ABSTRACT

Objectives

1. To determine the common bacterial pathogens causing diabetic foot infections
2. To describe the antibiotic sensitivity patterns of these bacteria.

MATERIALS AND METHODS

Study type: A hospital based, descriptive study

Study Population: 100 diabetic patients having foot infections admitted to general surgical units of the National Hospital of Sri Lanka

Study Duration: January to April 2009

Place of Study: National Hospital of Sri Lanka

Methods:

Foot infection was diagnosed by the presence of cellulitis, soft tissue necrosis or osteomyelitis. Wound curettings were taken in the operating theatre after cleaning with normal saline. The samples were cultured at the Department of Microbiology, Faculty of Medicine, Colombo within 2 hours of collection by plating on blood agar and MacConkey agar.

Staphylococcus aureus was identified by colony appearance, Gram stain morphology, catalase test and coagulase test. Streptococci were identified by colony appearance, Gram stain morphology, catalase test, bacitracin sensitivity and bile esculin test.

Enterobacteriaceae and Pseudomonas were identified by colony appearance, Gram stain morphology and the oxidase test.

Antimicrobial susceptibility testing of isolates was performed using the standard disc diffusion method recommended by the Clinical and Laboratory Standards Institute. For isolates of Enterobacteriaceae, sensitivity to ampicillin, gentamicin, amikacin, cefuroxime, cefotaxime, amoxicillin-clavulanic acid and imipenem was determined. Extended-spectrum beta lactamase (ESBL) producers were detected by the double disk diffusion method and confirmed by the combined disc method. For isolates of *Staphylococcus aureus* sensitivity to cloxacillin (using the cefoxitin disc), trimethoprim-sulfamethoxazole, gentamicin, vancomycin, fusidic acid, erythromycin and clidamycin was determined. For isolates of *Pseudomonas aeruginosa* sensitivity to ciprofloxacin, gentamicin, amikacin, ceftazidime, cefepime and imipenem was determined. For Streptococcal isolates sensitivity to penicillin, erythromycin, and clindamycin was determined. For Enterococcus isolates sensitivity to ampicillin, penicillin and vancomycin was determined.

Results

156 bacterial strains were isolated. Polymicrobial growth was found in 49 patients. The most common isolates were Enterobacteriacaea (74/156) (47.4%) Pseudomonas spp (41/156) (26%) and *Staphylococcus aureus* (29/156) (18.5%).

All coliforms were resistant to ampicillin. There was a low sensitivity rate to co-amoxiclav and cefuroxime (5.4% and 8%). Gentamicin and cefotaxime sensitivity were 51.3% and 35%. There was 64.8% and 78.3% sensitive to imipenem and amikacin. More than a third were ESBL-producers.

Pseudomonas was highly resistant to ceftazidime with only 2.4% sensitive. Sensitivity to amikacin, imipenem, gentamicin cefipime and ciprofloxacin were 80.4%, 75.6%, 56%, 44% and 54 % respectively.

86% of *S.aureus* were MRSA strains. Ninety percent were resistant to erythromycin and 62% were resistant to clindamycin on routine disc testing. A further 14% showed inducible resistance to clindamycin.

72% of patients were receiving empirical antibiotics that were not effective against the isolate from their ulcer.

Conclusions

This study illustrates that antimicrobial therapy needs to be selected based on actual culture findings and antimicrobial sensitivity pattern of isolates.