

Bacterial Estimation of Nosocomial Infection in Different Wards of Jinnah Hospital Lahore - A comparative clinical study

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ABSTRACT

The aims and objectives of this study were to identify the notorious bacteria caused nosocomial infections among hospital admitted patients. For these purpose 100 patients from orthopedic, medicine, surgery, pediatric and urology wards of Jinnah hospital Lahore were selected. Collected blood samples were put at 37°C in incubator for one night aerobically after streaking in agar plate. Microbiological findings showed that percentage of Methicillin-resistant Staphylococcus aureus (10%,13%,15%,11%,15%) was maximum as compared to the other bacteria like Staphylococcus aureus, Pseudomonas aeruginosa and E. coli (15%, 15%, 14%, 5%, 17%) ,(23%, 23%, 33%, 38%, 30%),(10%, 13%, 15%, 11%, 15%) respectively.

Keywords: Methicillin-resistant Staphylococcus aureus, E. coli,

INTRODUCTION

Nosocomial or hospital-acquired infections are caused by those pathogens which show antibiotic resistance (Rasheed and Awole, 2007). Nosocomial infections produce abnormalities in the normal functions of the body. These infections create emotional stress in the patients and ultimately reduce the quality of life (Ekrami et al., 2010). Consideration of nosocomial infections depends upon the site and pathogen distribution. Different studies concluded that Staphylococcus aureus, Pseudomonas aeruginosa and E. coli are the notorious pathogen mainly causes nosocomial infections (Jeong et al., 2002).

Now- a- days mostly Methicillin-resistant Staphylococcus aureus (MRSA) is major gram positive bacterial pathogen caused nosocomial infections (Hira Vishal et al., 2010). Methicillin resistance is mediated by mecA gene encoding a penicillin binding protein with reduced affinity to β -lactam antibiotics (Nomura et al., 2010) Methicillin resistant Staphylococcus epidermidis is skin oriented bacteria involved in the nosocomial infections in patients as well as medical staff of the hospital (Chaieb et al., 2005).

Nosocomial infections are a worldwide problem of both develop and under develop countries. It is very complicated situation for patients and medical staff because they all effected by different type of pathogen in the hospital which may be life

threatening (Yameen et al.,2010). WHO conducted a estimated survey 70 hospitals of 20 countries respectively and published its final report that nosocomial infection is a major problem in medical institutions (Bilal Ahmed 2013). World Health Organization represented its report that 9% hospital patients had nosocomial infections. World Health Organization also forecasted that in future 1.4 million people may acquire nosocomial infections if not take solid measures against it.

MATERIALS AND METHODS

This study was conducted in Jinnah hospital Lahore and samples were collected from orthopedic, medicine, surgery, pediatric and urology Departments. After collection each samples were send to Microbiology Department for further microscopic examination. All the collected blood samples were streaked in agar plates and put at 37°C in incubator for one night aerobically. Consider phenotypic characteristics for identification of bacterial colonies. Total 100 patients of age 02-50 years from different Departments were selected for current study. Clinical raw data was expressed bio-statistically by applying the SPSS.

RESULTS

In this study one hundred patients with nosocomial infections, 10 from Orthopedic, 15 from Medicine, 30 from Surgery, 15 from Pediatric and 30 from Urology department were selected from Jinnah hospital Lahore. According to the table A, their average age was 02-50 years respectively. Their blood samples were sent to the Microbiology

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Department for further microscopic examination. All the collected samples were streaked in agar plates and put at 37°C in incubator for one night aerobically. The mean percentage values of Staphylococcus aureus, Pseudomonas aeruginosa, Methicillin-resistant Staphylococcus and E. coli stain in the blood samples of patients selected from Orthopedic, Medicine, Surgery, Pediatric and Urology wards were seen (14%,24%,19%,10%,18%), (15%,15%,14%,5%,17%),(23%,23%,33%,38%,30%),(10%,13%,15%,11%,15%) respectively. The results showed that maximum percentage of bacterial count in the nosocomial infected patients was of

Methicillin-resistant Staphylococcus. The above results described that mainly the notorious bacteria in nosocomial infection was Methicillin-resistant Staphylococcus.

Table A: 100 patients from different departments

Wards	n	Ages
Orthopedic	10	15-50 years
Medicine	15	20-50 years
Surgery	30	20-50 years
Pediatric	15	2-10 years
Urology	30	20-50 years

Table B: Mean % of bacterial pathogen found in the collected samples of patients.

Wards	Staphylococcus aureus Mean %	Pseudomonas aeruginosa (Mean %)	Methicillin-resistant Staphylococcus aureus (Mean %)	E. coli Mean %
Orthopedic	14%	15%	23%	10%
Medicine	24%	15%	23%	13%
Surgery	19%	14%	33%	15%
Pediatric	10%	5%	38%	11%
Urology	18%	17%	30%	15%

DISCUSSION

Nomura et al., 2010 proved through their study that Staphylococcus aureus is the most common cause of nosocomial or hospital-acquired infections. They mentioned in their research that significantly the major isolated bacteria from the blood of hospitalized nosocomial infected patients were Methicillin-resistant Staphylococcus aureus (MRSA). A study described that percentage proportion of Methicillin-resistant Staphylococcus aureus was higher than other pathogens in the blood of nosocomial patients.

In the same pattern present study concluded that main cause of nosocomial infections is Methicillin-resistant Staphylococcus aureus. In this study percentage compositions of different bacteria in the blood samples were observed and calculated therefore results showed that percentage of Methicillin-resistant Staphylococcus aureus (10%,13%,15%,11%,15%) was maximum as compared to the other bacteria like Staphylococcus aureus, Pseudomonas aeruginosa and E. coli (15%, 15%, 14%, 5%, 17%), (23%, 23%, 33%, 38%, 30%), (10%, 13%, 15%,11%,15%) comparatively.

CONCLUSION

The findings of this study showed that Methicillin-resistant Staphylococcus aureus is the major cause of nosocomial infections.

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