

Vol 4 Issue 8 Feb 2015

ISSN No :2231-5063

International Multidisciplinary
Research Journal

Golden Research
Thoughts

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RNI MAHMUL/2011/38595

ISSN No.2231-5063

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STUDY OF POST OPERATIVE WOUND INFECTIONS IN A TERTIARY CARE CENTRE

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Abstract:-The pattern of pathogens in SSI and their susceptibility to antimicrobial agents are subject to constant change and is important in a health care setting to minimise mortality, and morbidity.

A six month hospital based study was conducted. A total of 292 patient samples (wound swabs) were processed according to standard microbiological procedures. Out of 292 patient samples, 188 (64.4%) showed growth of one or more organisms. Among Gram negative organisms, Klebsiella spp. was predominant followed by E. coli, and Pseudomonas. Among Gram positive bacteria, predominant was Staphylococcus aureus. Among the Gram negative bacteria, maximum resistance was seen for Levofloxacin and Cefpirome, while least resistance was observed for Imipenem and Tobramycin. Similarly, among the Gram positive bacteria, highest resistance was seen for Ampicillin, and least for Vancomycin and Linezolid.

Keywords: pattern of pathogens, antimicrobial agents, Staphylococcus aureus.

INTRODUCTION

Post-operative wound infections are mostly hospital acquired, and their incidence vary from one hospital to the other and adds to increased morbidity and mortality and prolong hospital stay [1, 2, 3]. Among all post operative wound infections, surgical site infections (SSI) account for about 25%, and their incidence may vary from 2.5% to 41.95% [4].

The pattern of pathogens in SSI and their susceptibility to antimicrobial agents are subject to constant change due to development of resistance which is a global clinical and public health problem, which also explains the increase incidence of SSI despite advances in infection control practices [5, 6]. The condition is serious in developing countries because of aberrant use of antibiotics [7]. Thus, this study is an attempt to know the incidence of SSI, pathogens commonly isolated and most effective antibiotic against these pathogens in central India at a tertiary care centre.

MATERIAL AND METHODS:

This hospital based prospective study was conducted in Department of Microbiology for a period of 6 months. Informed consent was taken from all patients. The study was approved from institutional ethical committee.

Two wound swabs from each patient were collected on third post operative day and were received in the department of Microbiology. The first swab was used for Gram staining and the second swab was inoculated on Blood agar and MacConkey agar. The plates were incubated at 37°C for 18-24 hrs. On the next day, the organisms were identified by Colony morphology, Gram stain, and biochemical reactions. Anti microbial susceptibility testing was performed according to the CLSI guidelines [8].

Observations:

Out of 292 patient samples, 188 (64.4%) showed growth of one or more organisms. Out of these 188 patients, maximum belonged to 21-40 years age group (88 of 188), and male: female ratio was 3.4 :1. The age wise and gender wise distribution is shown in chart 1.

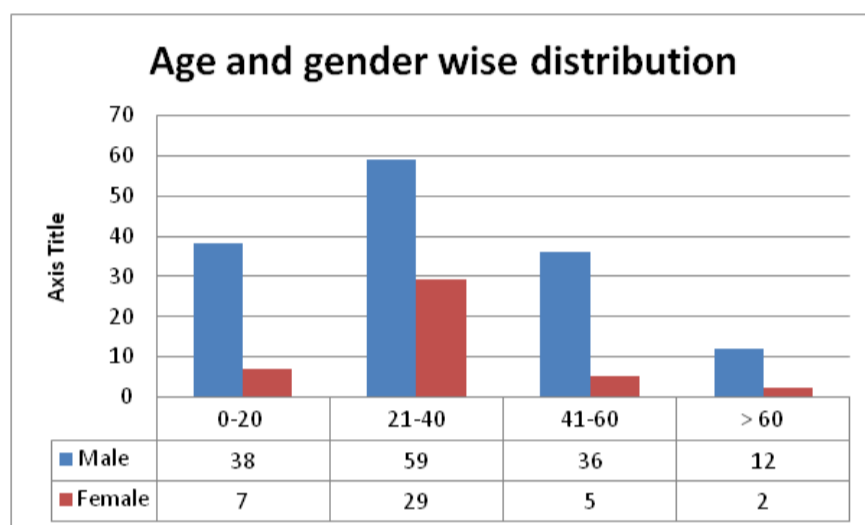


Chart 1: Age and Gender wise distribution of patients

Out of these 188 patients, 131 revealed growth of one organism, and 57 revealed growth of two organisms. Among Gram negative organisms, Klebsiella spp. was predominant followed by E. coli, Pseudomonas, Proteus, Citrobacter and Acinetobacter. Among Gram positive bacteria, predominant was Staphylococcus aureus, followed by Coagulase negative Staphylococci (CONS) and Enterococcus spp. The distribution of these organisms and Antimicrobial resistance pattern is shown in chart 2 and 3.

Among the Gram negative bacteria, maximum resistance was seen for Levofloxacin and Cefpirome, while least resistance was observed for Imipenem and Tobramycin. Similarly, among the Gram positive bacteria, highest resistance was seen for Ampicillin, and least for Vancomycin and Linezolid.

An attempt was made to identify the procedures as emergency and elective and it was observed that incidence of post operative wound infection was much higher for emergency procedures as compared to elective (data not shown).

It was also observed that procedures that were of longer duration had more chances of getting infected as compared to short duration procedures.

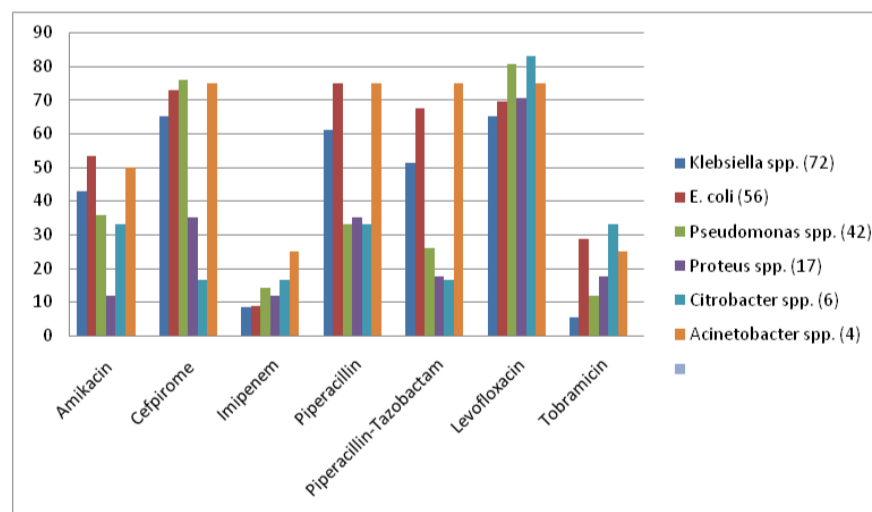


Chart 2 - Distribution of Gram negative bacilli and their Antimicrobial resistance (%)

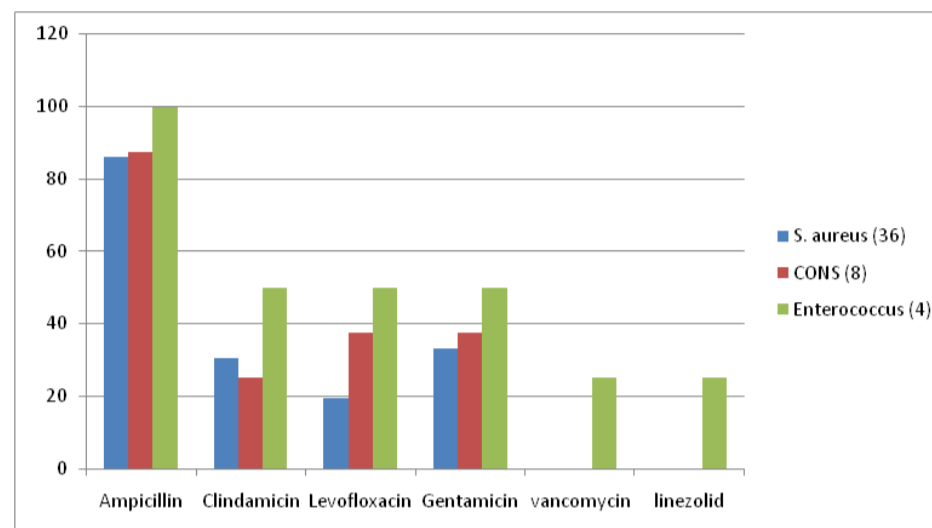


Chart 3 - Distribution of Gram Positive cocci and their Antimicrobial resistance (%)

DISCUSSION AND CONCLUSION:

In countries where resources are limited, postoperative SSIs remain as one of the major types of nosocomial infections [9].

In this study we found that Gram negative bacteria namely Klebsiella, E. coli, and Pseudomonas were predominant pathogens as compared to Gram positive bacteria. There are many studies with similar findings and there is a changing trend towards the gram negative organisms becoming highly prevalent [10]. However some studies still reveal that S. aureus is predominant pathogen followed by Gram negative bacteria [11].

A recently published study from south west Ethiopia revealed the predominant causes of postoperative SSIs were S. aureus, Klebsiella and proteus species. Organisms associated with postoperative SSIs were Staphylococcus aureus 11 (22.4%) followed by Klebsiella species 10 (20.4%) and Proteus species 9 (18.4%), Escherichia coli 6 (12.2%), Enterobacter species and coagulase negative staphylococci each 4 (8.2%), Pseudomonas aeruginosa 3 (6.1%) and Citrobacter species 2 (4.1%) [12].

The antimicrobial susceptibility profile in our study suggests increasing drug resistance specially to the antibiotics used more commonly like cephalosporins and flouoroquinolones in comparison to the higher antibiotics like imipenem, and tobramycin for Gram negative bacteria and Vancomycin and Linezolid for Gram positive bacteria. These findings further suggest judicious use of antibiotics and formulation of institutional antibiotic policy is of great importance to combat infections.

Therefore further similar studies on large scale are needed to generate a data set and formulate policies to meet local needs and prompt control of such infections.

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