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RESEARCH ARTICLE

SURVEILENCE INCIDENCES HAIs : URINARY TRACT INFECTION (UTI), SURGICAL SITE INFECTION (SSI), AND PHLEBITISAT HOSPITALIN INDONESIA

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ABSTRACT

Introduction: Hospital Acquired Infections (HAIs) were caused by various common bacteria, fungi and viruses during medical treatments, thus becoming the significant causes of morbidity and mortality. The lack of data about HAIs in Indonesia hospitals indicates a poor implementation of patients' safety.
Methodology: This is a descriptive quantitative research which employssurveillance approach. The population patients who have HAIs at the hospital.The samples was the patients who use catheter and have undergone surgery
Result: The incidence of Urinary Tract Infection at the Hospital in Indonesia was 114.75% and the infection is caused by Escherichia Coli germ. The Surgical Site Infections consist of 87% of superficial infection, 13% of incision, and 40% of aureusgerms which cause the infections. Phlebitis incidencedfrom May to June was high as 178. 21%. The microbacteria found in patients with phlebitis are E.Colly, Staphylococcus, dan Bacillus.
Conclution: The highest number of germs found to cause UTI because of catheter application is Escherichia Coli. The indication of catheter application exactly 100% on the patients who experienced urine retention, terminal disease and output urine observation.

INTRODUCTION

Every year,the rate of HAIs keeps on increasing in both developed and developing countries.(1) All over the world, 10% of inpatients get new infections during hospitalization or as many as 1,4 millions of infection every year. Meanwhile, 20 thousand deaths occur in the U.S. every year due to HAIs. In Indonesia, researches have been conducted in eleven hospitals in DKI Jakarta. In 2004, 9.8% of inpatients got new infections during hospitalization. In 1999, a descriptive study was conducted in Yogyakarta by Suwarni. The studies carried out in all hospitals show that the proportion of HAIs incidence ranges from 0.0% to 12.06%, with an overall approximation of 4.26%.[1]The research entitled 'The Incidence of Nosocomial Infection at Urinary Tract due to urinary catheterization at class III of Inpatient Surgery Installation at the hospital of Dr. Mohammad Housin Palembang showed that 20.84% incidences happen. Based on the diagnosis unit, 8.34% are diagnosed at neurosurgery unit, 6.24% are at digestive surgery unit, and 4.17% are at oncology unit. In fack risk factor of surgical site infection contributed from behaviour and environment (Luz et al., 2013).

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Active surveillance the most effective to know prevalence rate. The prevalence of colonization in patients with a high risk of MRSA colonization exceeded 30%. Active surveillance cultures should be considered in patients at high risk for MRSA colonization (10%) (Wakatake et al., 2012)

METHODOLOGY

Study was Quantitative research with designed cohort procpective, surveillance approach. The population were all subjects who meet the requirements as patients who are prone to HAIs at the Hospital. Through accidental sampling, the samples consist of population who were accessible to be used as research subjects . The subjects were patients who use catheter, patients who have undergone surgery, and patients who receive infusion.The variable of this research was incidences HAIs (Healthcare Associated Infections) consisting of : a) Urinary Tract Infection (UTI), b) Surgical Site Infection (SSI), and c) Phlebitis incidence.

RESULT

Surveillance of catheter installment

The incidence of patients with symptomatic Urinary Tract InfectionDuring the observation, the researcher found 21 patients who get urinary tract infection and they use catheter bags for 183 days. So, the patients who get urinary tract infection is 114.75%.

The characteristics of respondents with catheter use

Characteristics	Total	Percentage
Diagnosis		
Surgical Unit	43	32,8
MaternityUnit	41	31,3
Internist	47	35,9
Indication		
Accurate	131	100
Inaccurate	0	0
Catheter type		
Sillicon	0	0
Folley	131	100
Catheter number		
16	85	64,9
18	46	35,1
Reuse		
Yes	2	1,5
No	129	98,5

Pattern of germs causing Urinary Tract Infection

After the patients who get symptomaticUrinary Tract Infection are identified, three urine samples were taken and culture is done to find out the patterns of germs that cause the infection. The 3 cultured samples show that they are postively infected by UTI because the germs are more than /ml of urine and they are caused by the same germ called *Escherichia Coli.*

The surveillance of Surgical Site Infection (SSI)

Characteristics of surgery

Surgery characteristics	Frequency	Percentage
Surgery due to trauma No	69	69
Yes	31	31
Surgery type Elective	98	98
Emergency	2	2
Multiprocedure No	100	100
Radiotherapy No	100	100
Glucose<200	100	100

Table of The surgery

ASA Score	Frequency	Percentage
ASA 1	82	82
ASA 2	17	17
ASA 3	1	1
Wound classification		
Clean wound	86	86
Clean, contaminated wound	11	11
Dirty wound	3	3
Drain use		
Drain Yes	85	85
No	15	15
Wound classification		
Clean wound	86	86
Clean, contaminated wound	11	11
Dirty wound	3	3

The phlebitis incidents were 178.21%.From 18 patients that experienced phlebitis, 4 patients had microbiology culture in which phlebitis sample examination was conducted once that showed (+) result. The microorganism found were *E.colly, staphylococcus and Bacillus.*

Table of patterns of germs causing Surgical Site Infection at the Hospital in Indonesia

Microorganisms	Frequency	Percentage
Staphylococcus Aureus	4	40
Streptococcus Aureus	3	30
Pseudomonas	2	20
E. coli	1	10
Total	10	100

Surveillance of Phlebitis

Table of frequency distribution of liquid type, cannula, and Phlebitis at the Hospital in Indonesia

	n	(%)
Liquid type		
NaCl	146	27.8
RL	180	61.1
Otsu NS	18	5.6
Metronida	16	5.6
Cannula size	62	
16	71	11.1
18	29	11.1
20	168	5.6
22		66.7
Number of days ofPhlebitis infection		
2	2	1.11
3	7	38.90
4	7	38.90
5	2	11.11
Clinical symptoms		
Pain andfever	13	40.6
Redness	9	28.1
Edema	10	31.2
Redness along the path of vein	0	0.0

DISCUSSION

The surveillance of Urinary Tract Infection (UTI)

Based on the research findings, 85 patients (64.9%) use catheter sizes 16 Fr, and 46 patients (35.1%) use catheter sizes 18 Fr. This is in line for adult women need catheter sizes 14-16 Fr, while adult men need catheter sizes 16-18 Fr.[2] In selecting the size, the nurse should choose the catheter with small diameter because it will provide adequate urine drainage. Using too big catherer can cause bladder irritability, obstruction at the urethra gland, and strictur or urethra ulceration (Al-Qas Hanna et al., 2013).

UTI symptoms

Based on the research findings on the UTI symptoms, there are 19 patients (14.5%) who experienced fever ($\geq 38^0$), 7 patients experienced supra-pubic pain, 8 patients (6.1%) experienced urgency, 9 patients (6.9%) experienced dysuria, and 1 patient (0.8%) experienced costovertebra angle pain. The study was a before-and-after evaluation of a low-technology intervention to reduce duration of urinary catheterization and occurrence of CAUTIs in an MICU. CAUTIs are among complications fundamentally linked to nursing care and most likely constitute a measure of the performance of nursing care. Our results indicate that reductions in CAUTIs can be realized through a nurse-based intervention to avoid unnecessary catheter placement and limit duration of catheter use (5). The research found that 21 patients out of 131 patients who had urination catherization experienced UTI simtomatis and after counted using the formula from CDCthe result is 114, 75%.

In accordance with Rita (2013) who explained that 47.2% of patients from 55 patients who had urination catherization experienced UTI.Stamm (2000) also explained that UTI happens on at least 10%-15% of inpatient who have urination catheter. According to Purnomo (2000) transurethral instrumentation treatment (applied catheter, businasi, endourologi surgery) are the factors that ease the organism to enter the urethral tract. UTI number of 114. 75% is normal range based on the Health department regulation (*Permenkes RI No. 659/MENKES/PER/VIII/2009* about UTI rate on urination catherization in the hospital that is <15%.

The pattern of germ causing UTI

From 3 samples which were examined on urine culture, it is found out that three of them were UTI positive because the number of germs were more than 10^5/ml urine. The germ that caused UTI from those three samples were *Escherichia Coli*, in which it is the largest caused of UTI (Wilson, 2004).

Surveillance Infection on Surgical Area

ASA score

The research findings for patients with ASA score were showed that ASA score 1 was 82% (82 patients), ASA score 2 was 17% (17 patients), ASA score 3 was 1% (1 patient). The ASA score also influences the healing rate on the patients' surgery wound as well as the increase of surgical site infection.According to Jarvis (2007) ASA score is used to know the patient's condition before the surgery. ASA score is used to know whether the patient has systemic abnormality or not. The patient who has abnormal systematic influenced the surgical procedure. ASA score also shows the rate of surgical wound healing of the patient.

The health history of the patient used of medicine

Prophylactic

Based on the observation, 100% of the patients got prophylactic. Prophylactic was given 30 minutes before the surgery. According to Ministry of Health Regulation of Republic Indonesia No. 2406/ *Permenkes RI* No. 2406 (2011) prophylactic is given based on the surgery class and it should be suitable with sensitivity and the pattern of the largest pathogen bacteria in the related case.

Microorganism

The research findings showed that after the wound swab was taken from the patients and examined in microbiology laboratory of medical faculty (FKIK) Muhammadiyah University of Yogyakarta, 5 patients suffered from surgical site infection in which the largest germ was staphylococcus aureus (40%). The wound swab culture was infected by germ when the result of culturing showed the growth of germ in jelly media. This is related to a research conducted by Ahmad et.al. (2007) which revealed that staphylococcus aureus can be described as the most pathogen germ that often caused surgery wound infection.Besides wound swab research conducted by the researcher, the hospital also conducted culturing toward the patients who have experienced surgical site infection.

The result showed that surgical site infection was caused by *pseudomas* and *E.Coli*. According to Zumaro (2009) *E.coli* has a role to cause surgical site infection for 13.6%.

Phlebitis Survaillance

The highest phlebitis incident in Hospital happened in March for 0.82%while the lowest was in August for 0.13%. Based on the research, the phlebitis incidents were 178.21%. According to the researcher, this was caused by the lack of nurses' attention toward infusion care on patients. There are many factors that the increased number of infection in hospital such as too many patients, lack of nurses on duty to take care of the patients and antiseptic availability to promote clean care. Hence, afurther research was conducted to find out the factors that caused infection for the follwing months.

Conclusion

Urinary Tract Infection surveillance, Urinary Tract Infection caused by catheter application was found on 21 samples (114.75%) out of 131 research sample. The highest number of germs found to cause UTI because of catheter application is *Escherichia Coli.*The indication of catheter application exactly 100% on the patients who experienced urine retention, terminal disease and output urine observation. Surveillance on surgical site infection, the patients experienced surgical site infection are 87% of superficial infection and 13% of deep incision. 40% of germs causing surgical site infection is *Staphylococcus aureus.*The number of phlebitis in Hospital from May to June was 178.21%. microorganism found on the phlebitis patients *were E.colly, staphylococcus and Bacillus.*

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