



A STUDY ON NOSOCOMIAL INFECTIONS – IS ELDERLY PEOPLE ARE AT RISK? NURSE’S PERSPECTIVES

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Article Info

Received 10/02/2014; Revised 15/02/2014
Accepted 28/01/2014

ABSTRACT

Infections acquired for the period of hospital stay are generally called nosocomial infections. As incubation period varies with the type of pathogen and patients underlying condition, each infection must be individually assessed. The retrospective study was conducted in multispecialty hospital at Mexico. The data were collected from patient records and analyzed for types of infections, their causes and pathogens distribution pattern. A total of 98 records of patients admitted to Hospital, were considered and out of these 11 belonged to medical cases. The recent trends of nosocomial infection were analyzed in patients admitted in MICU of a multispecialty hospital. Clinical data were collected from patients that presented with symptoms of nosocomial infection in MICU. Incidence of nosocomial infections was 12.24%. In this 33.33% is of Urinary tract infection which is the most frequent nosocomial infection; followed by 16.67% each of Pneumonia, Infection in blood stream, Skin and soft tissue infection. Gastroenteritis and Meningitis 8.33% each. The nosocomial infection was found to be high in the age group of 40 to 60 years. The male was more prone than the female to nosocomial infections. In geriatric patients admitted to MICU are common to get Nosocomial infections. We suggest that more studies are needed to be carried out in Indian population to plan long term strategies for prevention and management of nosocomial infections. Systematic and standardized large scale studies be carried out on elderly population for prevention and management of nosocomial infections. Early detection of infections, limited and short term use of invasive devices can therefore, contribute considerably towards decreasing the incidence of nosocomial infections in elderly.

Key Words: Nosocomial Infections, Elder.

INTRODUCTION

Infections acquired for the period of hospital stay are generally called nosocomial infections. Previously, they were defined as infections that arise following to 48 hours of hospital admission¹. According to National Nosocomial Infections Surveillance system “a nosocomial infection as a localized or systemic condition that results from adverse reaction to the existence of an infectious agent(s) or its toxin(s) that was not exist or incubating at the time of admission to the hospital [1] As incubation period varies with the type of pathogen and patients

underlying condition, each infection must be individually assessed.

As incubation period varies with situations in which an infection is considered to be nosocomial [1,2]; Infection that is acquired in the hospital, but does not become apparent until hospital discharge and infection in a neonate that results from passage through birth canal. The geriatrics has faulty host defenses that compromise their



capability to deflect infectious agents. Factors which immunity, malnutrition, immune senescence, medications, chronic diseases and functional impairments. T lymphocyte production as well as proliferation turns down with age, which results in diminished cell-mediated immunity and decreased antibody production to fresh antigens. Chronic diseases such as atherosclerosis, malnutrition, dementia, diabetes mellitus, and cancer affects to certain types of infections[2].

Along with these, functional impairments viz. incontinence, immobility, dysphasia associated with aging necessitates the use of, feeding tubes, urinary catheters and other invasive devices enhancing vulnerability to nosocomial infections[3]. There is an urgent need to focus on problems of geriatric patients, exclusively infections amongst Medical Intensive Care Unit (MICU) admissions. According to published papers [4-6] the most widespread nosocomial infections among patients in the ICU are urinary tract infection (UTI), pneumonia, bloodstream infections(BSI), skin and soft tissue infections (SSTI), gastro-enteritis(GI), hepatitis and central nervous system infections(CNSI) like meningitis.

In the developed countries alone billion dollars are used yearly just for the control of these hospital acquired infections alone which reveal an added feature of the magnitude of the problem. Due to the nosocomial infections, the magnitude of the problems of is even more serious in other countries, one could one assume the feeble picture in terms of morbidity, mortality as well as the imperceptible but very important economic loss. The other annoying fact of the natural history of Nosocomial or Hospital Acquired Infections is that they will not be eradicated completely; but many of them are prevented by proper control methods. There has been a demonstrated reduction of morbidity and mortality where control

manipulate immune fitness are changes in non adaptive programmes can be implemented. Furthermore, the money can be saved by cutback of nosocomial infections.

This was a retrospective study conducted in MICU for 6 months with the total of 98 records of patients. The study method includes collection of data of nosocomial infections from patient records and out of these 12 belonged to non surgical cases. Detailed medical and medication history along with physical examination notes were studied in all the records. A diagnostic criteria⁷ for nosocomial infection is given in table 1.

RESULTS

The present study was conducted on 98 patients admitted in MICU department of multispecialty hospital. Twelve of 98 patients (12.24%) suffered from nosocomial infection, there were 10 males and 2 females. The patients' mean duration of stay in the hospital was 15.2 days. Table 2 gives the distribution pattern of the nosocomial infections in our study patients were UTI (33.33%), SSI (16.67%), LRTI (16.67%), GI (8.33%) and meningitis (8.33%) and BSI(16.67%). The distribution pattern of pathogens identified in nosocomial infection was given in table 3. In our current study the common pathogens for nosocomial infection of UTI was *Pseudomonas Aeruginosa*, UTI and GI was *E.coli*, UTI and BSI was *Staphylococcus Aureus* and SSI, Meningitis was *staphylococcus epidermidis*.

In present study, we have isolated the pathogens of the various nosocomial infections and found that most of them were device related as shown in Table 4. UTI was associated with urinary catheter; pneumonia was linked to ventilator and blood stream infections were related to CVP catheter.

Table 1. Diagnostic criteria for nosocomial infections [7]

Nosocomial Infection	Clinical features	Laboratory features
Urinary tract Infection (UTI)	Fever, Lower abdominal pain, Changes in urine characteristics	Leukocytosis, Positive urine culture
Pneumonia	Fever, Pleuritic chest pain, Decreased intensity of breath sounds and presence or increase in rales	Leukocytosis, Sputum for Gram stain, Positive sputum culture, Positive Chest X-Ray
Blood stream Infections (BSI)	Unexplained fever with chills and rigor Pain, tenderness or purulent drainage at the site of insertion of IV access or CVP Catheter	Leukocytosis, Positive blood Culture, Positive CVP catheter culture (after catheter removal)
Skin and soft tissue Infections (SSI)	Pain, swelling, tenderness or inflammation and warmth of skin, Purulent drainage from skin and Fever	Smear for Gram Stain, Positive swab culture, Leukocytosis
Gastroenteritis	Increased frequency of stool, Change inconsistency of stools, Fever & Dehydration	Leukocytosis, Positive stool culture
Meningitis	Fever, Altered sensorium, Headache, Neck stiffness, Vomiting .	Leukocytosis, CSF- cell count, cell type, culture, sugar, protein



Table 2. Distribution pattern of nosocomial infections among Nosocomial Positive Patients

Type of Nosocomial Infection	No. of Patients	Percentage
Urinary tract Infection (UTI)	4	33.33
Pneumonia	2	16.67
Blood stream Infections (BSI)	2	16.67
Skin and soft tissue Infections (SSI)	2	16.67
Gastroenteritis	1	8.33
Meningitis	1	8.33

Table 3. Pathogens isolated in various nosocomial infections

Organism Isolated	Nosocomial Infection					
	Urinary tract Infection	Pneumonia	Blood stream Infections	Skin and soft tissue Infections	Gastroenteritis	Meningitis
Pseudomonas Aeruginosa	2 (50%)	-	-	-	-	-
E.coli	1(25%)	-	-	-	1 (100%)	-
Gram -ve aerobes	-	1 (50%)	-	-	-	-
Candida albicans	-	-	-	-	-	-
Staph. Aureus	1 (25%)	-	2(100%)	-	-	-
Staph. Epidermidis	-	-	-	1 (50%)	-	1(100%)
Unidentified	-	1 (50%)	-	1 (50%)	-	-
Total	4 (100%)	2 (100%)	2 (100%)	2 (100%)	1 (100%)	1 (100%)

Table 4. Device related Nosocomial infections

Type of Nosocomial Infection	Type of device used	Infection with device	Infection without device
Urinary tract Infection (UTI) 4	Catheter	3 (75%)	1 (25%)
Pneumonia – 2	Ventilator	1 (50%)	1 (50%)
Blood stream Infections (BSI) -2	CVP catheter	2 (100%)	-
Other -4	-	-	4
Total		6 (50%)	6 (50%)

DISCUSSION

The incidence of nosocomial infections in our current study was less compared to 33.5% by Beaujean et al [8]. However, our study population consisting of 12 patients out of 98 MICU admissions is a comparatively small sample size. The general distribution pattern of the nosocomial infections that appeared in our study showed UTI was found to be the most common, followed by other infection which is similar to other study done by Richards et al [9] and Lee et al [10]. Our study population of 12 patients included 10 male and 02 female patients. Likewise our study revealed that 75% of UTI, 50% of pneumonia and 100 % of BSI could be due to the use of invasive devices which is contributing to nosocomial infections which is similar to the results of Richards et al [9] study. Our study result does not differ considerably with the findings of Richards et al is the pathogen distribution pattern of nosocomial infections also. Yet, we found that *Pseudomonas aeruginosa* to be the major cause

of nosocomial UTI which differ from *Candida albicans* as reported by Richardset al[9,11].The differences in

nutritional status, geographical locations and health care systems could explain such differences.

The nosocomial infections have now turned into one of the leading causes of death [12-29]. Recent findings suggested strongly that unsafe medical care might be an important factor in HIV transmission [13]. During the past 1-2 decades minute progress has been made in expressing the basic problems accountable for the mounting rates of nosocomial infections in several countries, and in a few countries, conditions are in fact worsening. It increase the cost of healthcare in the countries least able to pay for them during increased length of hospitalization; treating with costlier drugs and use of other allied services like laboratory tests etc. Many such infections are prevented with readily available at the same time relatively cheaper strategies by following the suggested infection prevention practices, in particular hand hygiene as well as gloves



wearing; Showing attention to well recognized processes and procedures for decontamination and cleansing of soiled instruments and other items and improving protection in operating rooms and other high-risk areas where the severe and frequent injuries along with exposures to infectious agents occur.

CONCLUSION

In current study, the geriatric population is found to be highly susceptible to nosocomial infections. Our findings are similar to annotations made in other studies in

various literatures. Urinary tract infections and pneumonias are the most common type of nosocomial infections. Present study also shows that the infection incidence rate increases with invasive devices use and early detection of infections, short term use or restricted use of invasive devices can contribute appreciably towards declining the incidence of nosocomial infections in geriatric patients. We recommend large scale studies to be carried out systematically on geriatrics for prevention and management of nosocomial infections.

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