

Analysis of Incidence of Nosocomial Infections Among Patients Admitted in Wards in a Tertiary Care Hospital

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ABSTRACT

Background: Nosocomial infection as a localized or systemic condition that results from adverse reaction to the presence of an infectious agent (s) or its toxin (s) that was not present or incubating at the time of admission to the hospital. Therefore, the present study was conducted to assess the incidence of nosocomial infections among patients admitted in wards in a tertiary care hospital.

Materials and Methods: The study was conducted among 300 patients admitted in hospital. Data was collected from the patient and analysis of infections, and their causes was carried out. Detailed history and physical examination were carried out. Blood and urine specimen among study patients was taken. The recorded data was compiled, and data analysis was done using SPSS (SPSS Inc., Chicago, Illinois, USA).

Results: The study was conducted among 300 patients including 156 males and 144 females. Nosocomial infection was present in 32.69% males and 19.44% females. Overall incidence of nosocomial infection was 26.33%. Maximum cases were of urinary tract infections (39.24%) followed by pneumonia (25.31%).

Conclusion: The present study concluded that incidence of nosocomial infection was 26.33%. Maximum cases were of urinary tract infections followed by pneumonia.

KEYWORDS: Nosocomial Infection, Urinary Tract Infections, Pneumonia.

INTRODUCTION

Nosocomial Infection is defined as infection arising in a patient at the time of care in the hospital or other health-care facility, which was not evident or incubating at the time of admission. This comprises infections developed in hospital and any other places where patients obtain health care and may appear even after discharge. Nosocomial Infection also comprises occupational infections that are found among staffs working in the health-care facility.¹

Nosocomial Infections, also called health care-associated infections, is defined by the CDC as a localized or systemic condition resulting from an adverse reaction to the presence of an infectious agent(s) or its toxin(s), without any evidence that the infection was present or incubating at the time of admission to the acute care setting.²

These infections are opportunistic, and microorganisms of low virulence can also cause disease in hospital patients whose immune mechanisms are impaired.

Hence, antimicrobial resistance increases in such cases making increase in morbidity and mortality. Nosocomial infections are typically exogenous, the source being any part of the hospital ecosystem, including people, objects, food, water, and air in the hospital.³ A prevalence survey conducted under the auspices of World Health Organisation (WHO) in 55 hospitals of 14 countries representing 4 WHO Regions (Europe, Eastern Mediterranean, South-East Asia and Western Pacific) showed an average of 8.7% of hospital patients had nosocomial infections.⁴

The highest frequencies of hospital acquired infections were reported from hospitals in the Eastern Mediterranean and South-East Asia regions [11.8 and 10.0% respectively] with a prevalence of 7.7 and 9.0% respectively in the European and Western Pacific Regions.⁵ The most common pathogens are staphylococci, pseudomonas, E-coli, Klebsiella, mycobacterium tuberculi, candida, aspergillus, fusarium,

trichosporon and malassezia all of these pathogens leads to increased risk of morbidity and mortality.⁶ In India, there are no mandatory reporting and recording systems for nosocomial infections both at the national and state level.⁷ Therefore, the present study was conducted to assess the incidence of nosocomial infections among patients admitted in wards in a tertiary care hospital.

MATERIALS AND METHODS

The study was conducted among 300 patients admitted in Department of Medicine, Indian Institute of Medical Science & Research, Warudi, Badnapur, Jalna, Maharashtra, India. Data was collected from the patient and analysis of infections, and their causes was carried out. Detailed history and physical examination were carried out. Blood and urine specimen among study patients was taken after 48 hours of admission who

developed fever after 48hours of admission and followed till discharge from the hospital. Bacterial strains were identified with the help of gram staining and biochemical tests. Patient’s body temperature was also monitored regularly. The relevant investigations were performed according to the clinical presentation of patients. The recorded data was compiled, and data analysis was done using SPSS (SPSS Inc., Chicago, Illinois, USA).

RESULTS

The study was conducted among 300 patients including 156 males and 144 females. Nosocomial infection was present in 32.69% males and 19.44% females. Overall incidence of nosocomial infection was 26.33%. Maximum cases were of urinary tract infections (39.24%) followed by pneumonia (25.31%).

Table 1: Incidence of Nosocomial infections according to gender.

Gender	Nosocomial Infections	
	Present N(%)	Absent N(%)
Male (156)	51(32.69%)	105(67.30%)
Female (144)	28(19.44%)	116(55.%)
Total (300)	79(26.33%)	221(73.66%)

Table 2: Distribution of nosocomial infection among nosocomial positive patients.

Nosocomial infection	Number of patients
Urinary tract infection	31(39.24%)
Pneumonia	20(25.31%)
Soft tissue infections	12(15.18%)
Gastroenteritis	6(7.59%)
Blood stream infections	6(7.59%)
Meningitis	4(5.06%)
Total	79(100%)

DISCUSSION

Hospital-acquired infections (HAIs), also known as healthcare-associated infections (HCAI), are infections occurring in a patient in a hospital or other healthcare facility in whom the infection was not present or incubating at the time of admission.⁸ HAI is a major problem for patient safety and has a high impact in terms of morbidity and mortality.^{9,10}

The study was conducted among 300 patients including 156 males and 144 females. Nosocomial infection was present in 32.69% males and 19.44% females. Overall incidence of nosocomial infection was 26.33%. Maximum cases were of urinary tract infections (39.24%) followed by pneumonia (25.31%).

According to WHO also, the most frequent type of infection in the mixed patient populations in developing countries was SSI (29.1%), followed by UTI (23.9%), BSI (19.1%), Hospital Acquired Pneumonia/HAP (14.8%) and other infections (13.1%).¹¹

The European Centre for Disease Prevention and Control has reported a mean Health Care Associated infections prevalence of 7.1 per cent in Europe¹², and public health reports from the USA estimate it to be 4.5 per cent in 2002¹³. The English National Point Prevalence Survey on HCAI revealed that prevalence had reduced from 8.2 in 2006 to 6.4 per cent in 2011.¹⁴ A study carried out by Koch et al in Norway reported that men present higher overall HAI prevalence than women.¹⁵

Urinary tract infection (UTI) is the most common and frequent nosocomial infection seen in critically ill patients.^{16,17}

The most common reported nosocomial infection in ICUs is urinary tract infection, followed by pneumonia and primary blood stream infection.¹⁸

Infection control strategies such as hand hygiene and wearing gloves; paying attention to well established processes for decontamination and cleaning of soiled instruments and other items, followed by either sterilization or high-level disinfection; and improving safety in operating rooms and other high-risk areas where the most serious and frequent injuries and exposures to infectious agents can resolve the problem to a major extent.¹⁹

CONCLUSION

The present study concluded that incidence of nosocomial infection was 26.33%. Maximum cases were of urinary tract infections followed by pneumonia.

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