Prevalence of Urinary Tract Infection In General Medicine Ward In A Tertiary Care Hospital And Its Bacteriological Profile

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Abstract: *Urinary tract infections(UTI) is the most common bacterial infection prevalent in both males and females and contribute to second most common nosocomial infection raising the hospital stay, morbidity and various complications related to it. Urethral catheters serve as a niche for proliferation and multiplication of bacteria's and biofilm produced by them provide resistance to antimicrobials and they spread elsewhere. This cross sectional study was conducted on 1008 adult patients admitted to general medicine ward in Kolkata.The age of patients varied from 14 to 102 years and study excluded those not willing to participate in the study.Our study revealed that in total 1008 patients the prevalence rate of UTI was 23.4 percent. In them type of UTI were maximum of LUTI type 78.4%, followed by UUTI 14.4% and Urosepsis7.2%. Among total uropathogens isolated E.coli (44%) was most prevalent in all sex and age group independent of risk factors diabetes and catheters, followed by Klebsiella (14%), Enterobacter (9.74%) and Citrobacter (7.20%).gram negative were 87.7% and gram positives were 12.29%.The chance of infection in catheterised patients is greater with MRSA, Pseudomonas and Staph aureus. Although the results show the development of UTI does not rely solely on health professionals' practices, the authors conclude these professionals can have an important role in the prevention of UTI reducing the number of risk factors*
Keywords*: Bacteria, catheterization, Escherichia coli, urinary tract infection*

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I. Introduction

Urinary Tract Infection is the most common bacterial infection prevalent in both male and female patients, causing discomfort in elderly patients, thus representing bacteraemia, septic shock, respiratory disease syndrome and death. There are number of factors that increase the risk of developing UTI. Between 15% and 25% of hospitalized patients may receive short-term indwelling urinary catheters. Virtually all healthcare-associated UTIs are caused by instrumentation of the urinary tract. Catheter-associated urinary tract infection (CAUTI) has been associated with increased morbidity, mortality, hospital cost, and length of stay.Therefore, investigating epidemiology of UTIs (prevalence, risk factors, bacterial isolates and antibiotic sensitivity) is fundamental for care givers and health planners to guide the expected interventions. Thus, the aim of this study was to determine bacterial etiologic agent of uropathogens.

II. Objectives

1. Determine the prevalence of urinary tract infection (UTI) in medicine ward in a tertiary care hospital.
2. To study its bacteriological profile.

III. Materials And Method

3.1 Study Design The study was an observational and cross sectional study. The study protocol was approved by the Institutional Ethical committee.

3.2 Study Setting The study was conducted at medicine ward, SSKM and IPGMER, Kolkata. It is a tertiary level teaching hospital.

3.3study period One And Half Years.

3.4 Inclusion Criteria All Patients Above 14 Years Old.

3.5 Exclusion Criteria Young Patients Less Than14 Yrs. Refused To Participate In The Study.

3.6 study subjects tHE study population comprised of all the patients admitted in General medicine ward, both from emergency and out patients department, with or without urethral catheter. The patients were included in the study group by using consecutive sampling technique.

3.6 Study Design The nature of the study was explained to each patient or their relatives and informed consent were taken from all patients who fulfilled the inclusion criteria and were willing to participate in the study. A thorough detailed history was taken from each patient with special symptoms and signs leading to diagnosis, history of urinary catheter placement along with its duration and any Comorbid conditions present or not. A meticulous general survey and systemic examination including genitourinary, respiratory, cardiovascular, gastrointestinal, nervous system was done to detect any subtle finding. General examination included pulse, BP, pallor Icterus, Clubbing, Cyanosis, and Edema.

3.8 General Investigations Complete Hemogram, Sugar (Fasting And Postprandial / Hba1c), Serum Urea Creatinine, Liver Function Test, Urine for routine and microscopic examination and Urine Culture & sensitivity report, Ultrasound Whole Abdomen & KUB Screening, Chest X-ray(P/A) view.

IV. Results And Analysis

4. 1 Prevalence Of Uti (Significant Bacteriuria)

Total 1008 patients were enrolled for the study out of which 236 (23.4%) had significant bacteriuria. 772 (76.6%) patients were having either normal urine or insignificant bacteriuria.

Table 1: Frequency Of Uti (Significant Bacteriuria) In General Medicine Ward

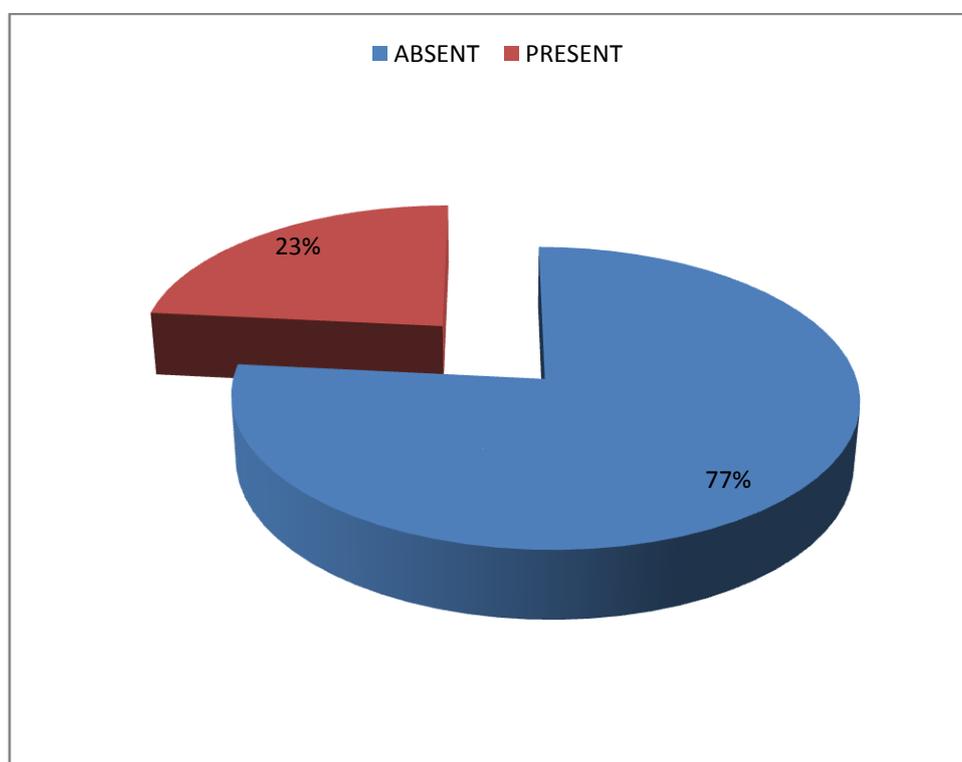| Uti (Sig. Bacteriuria)	Frequency	Percent
Absent	772	76.6%
Present	236	23.4%
Total	1008	100.0%

Fig 1: Prevalence Of Uti (Significant Bacteriuria)

Table 2: Frequency Of Isolation Of Bacterial Uropathogens

URINE C/S		TOTAL samples	Only positive sample
ACINETOBACTER	**SP.**	8	8
ROW	%	100.0	100.0
COL %		0.8	3.33%
CITROBACTER	**SP.**	17	17
ROW	%	100.0	100.0
COL %		1.7	7.20%
COAGULASE -VE STAPH		2	2
ROW	%	100.0	100.0
COL %		0.2	0.84%

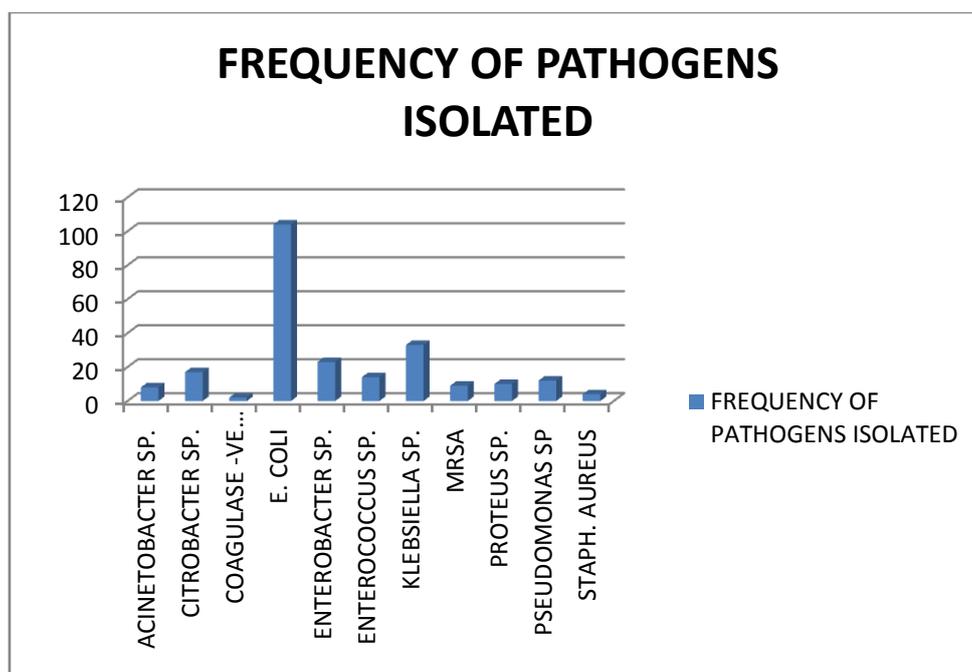|		
E. COLI ROW % COL %	104 100.0 10.3	104 100.0 44.06%
ENTEROBACTER SP. ROW % COL %	23 100.0 2.3	23 100.0 9.74%
ENTEROCOCCUS SP. ROW % COL %	14 100.0 1.4	14 100.0 5.93%
KLEBSIELLA SP. ROW % COL %	33 100.0 3.3	33 100.0 14.0%
MRSA ROW % COL %	9 100.0 0.9	9 100.0 3.81%
PROTEUS SP. ROW % COL %	10 100.0 1.0	10 100.0 4.23%
PSEUDOMONAS SP. ROW % COL %	12 100.0 1.2	12 100.0 5.1%
STAPH. AUREUS ROW % COL %	4 100.0 0.4	4 100.0 1.7%
CONTAMINATED ROW % COL %	121 100.0 12.0	Not included
INSG GR ROW % COL %	39 100.0 3.9	Not included
NG ROW % COL %	612 100.0 60.7	Not included
TOTAL ROW % COL %	1008 100.0 100.0	236 100.0% 100.0%

Fig 2: Frequency Of Isolation Of Bacterial Uropathogens

In our study we found such distribution of uropathogens as depicted in above table and chart. In total 236 UTI patients single pathogen found on urine culture report amounting to bacteria 236 isolates from each patient. In them E.coli was most frequently isolated from 104 patients, which is 44% of the total isolates, second most frequently isolated is Klebsiella 33(14%), then Enterobacter, Citrobacter, Enterococcus, Pseudomonas, ,Proteus, MRSA ,Acinetobacter, Staph aureus And Least Is CONS. Out of total urine C/S report 121 samples were contaminated (12%), 39 (3.9%) had insignificant growth and no growth in 612 samples.

V.   Discussion

The placement of urethral catheter is one of the most common invasive Procedures performed in hospitals. In the present study, among total study population of 1008, the no. of female patients were 556 (55.2%) and the no. of male patients were 452 (44.8%). The age of patients ranged from 14 yrs to 102 yrs. In our study the prevalence of UTI (significant bacteriuria) was 23.4% (236 patients with UTI). Among total 236 UTI patients, 134 were female (56.8%) and 102 were male (43.2%); (p=0.567, not significant) Out of total 1008 patients, 236 (23.4%) had significant bacteriuria, in which patients of age ≤20 yrs 12 (5.1%), in patients of age 21-40 yrs 51 (21.6%), in patients of age 41-60 yrs 110 (46.6%), in patients of age >60 yrs 63 (26.7%) had significant bacteriuria In total 236 isolates from patient E.coli was most frequently isolated from 104 patients, which is 44% of the total isolates, second most frequently isolated is Klebsiella 33(14%),then Enterobacter, Citrobacter ,Enterococcus, Pseudomonas, ,Proteus, MRSA ,Acinetobacter, Staph aureus And Least Is CONS.

VI.   Conclusion

The predisposing factors for UTI are the catheterisation, patient's profile (female sex, children and old age, high levels of dependency). Although the results show the development of UTI does not rely solely on health professionals' practices, the authors conclude these professionals can have an important role in the prevention of UTI reducing the number of risk factors. Minimize urinary catheter use and duration of use in all patients, particularly those at higher risk for CAUTI or mortality from catheterization such as women, the elderly, and patients with impaired immunity.

VII.   Limitations

This is a cross sectional study where patients symptoms, signs and urinary parameters are assessed for a single time. A longitudinal study with a baseline follow up of the patients with UTI and catheters would have been more suitable. It is a single centre study; hence the results may not be applicable to other settings.The study being hospital based, there is always a chance of selection biasing and study population might not be ideally representative of population.

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