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Bacteriological Profile of Chronic Foot Ulcers in Diabetic Patients at Teaching Hospital Karapitiya

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Background: Diabetes is a leading non-communicable disease in the world. Diabetic foot ulcers are one of the most common devastating complications in diabetic patients. Diabetic foot ulcers are predominantly caused by multidrug resistant (MDR) polymicrobial flora. Biofilm formation is an important pathophysiology in diabetic foot ulcers.

Objectives: To determine the types of bacteria, antibiotic sensitivity patterns of bacteria, isolated from chronic foot ulcers in diabetic patients at Teaching Hospital Karapitiya.

Methods: A prospective cross-sectional study was performed using convenient sampling method. Deep wound swabs were collected from 50 diabetic patients with chronic foot ulcers. All the samples were processed according to the Clinical and Laboratory Standards Institute guidelines and antibiotic sensitivity test was carried out using the disc diffusion method. MDR clinical isolates were subjected for the detection of biofilm formation using tissue culture plate method. Data were statistically analysed using SPSS version 25.0.

Results: A total of 76 bacterial isolates were obtained from 50 patients with chronic diabetic foot ulcers. The age group ranged from 38 to 80 years. Most of the cases were polymicrobial (58.0%). Majority of isolated pathogens were Gram negative bacilli (53.9%). Most commonly isolated pathogens were *Staphylococcus aureus* (28.9%) followed by *Proteus spp.* (19.7%), *Pseudomonas spp.* (18.5%), *Acinetobacter* (11.9%), Coagulase negative *Staphylococci* (7.9%), *Diphtheroid* (6.6%), *Escherichia coli* (3.9%) and *Enterococci spp.* (2.6%). Out of the isolates, 32 (42.1%) had multidrug resistance and among them 14 isolates (43.8%) expressed biofilm formation. Biofilm formation has a significant relationship with isolation of MDR organisms ($p < 0.05$).

Conclusions: Polymicrobial infections due to Gram negative organisms were the commonest in chronic diabetic foot ulcers. *S. aureus* was the predominantly isolated organism. Biofilm formation had a significant relationship with the isolation of MDR organisms from diabetic foot ulcers. As significant number of MDR cases were isolated, knowledge on the antibiotic susceptibility pattern of the isolates from diabetic foot infections is vital to design new treatment patterns.

Keywords: Biofilm formation, Diabetic foot ulcers, Multidrug resistance