

DETECTION AND SUSCEPTIBILITY PATTERN OF BIOFILM-PRODUCING PSEUDOMONAS AERUGINOSA AND USING CRISPR/CAS SYSTEMS TO KNOCK-OUT BIOFILM-SPECIFIC ANTIBIOTIC RESISTANCE GENES

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Backgrounds: Biofilm plays an important role in chronic diseases and their eradication is very challengeable, when bacteria confront with antibiotics or strong immune system response they have the choice whether to be planktonic cells or form a biofilm, producing extra cell materials to enhance their survival. The aim of this study was the assessment of incidence and antibiotic algorithms of biofilm-producing *Pseudomonas aeruginosa*, an opportunistic pathogen and one of the most frequent causes of infectious disease in vulnerable patients.

Methods: A total of 100 *Paeruginosa* isolates were collected from five different clinical specimens and wards of the fifth Azar Hospital, Gorgan, Iran during November 2017. However, after isolating of samples under sterilized conditions, these strains have been identified as a *Paeruginosa* through appropriate biochemical procedures and their antibiotic patterns according to NCCLS disk methodology have been examined; afterward, ELISA method was employed for the detection of biofilm producing *Paeruginosa*.

Results: Out of 100 clinical isolated *Paeruginosa* 31 (31%) of them were biofilm producer. The frequency of biofilm positive strains among specimens have been observed; 56.2% from burned wounds, 36.4% from urines, 22.2% from respiratory secretions, 19.4% from blood cultures and 16.7% of the strains were biofilm positive from normal wound cultures (P=0129). Besides, 50% of biofilm-producing *Paeruginosa* were isolated in internal section followed by burned section (45.8%), ICU section (29.4%), surgical section (15.8%) and 9.2% in pediatric neurology section (P=0129). Furthermore, biofilm-producing *Paeruginosa* indicated impressive resistance patterns to piperacillin (49.2%), Imipenem (49.2%), ciprofloxacin (47.6%), gentamicin (46.7%), ticarcillin (44.1%), cefepime (38.9%), ceftazidime (34.9%), ceftriaxone (34.3%), co-trimoxazole (34.1%) and cefotaxime (31.6%) respectively.

Conclusions: This study demonstrated that there is a discrepancy in the outbreak of biofilm-producing *Paeruginosa* among various specimens and also the pattern of antibiotic susceptibility and resistance did not follow a specific algorithm.

BIOGRAPHY

Muhammad Sadeqi Nezhad is majoring in Clinical Laboratory Science (BSc), Gorgan Islamic Azad University. He is a passionate, research-driven student looking to possess diversity of knowledge and necessary skills at Oncology/Pathology in medical school to begin a career in clinical research to discover diagnostic methods and treatment.

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