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Carbapenem-resistant *Pseudomonas aeruginosa*: Prevalence and impact of carbapenemase-encoding genes in isolates from Kuwait hospitals**Ayman K El Essawy, Hala M Abu Shady and Bassem M El Baiaa**
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Statement of the Problem: Multidrug resistance *Pseudomonas aeruginosa* (MDRPA) infections are difficult to treat. Carbapenems have been used against MDRPA. However, carbapenem-resistant *Pseudomonas aeruginosa* (CRPA) has also emerged. Carbapenem resistance is due to multiple mechanisms and among these mechanisms production of carbapenemases is the most important because it was associated with high mortality rate. There are reports on the geographic diversity of genes encoding carbapenemase production in *Pseudomonas aeruginosa* but continuous monitoring of this diversity will help the global effort to understand and overcome this problem.

Aim: The aim of this study was to investigate the prevalence of carbapenemase encoding genes that were associated with CRPA in Kuwaiti Hospitals.

Methodology & Theoretical Orientation: A random clinical specimens from a variety of Kuwaiti hospitals were collected. Bacterial isolation, identification and antibiotic sensitivity were performed. 80 CRPA isolates were resulted and 22 of them were investigated for the presence of specific carbapenemase-encoding genes by polymerase chain reaction. Gene mutation was enhanced by exposure of the bacterial cells to UV radiation.

Findings: Among the investigated CRPA isolates (12/22, 54.5%) were harboring genes for carbapenemases production. KPC, VIM, IMP genes were detected in (11/22, 50%), (5/22, 22.7%) and (4/22, 18.2%) respectively, while *SME*, *NDM-1*, *NDM-2* and *OXA* genes were not detected in any of the tested CRPA isolates. In the absence of *KPC*, *IMP* and *VIM* genes in bacterial mutants, MIC for carbapenems were decreased from ≥ 16 to ≤ 2 mg/L.

Conclusion & Significance: The prevalence of carbapenemase encoding genes was relatively high in the current study, which was reported in association with high mortality rate. In contrast to a recent publication, *KPC* and *IMP* genes were detected in Kuwait hospitals and their impact on resistance was proved. Recommendations are to give attention for rapid detection and isolation the CRPA infected patients.

Biography

Ayman K El Essawy has completed his PhD in Microbiology from Ain Shams University, Egypt, Diploma in Hospital Infection Control from Claude Bernard-Lyon 1 University, France and a Diploma in Biostatistics from Ain Shams University, Egypt. He is a Fellow of Microbiology at Ain Shams University, Egypt. He has also worked at Al Azhar University and American Naval Medical Research Unit No.3 (NAMRU-3). He is particularly interested in the study of bacterial resistance to antibiotics.

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