MAKERERE UNIVERSITY

ANTIMICROBIAL SUSCEPTIBILITY PATTERNS OF BACTERIA ISOLATED FROM OPEN FRACTURE INFECTIONS AT MULAGO HOSPITAL.

BY

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DECLARATION.

I declare that this dissertation has not been submitted for another degree in this University or any other University/ Institution of higher learning and that the views expressed herein are mine unless otherwise stated and where such has been the case, acknowledgement or reference has been quoted.

Witness my hand this.....day of 2014

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DEDICATION.

I dedicate this book to the Almighty God and my late mother.

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LIST OF ABBREVIATIONS.

AEU - Accident and Emergency Unit.

MDR - Multi Drug Resistance.

MRSA - Methicillin Resistant Staphylococcus aureus.

RTA – Road Traffic Accident.

S.O.P – Standard Operating Procedures.

SPP – Species.

WHO - World Health Organisation.

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OPERATIONAL DEFINITIONS.

Infected open fracture – An open fracture with a purulent discharge.

Purulent discharge – A discharge containing pus.

ABSTRACT

Introduction.

Infections are a common complication of open fractures; they are associated substantially with prolonged hospital stay, leading to higher treatment cost, morbidity and mortality, particularly when the etiological bacteria are multidrug resistant. Knowledge of the infecting bacteria and their antibiotic sensitivity patterns is very important in our setting where routine treatment is given without doing culture and sensitivity.

Objective.

To determine the antimicrobial susceptibility patterns of bacteria isolated from open fracture infections at Mulago hospital.

Methodology.

This was a descriptive cross sectional study involving 134 patients with infected open fractures between September 2013 and March 2014 at Mulago Hospital. Participants who met the inclusion criteria were consecutively recruited into the study. Pus aspirate and swabs were taken from infected open fractures for microscopy, culture and antibiotic sensitivity profiling. The data collected was entered into EPIDATA 3.02 exported to STATA Version 11 for analysis. Descriptive (mean, standard deviation and interquartile range) and inferential (Chi square and Fishers exact tests) statistics were used to analyse data. Alpha level was set at $p < 0.05$.

RESULTS

Multidrug resistant gram-negative and gram positive organisms were isolated. *Pseudomonas spp* 26(18.2%), *Klebsiella spp* 25(17.4%) and *Acinetobacter spp* 23(16.1%) were the

commonest gram negative organisms isolated while *Staphylococcus aureus* 8(5.6%) and *Enterococcus spp* 3(2.1%) were the commonest isolated gram positive organisms.

The isolated gram negative bacteria were sensitive (>80%) to Amikacin, Piperacillin and Imipenem but resistant (>80%) to, Ampicillin, Augmentin, Ceftriaxone, Ceftazidime, Cefuroxime and Co-trimoxazole.

The isolated gram positive bacteria; *Staphylococcus aureus* were sensitive (>80%) to Vancomycin, Chloramphenicol, and Oxacillin but resistant (71.4%) to Co-trimoxazole. Meanwhile, *Enterococcus spp* were sensitive (50%) to Vancomycin and Tetracycline but were resistant (100%) to Chloramphenicol, Ciprofloxacin and Gentamycin. There was significant statistical association between the duration of injury and bacteria isolated (p= 0.006).

CONCLUSION AND RECOMMENDATIONS.

Multidrug resistant gram negative bacteria, *Pseudomonas spp, Klebsiella spp, Acinetobacter spp*, *Enterobacter spp*, *Escherichia coli* and *Proteus spp* are associated with open fracture infections at Mulago hospital. These multidrug resistant gram negative bacteria were sensitive to Amikacin, Imipenem, and Piperacillin.

The isolation of multidrug resistant gram negative bacteria calls for laboratory guided therapy, strengthening infection control surveillance, identification of the source of these multidrug resistant bacteria, development of an antibiotic protocol for management of open fractures and we suggest use of Amikacin, Imipenem and Piperacillin for treatment of the multidrug resistant gram negative open fracture infections at Mulago hospital.