enterobacter spp and 2 K. pneumoniae). Among the VIM-producers the dominant plasmid type was the Inc A/C (17/22) and after Inc L/M (5/22). One K. pneumoniae was KPC-2 producer (ST258). The blaNDM-1 gene was carried by a C. freundii and a K. pneumoniae. These NDM-1 producers coharboured qnrA6 and blaCMY-4 determinants. The VIM and NDM positive isolates also carried blaTEM-1 and blaCTX-M-15 genes and nine were positive for blaCMY and two for blaDHA genes. BlaVIM genes were located in class I integron. Five strains of E. cloacae were clonally related. Conclusions: True carbapenemases emerged in significant number in Croatia from 2011. Carbapenemases found in this study belong to KPC, VIM and NDM family. Investigating of this heterogenic, carbapenem non-susceptible Enterobacteriaceae strains found a strong association between VIM-producers and QNARB determinant in Croatia during 2011-2012.