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Bacterial Prevalence and Antibiotic Resistance in Clinical Isolates of Diabetic Foot Ulcers in the Northeast of Tamaulipas, Mexico

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Abstract

Diabetic foot ulcers (DFUs) are a serious and common problem in patients with diabetes mellitus and constitute one of the major causes of lower extremity amputation. The microbiological profile of DFUs depends on the acute or chronic character of the wound. Aerobic gram-positive cocci are the predominant organisms isolated from DFUs. Diabetic foot biopsies from patients admitted to the Angiology and Vascular Surgery Hospital of the Northeast, in Reynosa, Tamaulipas from December 2011 to April 2016 were analyzed. The samples were processed using standard microbiology techniques. Antimicrobial susceptibility testing was carried out according to the protocol established by the Clinical & Laboratory Standards Institute (CLSI). We obtained 246 bacterial isolates, based on the results of phenotypic resistance. The least effective antibiotics for gram-positive bacteria were penicillin and dicloxacillin; for gram-negative bacteria, cefalotin and penicillin were the least effective. Levofloxacin, cefalotin, and amikacin were the most effective antibiotics for gram-positive and negative bacteria, respectively. *Enterobacter* genus was significantly associated with muscle biopsies ($P = .011$) and samples without growth were significantly associated with specimens of pyogenic origin ($P = .000$). In 215 DFU samples, we found that *Staphylococcus aureus* was the most commonly isolated pathogen followed by *Enterobacter* sp. This is consistent with previous reports. *Enterobacter* species may play an important role in the colonization/infection of certain tissues; however, further studies are needed in this regard.

Keywords

diabetic foot infections, antimicrobial susceptibility, MRSA

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