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Antimicrobials: Epidemiology of MDR-Gram-negatives

Emergence of NDM-1-producing *Providencia rettgeri* (PRE) clinical isolates in Argentina

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Up to date, NDM producers in Latin America are scarce and associate to species of *Enterobacteriaceae* from Guatemala, Mexico, Colombia, Uruguay and Brazil, except in Honduras and Paraguay where it was reported in *Acinetobacter spp.* **Objective.** To report the emergence of two NDM-1-producing PRE clinical isolates in Argentina. **Materials and methods.** In 2006, we designed an algorithm to detect carbapenemases at the level of the clinical microbiology laboratory which was implemented by 432 laboratories across Argentina that participate in the National Quality Control Programme in Bacteriology (Argentinean Ministry of Health). Bacterial identification was performed with MALDI-TOF. Sensitivity profiles were determined by disk diffusion and microdilution (CLSI). Phenotypic MBL screening was performed by disk synergy between carbapenem and EDTA. Molecular detection of VIM, IMP, NDM, KPC, VanA and PER-2 was performed by PCR. **Results.** During 2013, following this algorithm, two PRE clinical isolates with a MBL phenotype were recovered from respective patients admitted in a single hospital from Buenos Aires City. Case 1: PRE M15628 was recovered from a catheter (colonizing isolate) in a 54 y.o. patient admitted in January because of vascular disease. He was discharge alive after a month of hospitalization. Case 2: PRE M15758 was recovered from a urine culture from a 56 y.o. patient admitted to the same ward in June because of terminal prostate cancer. Both patients had no history of traveling. Rectal swab in the index patient revealed gastrointestinal colonization by KPC-producing *Klebsiella pneumoniae* and *Enterococcus faecium* Van A but not NDM producers. Strains were submitted to the National Reference Laboratory (Servicio Antimicrobianos) for further characterization. Antimicrobial susceptibility testing revealed identical resistance profile in both isolates, except aztreonam (M15758 was susceptible). Both strains showed resistance to penicillins, cephalosporins, carbapenems (imipenem MIC 16.0 mg/L, meropenem MIC 8.0 mg/L and ertapenem MIC 2 mg/L), quinolones, co-trimoxazole, rifampin and fosfomycin along with with the intrinsic resistance to colistin, tetracyclines, chloramphenicol and nitrofurantoin. The isolates were susceptible to gentamicin (MIC <=1 mg/L) and amikacin (MIC 4.0 mg/L). The Modified Hodge Test resulted (weakly) positive with carbapenem. MBL production was confirmed by using a combination disk test with EDTA. In both isolates, PCR screening followed by DNA sequencing detected the presence of *bla*_{NDM-1}. Additionally, *bla*_{PER-2} was detected in M15628. *NotI* PFGE studies revealed that the PRE isolates were genetically related. **Conclusions.** This is the first report of NDM-producing bacteria in Argentina. Interesting, patients had no history of traveling. The only epidemiological link found between the patients was their admission in the same ward, several months apart from each other. Remarkably, up to date no further NDM producer has been detected in this institution, indicating that these genes or strain did not spread in the hospital setting.