

Abstract

Diabetic foot syndrome is defined as the presence of a diabetic foot ulcer (DFU) associated with neuropathy, peripheral artery disease and infection. While the use of antimicrobials in the treatment of DFUs remains a mainstay, choice of antimicrobial remains problematic due to the presence of polymicrobial infections. The aim of this study was to determine antimicrobial susceptibility patterns of micro-organisms isolated from DFU patients visiting selected Gauteng public healthcare settings and treatment practices, in order to suggest a clinically effective treatment protocol.

Microbial sample swabs of 45 patients with DFUs were taken and a structured questionnaire was administered to the patients. A review of each patient's file was completed to assess treatment practices. Each sample swab was spread onto blood agar plates and thereafter, pathogens were isolated. The antimicrobial susceptibility patterns of all isolated pathogens were determined using the disc diffusion test. Pathogens were grouped according to macromorphological characteristics as well as susceptibility patterns and were then identified.

A total of 445 pathogens were isolated and susceptibility testing was done. The most effective antimicrobial was found to be gentamicin, followed by ciprofloxacin. Amoxicillin/ clavulanic acid is the first line treatment according to standard treatment guidelines and a large number of pathogens were resistant to this antibiotic. The total pathogen variety isolated from wound samples was 17. The most commonly isolated pathogens were *Proteus mirabilis*, *Enterococcus faecalis* and *Pseudomonas aeruginosa*.

Based on data obtained from the structured questionnaire and file review, the use of preventative measures among patients is poor with 48.9% of patients reporting that they did not make use of any preventative measures. The most commonly used preventative measure was crutches. The most frequently occurring concurrent medical conditions were hypertension followed by dyslipidaemia and peripheral neuropathy. Polypharmacy among the patient study was found to be prevalent with 55% of the population prescribed five or more medications. Potential medication interactions were examined and a total of 210 interactions were documented.

The data obtained through patient questionnaires emphasises the need to encourage patient education and preventive measures for the management of DFUs. Globally, causative pathogens and corresponding susceptibility patterns differ from country to country and the same is demonstrated in this study. These findings demonstrate the need to reassess the standard treatment guidelines and base treatment plans on local epidemiological data. This study provides valuable data on common causative pathogens in DFU infections as well as the resistance patterns of these pathogens forming a baseline with which to base future DFU treatment plans.