ABSTRACT

Antimicrobial susceptibility patterns for bacteria isolated from infected wounds in patients attending Mbale regional referral hospital

Habert Mabonga[1], Joel Mbazira[2], Barbra Tuhamize[1'2], Fredrik Byarugaba[1,2]

[1'2]*Department of Microbiology, Mbarara University of Science and Technology.*

Corresponding Author. Habert Mabonga; habert26@gmail.com

Background: Globally, about eight (8) million people were estimated to have wounds with or without infections and wound infections are responsible for significant human morbidity and mortality. In developing countries, wound infections due to surgical operations are the major cause of morbidity and mortality affecting about 5.6% of the total population. In Uganda, high prevalence of wound sepsis was recorded in western Uganda, with high resistance to antibiotics.

Objective of the study: To determine the etiological agents and their antimicrobial susceptibility in infected wounds in of patients attending Mbale regional referral hospital.

Methods: My study was a laboratory based descriptive cross-sectional study recruiting 210 participants from whom wound swabs were collected for culture to isolate bacterial pathogens for antibiotic susceptibility testing. MRSA screening and confirmation was done using cefoxitin as a surrogate test. My study employed both quantitative and qualitative data collection methods and analysis. Data was analyzed using STATA version 12 software and presented in form of tables as proportions and frequencies as well as figures. Chi square was employed to understand the distribution of bacterial pathogens and patient characteristics.

Results: About 41.9% (88/210) of the tested samples had bacterial growth; of which 36.4% (32/88) had *Staphylococcus* spp, 25.0% (22/88) had *Escherichia coli* and 15.9% (14/88) had *Klebsiella* spp. *Acinetobacter baumanii* was the least observed in only one sample 1.1% (1/88). 16.2% (34210) of the samples had gram positive bacteria, only 25.7% (54/210) had gram negative bacteria. There was no observed bacterial growth in 58.1% (122/210) of the analyzed samples. Meropenem, piperacillin-tazobactum, tetracycline had high sensitivity while ampicillin, gentamycin erythromycin had high resistance More than a third 37.5% (12/32) were Methicillin Resistant Staphylococcus aureus (MRSA) and 62.5% (20/32) were Methicillin sensitive Staphylococcus aureus.

Conclusion: Bacterial pathogens, including *Staphylococcus spp, Pseudomonas aeruginosa*, and *Klebsiella spp*, were identified as the major culprits behind these infections. The presence of these bacteria underscores the importance of effective infection control measures, appropriate antibiotic selection, and ongoing surveillance to

manage and prevent wound infections among patients. The rare observation of *Acinetobacter baumannii* highlights the need for vigilance in monitoring and controlling potential nosocomial pathogens.

Recommendation: There is need for the Ministry of Health and development partners to emphasize the importance of choosing appropriate antibiotics based on local susceptibility data, Methicillin-Resistant *Staphylococcus aureus* (MRSA) was identified in a considerably high proportion of *Staphylococcus aureus* isolates, highlighting the presence of antibiotic-resistant strains, this underscores the need for judicious antibiotic use and infection control measures to combat antimicrobial resistance.