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**Category: 9b. Host-pathogen interaction**

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**The impact of biofilm-producing multidrug-resistant bacteria on the outcome of diabetic foot infection: a prospective study**

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**Background:** We aimed to investigate the association between antimicrobial resistance profile and biofilm formation and to determine prognostic importance of biofilm production in the isolates obtained from patient with diabetic foot infection (DFI).

**Material/methods:** We performed a study on 165 DFI in patients treated in a multidisciplinary based DFI committee of Cerrahpasa Medical Faculty between January 2008 -December 2015. Individual demographic, laboratory data, and diabetic foot ulcer characteristics were obtained prospectively at the time of hospitalization. Standard methods of sample collection and identification of microorganism were adopted. Among a total of 339 bacteria were isolated, antimicrobial susceptibility of the isolates were determined by disk diffusion method. Biofilm forming ability of the isolates were investigated by modified microplate method. Using univariate and multivariate logistic regression analyses, risk factors associated with biofilm formation ability and association between biofilm production and antimicrobial resistance profile were determined.

**Results:** The overall biofilm producing infection rate among 339 isolates was 34 %. The biofilm production rate was significantly higher in Gram negative microorganism in comparison with Gram positive microorganism ( $p = 0.01$ ). *A. baumannii* (62 %) and *P. aeruginosa* (52 %) were the most prominent bacteria show biofilm positivity. On univariate analysis, significant risk factors for biofilm producing infection were previous antibiotic use within 3 month ( $p = 0.002$ ), previous recurrent DFI within 6 months ( $p = 0.01$ ), amputation history ( $p = 0.01$ ), hospitalization within 3 months due to ipsilateral recurrent DFI ( $p = 0.03$ ), multidrug resistance of microorganism ( $p < 0.001$ ) and extensive drug resistance of microorganism ( $p < 0.001$ ). Multivariate regression analysis also determined two variables to be potential independent risk factors for biofilm formation: multidrug resistance of microorganism ( $p = 0.002$ ) and extensive drug resistance of microorganism ( $p = 0.01$ ).

**Conclusions:** Biofilm formation was significantly associated with antimicrobial drug resistance and recurrent DFI. The detection of biofilm production from isolates obtained in DFU might represent a useful method to identify patients with high risk and to refine antimicrobial management of DFI.

<b>Table 1. Relationship between biofilm formation and MDR microorganism in DFI.</b>			
<b><i>S. aureus</i></b>	<b>MRSA (n,%)</b>	<b>MSSA (n,%)</b>	<b>p</b>
Biofilm positive (n=5)	3 (60)	2 (40)	0,93
Biofilm negative (n=26)	5 (19)	21 (81)	
<b><i>Enterococcus spp.</i></b>	<b>VRE(+) (n,%)</b>	<b>VRE(-) (n,%)</b>	<b>p</b>
Biofilm positive (n=6)	4 (67)	2 (33)	<b>0,02</b>
Biofilm negative (n=27)	4 (15)	23 (85)	
<b><i>A.baumannii</i></b>	<b>MDR(+) (n,%)</b>	<b>MDR(-) (n,%)</b>	<b>p</b>
Biofilm positive (n=17)	16 (94)	1 (6)	0,69
Biofilm negative (n=10)	9 (90)	1(10)	
<b><i>P.aeruginosa</i></b>	<b>MDR(+) (n,%)</b>	<b>MDR(-) (n,%)</b>	<b>p</b>
Biofilm positive (n=41)	31 (76)	10 (24)	<b>&lt;0,001</b>
Biofilm negative (n=37)	14 (38)	23 (62)	
<b><i>Enterobacteriaceae spp.</i></b>	<b>ESBL(+) (n,%)</b>	<b>ESBL(-) (n,%)</b>	<b>p</b>
Biofilm positive (n=31)	17 (55)	14 (45)	<b>&lt;0.001</b>
Biofilm negative(n=85)	15 (18)	70 (82)	