ORIGINAL ARTICLE

TRENDS OF NOSOCOMIAL INFECTIONS IN A PRIVATE HOSPITAL OF SURAT, GUJARAT

Latika N Purohit[1], Prashant V Kariya[2]

Author's Affiliations: [1]Assistant Professor, Dept. of Microbiology; [2]Assistant Professor, Dept. of Pediatric, Government Medical College, Surat, Gujarat
Correspondence: Dr Latika N. Purohit Email: drlatikanitin@gmail.com

ABSTRACT

Background: Nosocomial infection or hospital acquired infection refers to the infection occurring in patients after admission at the hospital that was neither present nor incubating at the time of admission. Infection occurring more than 48 hours after admission is usually considered nosocomial. These nosocomial infections (NI) occur among 7-12% of the hospitalized patients globally with more than 1.4 million people suffering from the infectious complications acquired in the hospital.

Methodology: The current study was done in a multi speciality hospital of Surat, Gujarat. This hospital is having Surgery, Obs & Gynec, Medicine, Orthopedic speciality under one roof. All patients admitted in the hospital from January 2015 to June 2015 were analysed for Nosocomial Infections. CDC (Centre for disease control & prevention) guidelines were used to identify nosocomial infections. Total 125 patients were enrolled in the study.

Result: In our study, total 125 patients were diagnosed as having nosocomial infections in two years. Out of these, 58 (46.4%) were female and 67 (53.6%) were male. Thus, male predominance was observed. We observed that Urinary tract infection (UTI) was the most common Nosocomial infection. Out of total 125 patients, 48 (38.4%) were having UTI. Surgical site infection (SSI) was the second most common culprit. SSI was observed in 32 (25.6%) patients. It was followed by sepsis (20%). It was observed that E.Coli was the most common micro-organism isolated from UTI and SSI patients. Whereas, Staph. Aureus and Klebsiella were the most common micro-organism isolated from patients of Sepsis and LRTI respectively. In patients of UTI and SSI, Psedomonas and Klebsiella were other common organisms isolated. From many samples, more than 1 micro-organism was isolated.

Key words: Nosocomial Infection, Surgical site infection, Urinary tract infection

INTRODUCTION

Nosocomial infection or hospital acquired infection refers to the infection occurring in patients after admission at the hospital that was neither present nor incubating at the time of admission. Infection occurring more than 48 hours after admission is usually considered nosocomial. It is one of the public health problems throughout the world. The infection causes the patient's physical and mental sickness that makes the patient stay longer in the hospital without necessity.[1]

Studies throughout the world document that nosocomial infections are a major cause of morbidity and mortality. A high frequency of nosocomial infections is evidence of a poor quality of health service delivery, and leads to avoidable costs. Many factors contribute to the frequency of nosocomial infections hospitalized patients are often immunocompromised, they undergo invasive examinations and treatments, and patient care practices and the hospital environment may facilitate the transmission of microorganisms among patients. The selective pressure of intense antibiotic use promotes antibiotic resistance. While progress in the prevention of nosocomial infections has been made, changes in medical practice continually present new opportunities for development of infection.

Infections acquired in the hospital account for major causes of death, morbidity, functional disability, emotional suffering and economic burden among the hospitalized patients. These nosocomial infections (NI) occur among 7-12% of the hospitalized patients globally with more than 1.4 million people suffering from the infectious complications acquired in the hospital.[2] The most frequent nosocomial infections are infections of surgical wound, urinary tract infections and lower respiratory tract infections.[3] Surgical

site infections (SSI) are the third most commonly reported nosocomial infection and they account for approximately a quarter of all nosocomial infections.[4] Surgical site infections are the most common nosocomial infections in surgical patients- accounting for about 24% of the total number of nosocomial infections. [4,5,6] It's rate has varied from a low of 2.5% to high of 41.9%.[7]

The present study was done with objective of documenting rate of Nosocomial infections and identifying common micro-organisms associated with it in specified population.

METHODOLOGY

The current study was done in a multi speciality hospital of Surat, Gujarat. This hospital is having Surgery, Obs & Gynec, Medicine, Orthopedic speciality under one roof.

All patients admitted in the hospital from January 2015 to June 2015 were analysed for Nosocomial Infections. CDC (Centre for disease control & prevention) guidelines were used to identify nosocomial infections.[8]

Permission was obtained from hospital administration. Written informed consent was taken from patients after explaining the study.

All patients admitted in hospital for more than 7 days were checked for possible Nosocomial infection. Clinical and demographic information of each patient was noted . Clinical specimens like urine, pus, blood, sputum, pleural fluid, other fluids & tips of invasive devices were processed in microbiology laboratory. Identification of clinical isolates & their antimicrobial profile was performed by standard microbiological methods.[9]

Total 145 patients were identified as having Nosocomial Infections. Out of these, 20 were not ready to give informed written consent and those patients were excluded from the study. Thus, 125 patients were enrolled in the study.

RESULTS

In our study, total 125 patients were diagnosed as having nosocomial infections in two years. Out of these, 58 (46.4%) were female and 67 (53.6%) were male. Thus, male predominance was observed. Most of the patients were from the age group of 30 to 40 years.

Table 1: Distribution of patients according to type of Nosocomial Infections (N=125)

Type of Infection	Cases (%)
Urinary tract Infection (UTI)	48 (38.4)
Surgical site infection (SSI)	32 (25.6)
Sepsis	25 (20.0)
Lower respiratory track infection (LRTI)	9 (7.2)
Liver Abscess	4 (3.2)
Other	7 (5.6)

Table 1 shows distribution patients according to type of Nosocomial infections. We observed that Urinary tract infection (UTI) was the most common Nosocomial infection. Out of total 125 patients, 48 (38.4%) were having UTI. Surgical site infection (SSI) was the second most common culprit. SSI was observed in 32 (25.6%) patients. It was followed by sepsis (20%). Thus, UTI, SSI and sepsis together constitute 84% of Nosocomial infection. Apart from these, Lower respiratory track infection (LRTI), Liver abscess etc. were also having share in Nosocomial infection.

Table 2: Distribution of micro-organism according to identified site

Microorganism	UTI	SSI	Sepsis	LRTI	Liver Abscess
E.Coli	46.2%	22.4%	10.2%	14.8%	35.2%
Acinetobacter	6.2%	15.8%	12.1%	10.0%	0
Psedomonas	20.2%	20.5%	0	20.0%	6.8%
Klebsiella	16.8%	17.2%	11.4%	25.5%	52.4%
Proteus	4.5%	7.5%	0	0	0
Staph. Aureus	2.1%	18.5%	36.4%	0	3.1%
Candida	6.4%	7.2%	12.3%	12.4%	2.8%
Other	3.0%	2.5%	15.2%	7.2%	3.5%
More than 1	15.4%	12.4%	18.2%	14.7%	10.8%

Table 2 shows distribution of micro-organism according to identified site. It was observed that E.Coli was the most common micro-organism isolated from UTI and SSI patients. Whereas, Staph. Aureus and Klebsiella were the most common micro-organism isolated from patients of Sepsis and LRTI respectively. In patients of UTI and SSI, Psedomonas and Klebsiella were other common organisms isolated. From many samples, more than 1 micro-organism was isolated.

From liver abscess, most common organism isolated was Klebsiella (52.4%). E.coli was also isolated from 35.2% of patients of Liver Abscess.

DISCUSSION

Nosocomial infection is emerging as a new threat to public health. This depends on severity of illness, length of hospital stay, therapeutic procedure, irrational use of antimicrobial agents etc.

We found that among nosocomial infections, UTI, SSI, Sepsis and LRTI are most common. In a similar study done by Mukherjee et al, urinary infection (45%) was the most common infection followed by pulmonary infections (30%), blood stream infections (16%) & skin infections (3.75%). [10] Our SSI rate was favorably compared with SSI rate of Shrivastava et al (10.19%), shaw et al (16.9%) and desa LA et al (18.92%). [11, 12, 13]

Predominance of skin & surgical site infection in our study could be due to the reason that majority of patients were from surgical ward & were using invasive devices. Another study by Rosineide et al reported, skin & surgical site infection (56%) as the most frequent infection and most of the patients were from surgical wards. [14]

One of the most common risk factor of Nosocomial infection may be the use of invasive devices In 56.9% patients, nosocomial infections were associated with use of invasive devices such as urinary & CVP catheters, ventilators & surgery. These findings indicate that nosocomial infections are often associated with the use of invasive devices. Therefore to effectively reduce burden of these infections, the use of invasive devices should be minimized and specific disinfection precautions should be taken during application of devices. The length of hospitalization, which is a well known risk factor related to severity of disease and affects health costs, was also a risk factor for development of hospital acquired infections. Use of antibiotics prior to infection and associated chronic morbidities were other risk factors for nosocomial infections in elderly patients. Similar risk factors were implicated in a study reported by Mukherjee et al.[10]

In our study we found that E.Coli was the most common micro-organism isolated from UTI and SSI patients. Whereas, Staph. Aureus and Klebsiella were the most common micro-organism isolated from patients of Sepsis and LRTI respectively. In patients of UTI and SSI, Psedomonas and Klebsiella were other common organisms isolated. From many samples, more than 1 micro-organism was isolated. In contrast to this mukherjee et al reported Pseudomonas and Richards et al reported Candida as most common organism associated with UTI. [10, 14] These differences could be explained by differences in geographic location & health care system.

Multi drug resistance was also observed in our study. Similar observations were also reported by Mohanasundaram et al. The most likely explanation for this phenomenon can be extensive & indiscriminate use of antibiotics.[15]

CONCLUSION

It was concluded from this study that Urinary tract infections and Surgical Site Infections were the most common Nosocomial infections. E.Coli, Pseudomonas and Klebsiella were the mast common micro-organisms isolated from the specimens.

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