Medical Technologies Journal, Volume: 4, Issue: 1, January-March 2020, Pages: 518-519. Doi : https://doi.org/10.26415/2572-004X-vol4iss1p518-519

Detection of Biofilm Formation of Klebsiella Pneumoniae Isolated from Medical Devices at the University Hospital of Tlemcen, Algeria

Type of article: Conference abstract

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Abstract:

Background: *Klebsiella pneumoniae* is a major cause of community-acquired and nosocomial infections. This germ is responsible for acute and chronic infections, most of which are due to its ability to adhere to medical implants and form a biofilm. The objective of this work is to study the interaction between clinical isolates of *K. pneumoniae* and abiotic surfaces (medical devices) and some factors influencing biofilm formation.

Methods: Over a period of 2 years, 115 strains of *K. pneumoniae* were isolated from medical devices CHU Tlemcen, most of which had a high level of resistance to cephalosporins 1st, 2nd, and 3rd generation. Their capacity to form biofilm was assessed using 3 techniques: TCP, TP, and RCA. We determined *in vitro the* effects of three antimicrobial agents against planktonic and biofilm forms of *K. pneumoniae*. The presence of MrkD genes was detected by polymerase chain reaction (PCR).

Results: According to the studied (TCP, TP, RCA) strains of *K .pneumoniae* isolated from urinary catheters have proved very good, forming the biofilm to those isolated from other medical devices. 24 of 115 isolated strains showed a clear difference in antibiotic susceptibility between planktonic populations and biofilm populations. They were 10-20 times higher. All strains presented a highly hydrophilic character and adhesion 2-10 times greater in PVC with respect to glass support. The MrkD gene (detected by PCR) responsible for biofilm formation was found in 22 strains of *K. pneumoniae*, which may explain their adhesion and therefor their pathogenicity.

Conclusion: Our results show the great ability of *K.pneumoniae* strains to form a biofilm on medical devices, and the isolates were at least 10 times more resistant than their planktonic counterparts. In addition, we showed that the presence of type 3-encoding gene *mrkD* was associated with high adhesion indexes.

Keywords: Biofilm, *Klebsiella Pneumoniae*, Antibiotic Susceptibility, Urinary Catheter, Medical Devices.

1. Conflict of interest statement

This article is a conference abstract presented at the International Congress on Health Sciences and Medical Technologies, Tlemcen Algeria 5-7 December 2019, ICHSMT'19.

2. Authors' biography

No Biography.

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3. References

No references