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ePoster Viewing

Antimicrobials: mechanisms of action and resistance

Clonal diversity of *A. baumannii* mediated by carbapenem resistance in Saudi Arabian hospitals

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SUMMARY

Background: *Acinetobacter baumannii* is an important opportunistic pathogen associated with infections in immunocompromised patients in intensive care units (ICUs) worldwide. The increase of carbapenem resistance in *A. baumannii* is a global concern since it limits the range of therapeutic alternatives. Carbapenem resistance in *A. baumannii* is largely manifested by class B and D β -lactamases. Occurrence of multidrug resistant *A. baumannii* has been reported in several hospitals in Saudi Arabia hitherto. This work was taken up to investigate the clonal diversity of multi-drug resistance *A. baumannii* associated with carbapenem resistance in Saudi Arabian hospitals.

Methods: Sixty-two non-repetitive strains of *A. baumannii* from different specimens, collected from King Faisal Specialist Hospital and Research Centre (KFSHRC) in Riyadh were included in the study. The isolates were identified by the Vitek compact II system. Multiplex PCR using primer for *bla*_{OXA-51} combined with primers for *bla*_{OXA-23}, *bla*_{OXA-24/40} and *bla*_{OXA-58} was employed. The resistance pattern of the tested isolates was determined by Vitek 2 compact system and the minimum inhibitory concentrations of imipenem, meropenem, tigecycline and colistin were determined by Etest strips. The clonal diversity of the isolates was investigated by PFGE.

Results: Carbapenem resistance was considerably high. Sixty-one out of 62 (98.4%) and 58/62(93.5%) were resistant to imipenem and meropenem, respectively. All isolates were susceptible to colistin but resistance to tigecycline was observed in 9/62 (14.5%). The prevalence of *bla*_{OXA-23}, *bla*_{OXA-24/40}, *bla*_{VM} and *bla*_{SPM} were 32 (51.6%), 15 (9.3%), 55 (89%) and 37 (60%), respectively. None of the isolates had *bla*_{OXA-58}, *bla*_{IMP}, *bla*_{SIM} or *bla*_{GIM}. *ISAba1* and *ISAba2*, were 53 (85%) and 1(1.6%) respectively, while *ISAba3* and *IS18* were not detected. PFGE results showed that the tested isolates were clustered in twenty two groups. Clone 10 and 17 were the dominant clones containing 7 and 9 isolates respectively were from six hospitals followed by clone 14 and 18 containing 5 and 6 isolates respectively were from 6 hospitals.

In conclusion, *bla*_{OXA-23}, *bla*_{OXA-24/40}, *bla*_{VM} and *bla*_{SPM} were the most prevalent genes in the carbapenem resistant *A. baumannii* isolates under investigation while *ISAba1* was the most common insertion sequence with *bla*_{VM} emerging as the chief culprit. Early recognition of the epidemic clone is very helpful to prevent its dissemination by application of strict infection control measures.