Relationship between Clinical and Environmental Isolates of Acinetobacter baumannii in Assiut University Hospitals

Enas A Daef, Ismael S Mohamad, Ahmad S Ahmad, Sherein G El-Gendy, Entsar H Ahmed, Ibrahim M Sayed

Abstract:

This study was conducted during the period from February 2010 to February 2011 to correlate the Acinetobacter baumannii strains isolated from clinical and environmental samples by different methods including biotyping, antibiogram, phenotyping (detection of metallo-B-lactamase enzyme) and also molecular typing throw detection of universal gene of Acinetobacter species. We isolated a total of 51 Acinetobacter species from clinical and environmental samples from different wards and ICUs of Assiut University Hospitals. Biotyping of the isolates were done using API 20NE Index system which identified all clinical & environmental isolates as Acinetobacter baumannii / calcoaceticus complex. Antimicrobial susceptibility testing was determined by Kirby Bauer disk diffusion method. The highest resistance was to penicillin derivatives (66.7% and 51.9% in clinical and environmental samples respectively). The lowest resistance was to tetracycline (20.8% and 29.6%) and imipenem (29.2% and 33.3% in clinical and environmental samples respectively). Phenotypic detection of Metallo-B-lactamase (MBL) was done by double disc synergy test. All the imipenem resistant Acinetobacter baumannii strains isolated from clinical and environmental samples expressed MBL phenotypically. Molecular typing by PCR showed that 49 of Acinetobacter baumannii isolated from clinical and environmental samples had positive ITS of 602-622bp with an overall sequence similarity of more than 96%. These methods supported a close relationship between clinical and environmental isolates and also indicated the important role of hospital environment in spread and transmissibility of multidrug resistant A. baumanii among hospitalized patients.

Keywords:

Keywords: A. baumanii, environmental isolates, 16S rRNA-23S rRNA gene.

Published In:

Journal of American Science, 9(11s), 67-73