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Abstract (poster session)

Rapid dissemination of OXA-163 carbapenemase, an emerging OXA-48 variant, in species of Enterobacteriaceae in multiple hospitals from Argentina: multiples clones and detection issues

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OXA-48-producing Enterobacteriaceae (Ent) isolates are emerging worldwide and represent a serious threat. Recently, OXA-163, a novel carbapenemase related to OXA-48 with increased activity against extended-spectrum beta-lactams, was detected in Argentina. Objective: to describe the evolution of the epidemiology of OXA-163-producing Ent in Argentina. Methods: we designed an algorithm to detect carbapenemases in Ent at the level of the clinical microbiology lab, which was implemented among the National Quality Control Program in Bacteriology (Argentinean Ministry of Health; 432 labs). By means of this algorithm, all Ent with decreased susceptibility to carbapenems and a negative synergy test result between the carbapenems disks and boronic acid or EDTA, were considered as suspicious of OXA production and referred to the National Reference Lab. The presence of several beta-lactamase genes, including blaOXA-48/163 was assessed by PCR. Sequencing of amplicons and PFGE using XbaI was performed on all OXA-producers. Antimicrobial susceptibility was confirmed by agar dilution (CLSI). Results: A total of 13 strains were confirmed in the INEI as OXA-163 producers: 9 Klebsiella pneumoniae (Kpn) and 4 Enterobacter cloacae (Ecl). Co-production of CTX-M was detected in one Ecl. Strains were recovered from Apr 2010 to Feb 2011 from 10 different Hospitals in Buenos Aires. Only one hospital had multiple isolations of Kpn OXA-163 (n=4). All the strains were resistant to penicillins, extended-spectrum cephalosporins, aztreonam and cefoxitin. The range of carbapenem MICs (mg/L) (% of susceptible-S-) was: 0.12-8 imipenem (91%); 0.25-16 meropenem (14%); >16 ertapenem (0%). Tigecycline was the most active drug (77% of S), followed by colistin (61%) and fosfomycin i.v. (25%). Three strains displayed a pan-resistant phenotype. By PFGE, 7 clones were observed among 9 Kpn isolates and 4 clones among 4 Ecl isolates. A single clone of Kpn or Ecl was found in all except one hospital where 2 Kpn clones were detected. Conclusions: This is the first report describing the rapid spread of OXA-163 worldwide. The emergence of multiple clones of Ent OXA-163+ was responsible of this dissemination. Ertapenem resistance was the only effective marker of OXA-163 production, but in countries with high prevalence of CTX-M plus impermeability producing strains, this indicator could be very limited. The silent spread of OXA-163 among multiples hospitals constitutes a public health concern.