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Genetic identification of *Pseudomonas aeruginosa* virulence genes among different isolates

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Background & Objectives: *Pseudomonas aeruginosa* possesses a variety of virulence factors that may contribute to its pathogenicity. *P. aeruginosa* also has a large number of virulence factors such as exotoxin A, exoenzyme S, nan 1 and Las genes. The aim of this study was to evaluate opr I, opr L as reliable factors for rapid identification of *P. aeruginosa* and to detect tox A, exo S, nan 1 and Las genes by Polymerase Chain Reaction (PCR) in different isolates of *P. aeruginosa* in order to find out any relation between these virulence factors and special manifestation of *P. aeruginosa* infections. We detected virulence factors among these isolates by using PCR.

Materials & Methods: In this study, 30 isolates of *P. aeruginosa* were recovered from burn, pulmonary tract and blood infections from Community Acquired Infections (CAIs) and Hospital Acquired Infections (HAIs). The prevalence of opr I, opr L, tox A, las B, exo S and nan 1 genes was determined by PCR.

Results & Conclusions: The opr I and opr L genes were detected in all of 30 *P. aeruginosa* isolates collected. However, presence of tox A gene in clinical samples was different. The presence of tox A gene in isolates from burn and pulmonary tract was significantly higher than that from blood. All tested isolates harbored Las B gene. However, difference between exo S prevalence in isolates from pulmonary tract and burn isolates was statistically significant and higher than that isolated from blood. The prevalence of nan1 gene was significantly higher in isolates of pulmonary tract and burn specimens than isolates from blood. The presence of two or three virulence genes is significantly higher among HAIs than CAIs. Molecular methods have been reported to be superior to the phenotypic methods for identification of *P. aeruginosa* by designing a multiplex PCR assay based on opr I and opr L genes for molecular detection of *P. aeruginosa*. Simultaneous use of opr I, opr L and Las B genes provides more confident detection of *P. aeruginosa* by PCR. Determination of different virulence genes of *P. aeruginosa* isolates suggests that they are associated with different levels of intrinsic virulence and pathogenicity. Significant correlations between some virulence genes and sources of infections obtained in this research indicate that the implementation of infection control measures will help in controlling the dissemination of virulence genes among *P.aeruginosa* isolates.

Biography

Nadia Mohamed El-Sheshtawy has completed her PhD at the age of 30 years from Faculty of Medicine Ain Shams University also got a diploma in Infection Control. She is a lecturer of Microbiology and Immunology at the Faculty of Medicine. She published papers concerned in neonatal sepsis and virulence factors in Acinetobacter species and now supervising thesis concerned in hospital acquired infections and rapid detection methods for E.coli (ESBL).

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