Evaluation of different phenotypic assays for the detection of metallo-β-lactamase production in carbapenem susceptible and resistant Acinetobacter baumannii isolates.


Abstract:

This study was conducted to evaluate the combined disc test and the double disc synergy test for MBL detection among imipenem sensitive and resistant A. baumannii strains, to study the co-resistance to other classes of antibiotics and to determine the prevalence of some antibiotic resistance determinants (bla OXA 51 like gene and class I integron) among these isolates. We isolated a total of 51 A. baumannii strains. The antibiotic sensitivity pattern was determined by Kirby Bauer disc diffusion method. For imipenem, the minimum inhibitory concentrations (MICs) were determined using the Epsilometer (E test). The isolates were tested for the presence of MBLs by the combined disc test (CDT) and the double disc synergy test (DDST). For all isolates, PCR was performed for the detection of the bla OXA-51-like and Class I integrase genes. The highest rates of resistance were against ciprofloxacin (64.7%), amoxicillin clavulanic acid (58.8%), amikacin (58.8%), ceftriaxone (56.9%) and chloramphenicol (52.9%). Lower rates of resistance were to imipenem (31.4%) and tetracyclines (25.5%). MBLs were detected in both imipenem sensitive and resistant A. baumannii isolates. The CDT had a sensitivity ranging from 92% to 100% , while the DDST had a sensitivity ranging from 86.2% to 100%. The bla OXA-51 like gene was detected in 96.1% and Class I integrase gene was detected in (72.5%) of A. baumannii strains . The later conferred significantly higher resistance rates to various antibiotics.

Keywords:

A. baumanii, Metallo beta lactamase, phenotypic methods.

Published In:

Journal of American Science , 8(11) , 292-299