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The role of microbiological cultures in managing diabetic foot osteomyelitis

D. Madani, I. Wilson, A. Tiwari, M. David and **M. Saeed**
University Hospitals Birmingham NHS Foundation Trust, UK

Background and aims: Diabetic foot osteomyelitis (DFO) is a well-recognised complication and a risk factor for lower limb loss. Its effective treatment can reduce the risk of minor and major amputations. Our aim was to compare the yield in cultures from the proximal and distal segments of bone excised intraoperatively as part of the management of DFO and the impact on antibiotic choice and duration.

Materials and methods: Patients attending the diabetic foot service at our hospital, within the University Hospitals, between 2013-2018 with a confirmed diagnosis of osteomyelitis on bone culture results, with a proximal and distal bone segment samples were retrospectively selected from electronic hospital records. Microbiological data was reviewed on these samples collected intraoperatively and true pathogens were identified and studied against antimicrobial choice and duration of prescribing.

Results: During the study period, a total of 47 forefoot amputation cases were studied. There were 83% males and the mean age of the patients was 64 years (range 43-94 years). In 89% of cases, definite or possible pathogens were isolated from the deep tissues cultured. Definite pathogens (Gram positive cocci: Staphylococcus aureus, Group B Streptococcus, Group G Streptococcus and Streptococcus anginosus) were identified in 32% cases; in 73% of these, definite pathogens were grown in both the proximal and distal bone segments. In 60% of these cases antimicrobial prescription was in-line with the microbiologists' recommendations. 89% of the patients had 12 months post-operative amputation free survival.

Conclusion: It is challenging to correctly estimate whether, intraoperatively, clear surgical margins have been achieved when resecting infected bone. Patients may therefore need a prolonged course of culture-aligned antimicrobials to achieve complete cure. In our Centre, when cultures from proximal bone samples are negative, the duration of the antibiotics courses can be reduced in 27% of patients.