

Observation on Microbiological Profile of Type2 Diabetic Foot Ulcer and Its Antimicrobial Sensitivity Pattern in a Tertiary Care Hospital in Eastern India

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Abstract : Diabetes Mellitus (DM) is commonly encountered metabolic disorder in clinical practice. An estimated 25 percent of DM patients develop foot problems. Foot ulceration and infection are one of the major causes of morbidity, hospitalization or even amputation. Objective: To isolate and identify bacterial pathogens in Diabetic Foot Ulcer (DFU) and to observe its antimicrobial sensitivity pattern. Methodology: A prospective study was conducted for a period of 9 months at the Department of Microbiology, GD Hospital & Diabetes Institute, Kolkata. 75 DFU patients were recruited in the study. Specimens for microbiological studies obtained from ulcer base were examined as gram stained smear and was cultured aerobically on Nutrient agar, Blood agar and MacConkey agar plates. Antimicrobial sensitivity test was performed by disc diffusion techniques according to CLSI guidelines. Result: In this study out of 75 cases, 73% (55/75) were male and 27% (20/75) were females with mean (SD) age of 51.11(±10) years. Out of 75 pus cultures, 63(84%) showed growth of microorganism making total of 81 bacterial isolates with 71.42% of monomicrobial infection and 28.57% of polymicrobial infection. Out of 81 isolates 53(65.43%) were gram negative and 21(25.92%) were gram positive. E.coli was relatively common isolate 21(26%) followed by Staphylococcus aureus 15(18.5%), Klebsiella pneumonia 14(17.28%), Pseudomonas aeruginosa 12 (14.81%), Proteus spp. 3 (3.70%), and Enterococcus faecalis 6 (7.40%). 75% of Gram-negative microorganism were extended Beta-lactamase enzyme (ESBL) producer and around 20 % of Klebsiella and Proteus spp. were carbapenemase enzyme producer. Among Gram positive, around 50% of S.aureus was MRSA, sensitive only to Vancomycin, Teicoplanin & Linezolid. Conclusion: More prevalence of monomicrobial gram-negative bacteria than gram-positive bacteria in DFU was observed. This study emphasizes that Beta-Lactam group of antibiotics should not be the empirical treatment of choice for Gram-negative isolates; instead alternatives like Carbapenems, Amikacin could be a better option. On the other hand, Vancomycin and Linezolid are preferred for most of the infection with gram-positive aerobes. Continuous surveillance of resistant bacteria is required for empiric therapy.

Keywords : antibiotic resistant, antimicrobial susceptibility, diabetic foot ulcer, surveillance

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