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Publication Only

Antimicrobials: Surveys of molecular epidemiology of resistance and resistance genes, strains or serotypes

Carbapenem resistance and acquired class D beta-lactamases in *Acinetobacter baumannii* isolated in a Tunisian intensive care unit

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Introduction and Objectives:

Carbapenem-resistant *A. baumannii* has emerged as an important cause of nosocomial infections with high morbidity and mortality in Intensive Care Unit (ICU). Carbapenemases, especially class D carbapenem-hydrolyzing oxacillinases, play an important role in carbapenem resistance. In this study, the molecular epidemiology and the genetic basis of carbapenem resistance were investigated in carbapenem-resistant *A. baumannii* isolated, in 2012, from the ICU of Charles Nicolle Hospital of Tunis, Tunisia.

Material and Methods:

Thirty three non-repetitive strains were collected. They were identified using conventional biochemical tests and OXA-51 specific PCR. Antibiotic susceptibility was performed by a disk diffusion method. Screening for metallo-beta-lactamase (MBL) production was performed by EDTA-disk synergy test. Detection of *bla*_{OXA-23-like}, *bla*_{OXA-24-like} and *bla*_{OXA-58-like} families was performed by PCR. All isolates were typed using enterobacterial repetitive intergenic consensus polymerase chain reaction (ERIC-PCR) and pulsed-field gel electrophoresis (PFGE).

Results:

All strains were co-resistant to all b-lactams, gentamicin, amikacin and ciprofloxacin. Two isolates remained susceptible to netilmicin and 1 to nalidixic acid. All the isolates were susceptible to colistin and tigecycline. MBL production was negative for all isolates. *bla*_{OXA-23-like} was detected in 7 strains. However, *bla*_{OXA-58-like} and *bla*_{OXA-24-like} were not found in any isolate. Isolates were clustered into 9 different ERIC-PCR patterns. However, they were classified by PFGE into 15 patterns with 2 major clones: P (n=5) and K (n=4). Strains harboring *bla*_{OXA-23} gene were genotypically unrelated.

Conclusion:

The spread of carbapenem-resistant *A. baumannii* in our ICU is serious health problem that requires the application of strict infection control measures.