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Drug Resistance and Biofilm Production among Pseudomonas aeruginosa Clinical Isolates in a Tertiary Care Hospital of Nepal

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Abstract

To evaluate the biofilm forming abilities of the clinical isolates of Pseudomonas aeruginosa and to correlate biofilm formation with antibiotic resistance. A total of 90 consecutive isolates of P. aeruginosa obtained from various specimens collected from patients visiting the Manipal Teaching Hospital, Pokhara, Nepal between January 2018 - October 2018 were studied.

Of the 90 Pseudomonas aeruginosa isolates maximum i.e 42 (46.6%) were from patients in the age group of > 50 years. Majority (30; 33.3%) of the isolates were obtained from sputum samples. However, percentage isolation from other specimens like urine, endotracheal tube (ETT), pus, eye specimens and blood were 18.9%, 16.7%, 16.7%, 7.8% and 6.7% respectively. All the isolates were sensitive to polymixin B and colistin, 91.1% of the organisms were sensitive to imipenem, and more than 80% to aminoglycosides (80% to gentamicin, 83.3% to amikacin). A total of 29 (32.2%) organisms were biofilm producers. Maximum numbers of biofilm producing strains were obtained from ETT (8 of 15; 53.3%), pus (8 of 15; 53.3%) and blood (2 of 6; 33.3%) i.e from all invasive sites. None of the isolates from noninvasive specimens such as conjunctival swabs were biofilm positive. Significantly higher numbers of biofilm producers (23 of 29; 79.3%) were found to be multidrug resistant as compared to non-biofilm (6 of 61; 9.8%) producers (p=0.000).

Pseudomonas aeruginosa colonization leading to biofilm formation in deep seated tissues and on indwelling devices is a therapeutic challenge as majority of the isolates would be recalcitrant to commonly used antipseudomonal drugs.

Effective monitoring of drug resistance patterns in all Pseudomonas clinical isolates should be a prerequisite for successful patient management.There are several variants developed in order to inject the vaccine in different age groups basing on the composition of number of polysaccharide chains attached in the variant. Some of the variants include PCV7, PCV13 etc.

Biography:

Rajani Shrestha has been completed her master's in Institute of Medicine · Department of Anatomy. She has worked on many research papers including Anatomic Variations, Palm Creases Analysis, Neck Shaft Angle, nanotechnology, etc.

Speaker Publications:

1. "Anatomic Variations of the Right Hepatic Duct: Results and Surgical Implications From a Cadaveric Study"
2 "Anatomic Variations of the Right Hepatic Duct: Results and Surgical Implications From a Cadaveric Study"
3. "Palm Creases Analysis in Students and Staff of a Teaching Hospital in Kathmandu"
4. "Neck Shaft Angle of Non-articulated Femur Bones among Adults in Nepal"
5. "Brain Morphology and Feeding Habits of Some Fresh Water Teleosts of Nepal"

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