

P1458 Molecular characterisation of *Escherichia coli* strains resistant to carbapenems isolated from a multidrug screening programme in Verona, ItalyVerdiana Righeti¹, Anna Bertonecelli¹, Elisa De Tomi¹, Annarita Mazzariol*¹¹ Department of Diagnostics and Public Health, Verona, Italy

Background: Resistance to carbapenems, which is the last available resource for those strains that are resistant to cephalosporins, in Enterobacteriaceae is a growing worldwide phenomenon and is a major problem both at the clinical and public health levels. The aim of the study is to characterize 35 carbapenem resistant *Escherichia coli* strains, isolated from multi-resistant screening to identify the molecular mechanism responsible for resistance.

Materials/methods: 35 carbapenem resistant *E. coli* strains isolated from carbapenem resistant Enterobacteriaceae screening (CRE) at the service of Microbiology and Virology (AOUI Verona) in the period 2013-2017 were investigated. For all strains, sensitivity to carbapenems (Ertapenem, Meropenem, Imipenem), cephalosporins (Ceftazidime, Cefepime), aminoglycosides (Gentamicin, Amikacin), Ciprofloxacin and Colistin was determined by microdilution. The results were interpreted according to the EUCAST guidelines. The presence of carbapenemases was first investigated with the rapid carbaNP test and then by PCR for the identification of the genes coding for the most interesting carbapenemases. The so-called "big five" (*bla*_{VIM}, *bla*_{IMP}, *bla*_{KPC}, *bla*_{NDM}, *bla*_{OXA-48}). Strains were also investigated for their plasmid profile by PBRT protocol.

Results: All strains confirmed resistance to cephalosporins and reduced susceptibility to carbapenems. They retain sensitivity to aminoglycosides and to Colistin. 23 out of 35 strains (65.7%) under study, tested positive for the carbaNP test and therefore showed the ability to hydrolyze the carbapenems. Of these strains, by means of PCR, the molecular mechanism responsible for resistance was identified: 20 strains out of 23 positive to carbaNP, carried the *bla*_{KPC} gene which is the most widespread carbapenemase in Italy; one strain carried the *bla*_{VIM} gene and 2 strains carried *bla*_{NDM}. The amplifiers for the NDM-coding genes were sequenced and showed produce NDM-5 variant. PBRT on carbaNP positive strains showed FIA, FIB and F_{II5} are the most prevalent plasmids.

Conclusions: *E. coli* producers of carbapenemases have been identified and the most commonly carbapenemase was KPC enzyme. The NDM-5 variant that is spreading in Italy has also been found. Resistance to carbapenems in *E. coli* and other Enterobacteriaceae other than KPC-producing *Klebsiella pneumoniae* should be monitored continuously and placed under control and surveillance measures to prevent the emergence of new epidemics.

