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The profile of bacteria and biofilms in patients with ischaemic lower limbs

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ABSTRACT

The profile of bacteria and biofilms in ischaemic lower limbs

Insertion of lower extremity prosthetic grafts is one treatment option for patients with Chronic Occlusive Arterial Disease (COAD). Although graft infections are reported as 2-5%, their complications are devastating.

Choice of antibiotics for prophylaxis and treatment is dependant upon the spectrum of presumptive pathogens. In addition, the formation of microbial biofilms has a profound impact on these patients as they contribute considerably to delay in healing. Biofilms cannot be visualized by routine culture methods.

This study was designed to determine the spectrum of bacterial pathogens and biofilms associated with COAD and associated wounds and to determine the optimal specimen for bacterial isolation.

The study group consisted of 100 male patients with COAD with a wound in the lower limb, presenting to the surgical unit, at Teaching Hospital Peradeniya. After obtaining informed consent, fine needle aspiration of the lymph nodes and wound were obtained in addition to a

wound swab. The samples were immediately transported to the laboratory for aerobic and anaerobic culture.

A total of 227 aerobic specimens and 28 anaerobic specimens were studied. A significant difference was found in the type of isolates from the lymph node and wound aspirates when compared with the surface swab isolates of the wound (p value <0.05). The antibiotic resistance pattern of the isolates at the two different sites also showed a very highly significant difference (p value < 0.001).

The isolation of Gram negative bacilli from lymph nodes of patients with COAD is of concern as Gram negative infection of prosthetic grafts are known to have severe consequences.

Many organisms that are known to exhibit polymicrobial synergy were isolated from the specimens. Biofilms were visualized in all 54 pseudomonal isolates, which reveals a very alarming situation in the management of these patients.

In addition, the discrepancy between the results of surface swabs and aspirates provide further evidence for obtaining deeper tissues for culture. Antibiotic policies formulated on the results of surface swabs may be inappropriate and even dangerous.

