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Research Article

**AN EVALUATION ON MANIFESTATION AND OCCURRENCE
OF THE INFECTION OF UNINARY TRACT IN PEDIATRIC
INTENSIVE CARE UNIT**

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Abstract:

Objectives: The objective of this research work is to find out the occurrence, causes of risks & microbiology for having urinary tract infections in the ICU of children ward in Mayo Hospital, Lahore.

Methodology: This observational study performed on all the children who got admission in the Mayo Hospital Lahore from June 2017 to June 2018.

Results: During this complete one-year duration, total 428 patients got admission in the ICU for at least 2 days or more and a sum of 7.20% (n: 32) attained urinary tract infections, with a total prevalence density of eleven per thousands of pediatric ICU days. One bacteremic (4.30%) intensive care unit attained urinary tract infections happened. The average stay of urinary tract infections patients at hospital was 22 days, which was much longer than the stay of the other patients which was just 7 days. The disparity of the rate of mortality was not significant in both types of patients. The main frequently separated organisms were *Escherichia coli* (30.40%), *Kelebsiellapneumoniae* (30.40%) & *Candida albicans* (21.70%).

Conclusions: The checking of the pediatric ICU attained urinary tract infections is very vital for the administration of the serious patients. The outcomes of this case study present a trustworthy measure for the incidence of the nosocomial urinary tract infections at the hospitals in Pakistan.

Keywords: Nosocomial, UTI, methodology, bacteremic, pediatric, infection, occurrence, incidence, prevalence, microbiology.

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INTRODUCTION:

NIs (nosocomial infections) has association with the enhancement in mortality, morbidity, long stay in the hospital & cost of the healthcare activities [1, 2]. UTIs are the most common disease attained from the hospital stay. It is also well common in the seriously ill patients [3, 4]. Most of the urinary tract infections found to have association with the urine catheters [5, 6]. So, nosocomial urinary tract infections are the result of NIs related to catheter. Intensive care unit in the hospitals has become a vital factor for the management & control of these infections. NNIS (national nosocomial infection surveillance) System is defining the infections especially associated with the devices [7]. Pediatric ICU is much different from the intensive care unit of the adults regardless the patient's age. Low numbers of children as compared to the youngsters in the intensive care units have the anomalies of such organ system and large amount of the children will return to the healthy life after proper treatment. Therefore, NIs represents the vital reason of the mortality & morbidity in our community [8]. This case study elaborates the epidemiology of urinary tract infections in the children getting treatment within pediatric ICU. If the patient found to have an associated infection, the record of the start of the disease, infection type & micro-organisms maintained. These outcomes are comparable with the nosocomial urinary tract infections of pediatric intensive care unit in any other country.

METHODOLOGY:

The collection of the information from the patients carried in pediatric intensive care unit in national nosocomial infection surveillance system. This study started from June 2017 and finished in June 2018. All the patients getting treatment in pediatric ICU have the age from 1 month to 15 year of age were under monitoring for NIs (Nosocomial Infections) by nurse according to the standard of the research work. All the nurses of the responsibility were available with at least 3 year experience in the field of control of infections. Nosocomial urinary tract infections were available as pediatric ICU associated, if their diagnosis carried out within forty eight hours after the discharge from pediatric ICU, unless there were some other evidences for other reasons. A team of control of infections was in action for the isolations and diagnosis of the pathogens from cultures with the utilization of standard methods.

The symptoms of urinary tract infections were under monitoring in pediatric ICU for all the patients on daily basis. Our expert physician documented the

patients which were under suspicion. The collection of the information carried out with the help of questionnaires from every patient with urinary tract infection. The collection of the information from each patient carried out about their gender, age, fundamental disease, prompting conditions for urinary tract infections, availability of fever, extremity of illness in accordance with the score of sepsis and isolated pathogens from the cultures of blood & urine. The information about the type & length of catheter gathered from the patients who were using catheter. A sample of urine obtained from every patient at very initial stage and found with positive culture, he was not the part of this case work anymore. After that the testing of urine carried on weekly basis for every patient. The definition of a bacteremic or fungemic urinary tract infection is an infection found with a positive culture of the blood with the similar pathogen within a period of 2 days [9]. Chi square test & Fisher's method were in use for the comparison of the categorical information and continuous data compared with the help of Student's T-test in each group of the case study.

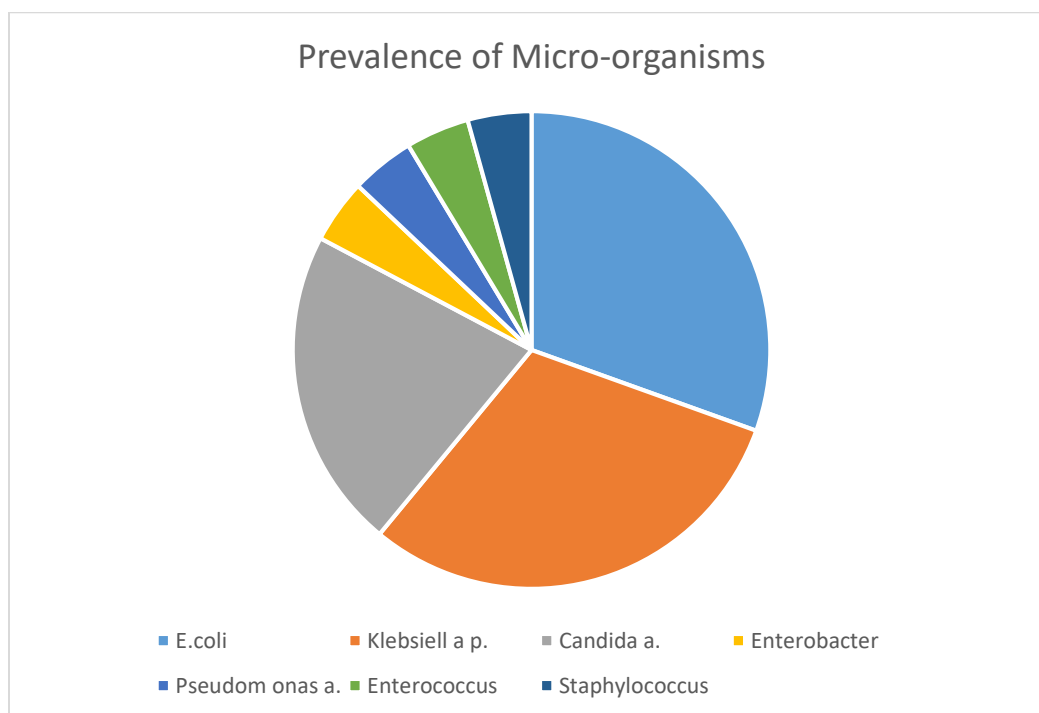
RESULTS:

In the duration of this case study, total 428 patients got admission at pediatric ICU for at least two days. A sum of 7.20 (n: 31) pediatric attained urinary tract infections occurred during survey. We also found an occurrence density of pediatric ICU attained urinary tract infections of eleven per thousand pediatric ICU days in hospital. Total 64.50% (n: 20) were male patients and 35.50% (n: 11) were female patients. The age with median was 13 months. The average stay of the patients in the hospital was 22 ± 14 days in comparison with the 7 ± 5 days in other pediatric ICU patients. Most of the urinary tract infections had an association with catheter (90.40%). The most common type of the catheter was urethral catheter as 96.50%. The average period of catheterization was fifteen days.

Past urinary tract infections history was present in 4.50% patients. About 45.50% of Pediatric ICU attained urinary tract infections found with underline disease that eleven patients found with malnutrition & 3 patients were immune-compromised. Seventy one percent (n: 22) were getting antimicrobials on the sampling day for urine and diagnosis of the nosocomial urinary tract infections. The separated pathogens are available in Table-1. The very common agents were *E. coli* and *Kelebsiella*. Total 70.0% (69.40%) of the separated isolations were gram negative bacilli. The infection of the blood stream proven by the culture was available in 29.0% (n: 9).

Table I: Prevalence of Micro-Organisms

Micro Organisms	Prevalence (%)
E.coli	30.40
Kelebsiella p.	30.40
Candida a.	21.70
Enterobacter	4.30
Pseudom onas a.	4.30
Enterococcus	4.30
Staphylococcus	4.30

**DISCUSSION:**

In this research work, the rate of nosocomial urinary tract infection was 7.20 infections/100 patients & the rate of infections per thousand patients was eleven, this result is comparable with the outcomes of various other studies [10-12]. The UTI associated with catheter were 8.90 patients for per thousand catheter days [13]. The symptomatic urinary tract infection rate in this research work was 4.20%, in dissimilarity; the asymptomatic CAUTI rate was very high as 14.0%

[14]. The site of urinary tract is very one of the frequent site of NIs. Majority of such infections follow urinary tract instrumentation particularly catheterization of the urinary tract.

Most of the pediatric urinary tract infection of this case study happened in the 1st week and patient had a urinary catheter during their treatment in the intensive care unit and more than 90.0% patients found with urinary Foley catheter. So, the care of catheter in accordance

with the proof based medicine should be in practice in each intensive care unit. The important outcome of this research work was that ICU obtained urinary tract infections do not enhance the danger of death alone but they have an association with the greater stay in the hospital. The infections obtained in the health care centers have an association with the morbidity & sometimes mortality, and it is also the cause of high cost of the health care facilities [15, 16]. Our recent finding of small rate of uroseptic type ICU obtained urinary tract infections (4.30%) & deficiency of the attributable mortality shows that ICU obtained urinary tract infections have a benign medical route but approach based on the judgment for treatment should be reasonable.

The most common occurring pathogens as a cause of this disease were E.coli & Enterobacteriaceae. In this research work, after the presence of E. coli & Kelebsiella, we concluded the high presence of the fungi names as Candida spp which has an association with the urinary tract infections particularly in those patients who were present with the urinary catheters. The species of Candida are the very significant reasons for the ICU obtained urinary tract infections in some other case studies and a less rate of these infections occurred if treatment against these pathogens is well enough [17, 18].

CONCLUSION:

The outcome of this national nosocomial infection surveillance system based case work provides a suitable prevention measures against the occurrence of the nosocomial urinary tract infections and provide a foundation for further research works which will monitor the new trends in this literature with the passage of time.

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