Wound Manag Prev. 2019 May;65(5):16-23.

The Microflora of Chronic Diabetic Foot Ulcers Based on Culture and Molecular Examination: A Descriptive Study

Banerjee T[1], Das A[1], Singh A[1], Bansal R[2], Basu S[2].

Abstract

Infection of chronic diabetic foot ulcers (DFUs) is a major concern in patients with diabetes mellitus.**PURPOSE:** This prospective, descriptive study was conducted to evaluate clinical wound parameters and to determine the aerobic and anaerobic microflora of DFUs with 1 or more clinical signs of infection using culture and molecular methods. **METHODS:C**Patients with a DFU and clinical signs of infection receiving care at a tertiary care hospital in Varanasi, India, were consecutively enrolled. Patient and wound characteristics were assessed, and the cultures obtained were analyzed quantitatively to detect aerobes/facultative anaerobes and by polymerase chain reaction for common anaerobes. If no organisms were found using these methods, sequence analysis of bacterial 16S ribosomal RNA (16SrRNA) was used. Clinical, demographic, and microbial flora variables were compared using the chi-squared test, and predictors of culture results were ascertained using multiple logistic regressions. **RESULTS:** Forty (40) patients participated. Of those, 30 (75%) had positive culture results with a total of 64 isolates (2.13 isolates/ulcer). The ratio of aerobes to anaerobes was 1.24:1 (35/29); Peptococcus spp was the most frequent isolate (15, 23.4%). Proteobacteria and Firmicutes were detected by 16SrRNA in 6 of the 10 samples (60%), their presence not detected by other methods. Ulcer size <11.84 cm2 (OR: 4.71; 95% CI: 0.93-23.68) and ulcer on the dorsum of the foot (OR: 0.92; 95% CI: 0.05-16.42) were significantly associated (P <.05) with monomicrobial microflora. **CONCLUSION:** Gram-negative aerobic/facultative anaerobes predominated in the 30 DFUs that exhibited clinical signs of infection. Further experimental studies are required to understand the diverse microorganisms present in DFUs and their potential role in wound infections.

KEYWORDS: diabetes mellitus; foot ulcer; infection

PMID: 31368679