Prevalence of Plasmid Mediated Quinolone Resistance Mechanisms (PMQR) in Argentina

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Background: Due to the difficulties of phenotypic detection of PMQR its real prevalence is underestimated. Our aim was to evaluate the prevalence of PMQR in those enterobacteria where we previously found the highest PMQR diversity.

Methods: We studied 232 isolates of *Klebsiella* spp (KL, 144), *Enterobacter* spp (EN, 54), *Serratia* spp (SE, 19) and *Citrobacter* spp [CI, 8 *C. freundii* (CF) and 7 from other specie], consecutively recovered over a period of 5 days (2007) in 66 hospitals of WHONET-Argentina (BsAs City and all Provinces). All isolates were screened for *qnrA, -B, -C, -D, -S* (PCR) and *qepA* (PCR and dot blot). *aac(6´)-Ib-cr* was detected by allele-specific PCR. Different alleles of *qnrB* were identified by PCR-RFLP. Linkage to IS*CR1* was analyzed by PCR cartography. Detection of extended spectrum β-lactamases (ESBLs) was done by testing the synergy between cefotaxime/ceftazidime and clavulanic acid by disk diffusion.

Results: 19% (43/232) of isolates from 25 of 66 hospitals had at least 1 PMQR (8.6% and 7.3% with *qnr* genes or *aac(6')-Ib-cr* alone, respectively; 2.6% both). *qnrB* was detected in 27% (4/15) of CI, 11% (16/144) of KL and 7.4% (4/54) of EN (not detected in SE). The prevalence of *qnrB* was significantly higher in CF (50%, 4/8) than in KL or EN (p=0.011 and p=0.007, respectively, Fisher's Test). Major *qnrB* alleles found were (n): *B2* (9), *B10* (7) and *B19* (4), mainly in KL. Other *qnrB* alleles found were: *B6* (EN) and *B13*-like, *B18*, *B28* (CF). Only 2 KL had *qnrS* while *qnrA*, *-C*, *-D* and *qepA* were not found. The *aac(6´)-Ib-cr* gene was detected in 12% (17/144) of KL, 7.4% (4/54) of EN, and in 1 CF and 1 SE. The unique *qnrB* alleles genetically linked to IS*CR1* were *B2* and *B10*. In turn, these were the only ones associated to *aac(6´)-Ib-cr* (3 isolates each). PMQR were more common in isolates with an ESBL phenotype than in those without it [41% (29/71) *vs* 8.7% (14/161), respectively, p<0.0001, Fisher's Test].

Conclusions: This is the 1st study on PMQR prevalence in Argentina where they are broadly spread (38% of included centers). ESBL expression was significantly associated to the presence of PMQR. The high diversity and prevalence of *qnrB* genes in CF suggest that this specie may be a reservoir.

Keywords: quinolone resistance; PMQR; ESBL

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