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# URINARY TRACT INFECTION IN CHILDREN AND ULTIMATE OUTCOME

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## ABSTRACT

***Objective:*** *In this study our main objective is to assessthe ultimate outcome of UTI in children.* ***Method:*** *This observational study was carried out in a Tertiary level medical college, Dhaka from January 2018 to December 2019 among 100pediatric patients with UTI who attending outpatient and inpatient departments of paediatrics. Data were compiled and appropriate statistical package for social science (SPSS). P value <0.05 was taken as minimum level of significance.* ***Result****: in this study, most of the patients belong to 1-5 years age group and male were 69% and female were 31%.Male is higher than male. Also, 75% positive culture of bacteriuria was found in female and most of the patients from rural area and only 41% patients treated with antibiotics.* ***Conclusion:*** *From our study, we can say that E. coli is the most common uropathogen. Antibiotics such as amoxycillin, amoxiclav, cephradine and cefixime. have limited value for the treatment of UTI. Routine observing of susceptibility patterns is necessary, which will help in the empirical treatment of UTI to the clinicians and also for the planning of antibiotic policy of the individual foundation.*

**KEYWORDS:** *Urinary tract infections (UTI), antibiotic resistance, amoxicillin,* culture and sensitivity.

## INTRODUCTION

Urinary tract infections (UTI) are the most common infections among childrenin theworld. Reported rates of urinary tract infection (UTI) in children consulting for any acute condition varies widely from 2% -20% depending on setting and inclusion criteria.[1,2] UTI implies presence of actively multiplying organisms in the urinary tract.[3] UTI occurs in 3-5% of girls and 1% of boys during childhood.[4] The patient with UTI in early infancy presents with abnormal crying, fever, malodorous urine, dripling of urine, vomiting, diarrhea and jaundice. Urinary pathogens have shown a changed configuration of susceptibility to antibiotics, resulting in an increase in resistance to commonly used antibiotics.

In modern medicine bacterial infection resistance to antibiotics is one of the most challenging global health threats. It has been assessed that by 2050, 10 million people per year will be at risk from antibiotic-resistantinfections. Urinary tract infectionis a major public health problem in terms of morbidity andtreatment cost. It also characterizes the most commonantibiotic-resistant infections in major care setting. It is a principal cause of repeated physician consultations andantibiotic resistance and problem for clinicians in choosingsuitable antibiotic.

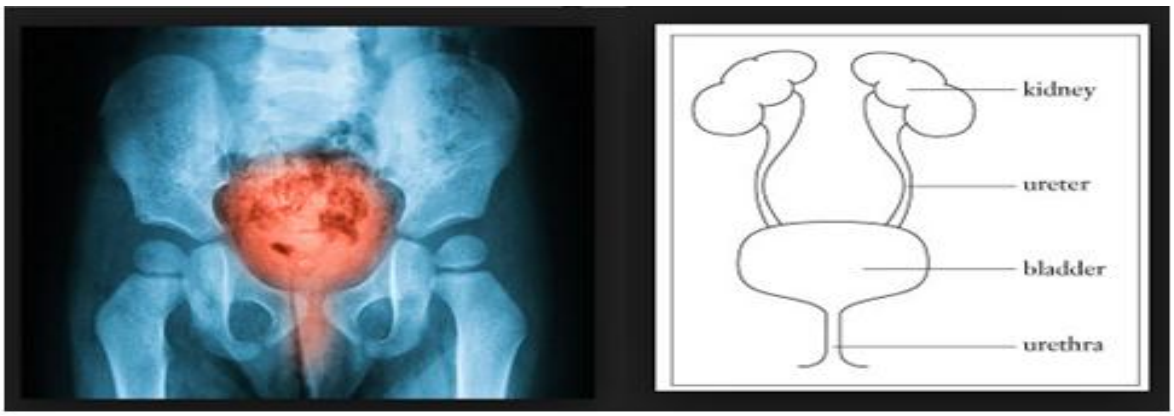


**Figure-1: bacterial formation in UTI in patients and Urinary structure.**

In this study our main objective is to assess the outcome of UTI in children.

**Objective**

**General objective**

- To assess the outcome of UTI in children.

**Specific objective**

- To identify the frequency of presence culture positive bacteriuria in relation to gender of patient.
- To evaluate the incidence of isolation of organism in relation to gender of patient.

**METHODOLOGY**

| | |
|---|---|
| **Type of study** | Observational study |
| **Place of study** | Tertiary care medical college, Dhaka |
| **Study period** | January 2018 to December 2019 |
| **Study population** | 100 pediatricpatients with UTI attending outpatient and inpatient departments of paediatrics. |
| **Sampling technique** | Purposive |

**Method**

- All the pediatric patients included in this study were above 2 months of age, presented with the suspected UTI (dysuria, frequency, fever and pain in lower abdomen). Patients on antibiotic were advised to stop antibiotic for 48 hours and were included in this study. Data were collected by a semi structured questionnaire. Clinical history was taken, physical examination was done and recorded in patients' data collection sheet.

**Statistical Analysis**

- The results are given as Mean ± SD for the seven independently performed experiments. Unpaired student's "*t*" test was used to see the level of significance. P value <0.05 was considered statistically significant. ANOVA test was used to see the level of significance among comparison more than two groups, p value < 0.05 was consideredstatistically significant. Data were compiled and appropriate statistical package for social science (SPSS). P value <0.05 was taken as minimum level of significance.

**RESULTS**

In table-1 shows age distribution of the patients where most of the patients belong to `1-5 years age group. The following table is given below in detail:

**Table-1: Age distribution of the patients.**

| Age group | % |
|---|---|
| 2 m to 1year | 10% |
| 1yr to 5 years | 51% |
| 6y to 10 years | 17% |
| >10 years | 22% |
| Total | 100% |

In figure-2 shows gender distribution of the patients where most of the patients were female, Female were 69% and Male were 31%. Female were higher than male. The following figure is given below in detail:

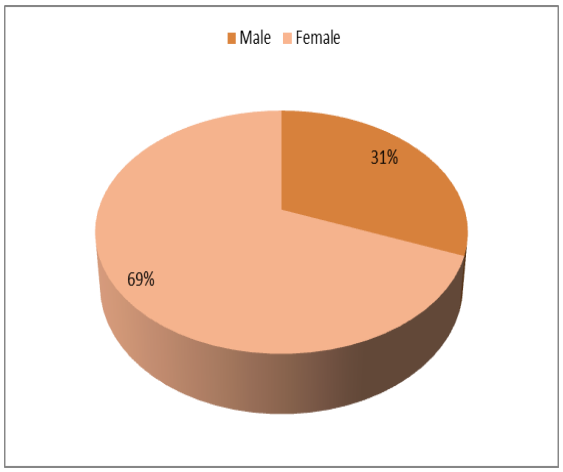


**Figure-2: Gender distribution.**

In figure-3 shows Frequency of presence culture positive bacteriuria in relation to gender of patient where 75% positive culture of bacteriuria was found in female andonly 25%in Male. The following figure is given below in detail:

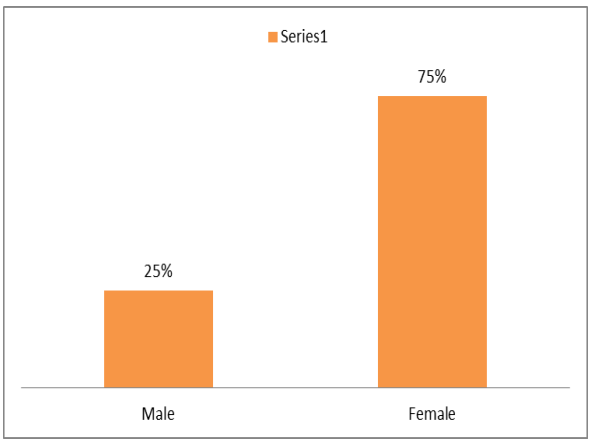


**Figure-3: Frequency of presence culture positive bacteriuria in relation to gender of patient.**

In table-2 shows demographic characteristics of the CT-UTI patients where most of the patients from rural and only 41% patients treated with antibiotic. The following table is given below in detail:

**Table-2: Demographic characteristics of the CT-UTI patients.**

| Demographic characteristics | % |
|---|---|
| **Living area:** | |
| Urban | 12% |
| Rural | 88% |
| **Clinical symptom:** | |
| Fever | 57% |
| Dysuria | 71% |
| Urgency | 48% |
| Abdominal pain | 36% |
| **Treated with antibiotics** | |
| Yes | 41% |
| No | 59% |

In table-3 shows radiological finding in UTI where Among children, only (25%) had abnormal USG finding, (33.3%) had abnormal MCUG. The following table is given below in detail:

**Table-3: Radiological finding in UTI.**

| Investigation | Normal | Abnormal |
|---|---|---|
| USG | 75% | 25% |
| MCUG | 66.70% | 33.30% |

In figure-4 shows incidence of Isolation of organism in relation to gender of patient where both male and female E. coli was ranked highest 41% and 43% respectively among other isolated samples. The following figure is given below in detail:

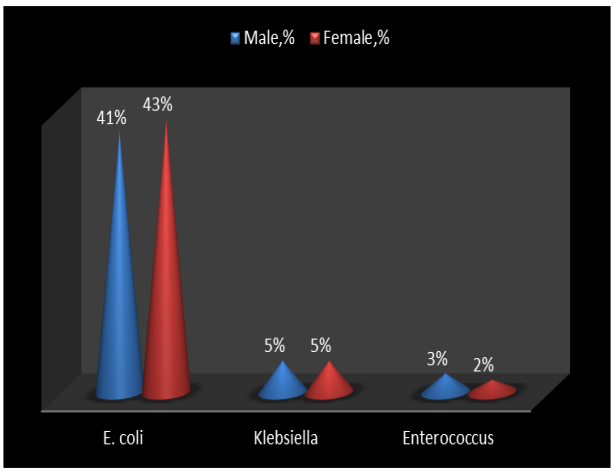


**Figure-4: Incidence of Isolation of organism in relation to gender of patient.**

In table-4 shows In vitro antibiotics resistance pattern of the bacteria where high degree of resistance against commonly used antibiotics- amoxycillin, amoxiclav, cephradine and cefixime. The following table is given below in detail:

**Table-4: In vitro antibiotics resistance pattern of the bacteria.**

| Name of antibiotics | Total no resistance | % |
|---|---|---|
| Meropenem | 1 | 0.5% |
| Imipenem | 2 | 1% |
| Amikacin | 2 | 1% |
| Tazobactum | 1 | 0.5% |
| Gentamycin | 23 | 11.5/ |
| Nitrofurantoin | 20 | 10% |
| Mecillium | 84 | 47% |
| Colistin | 31 | 16% |
| Ceftriaxone | 91 | 45.5% |
| Cefixime | 130 | 65% |
| Amoxiclav | 118 | 59% |
| Amoxicillin | 91 | 45.5% |

## DISCUSSION

This study determines the distribution and antibiotic resistance pattern of bacteria isolated from patients with UTI from a tertiary care center. In our study, about 75% female had culture positive with UTI symptoms which was similar to other study.[6] Higher occurrence of UTI in females (75%) than in maleswhich is similar to other reports.[7][8] It was because of anatomical and physical factors of the patient.[9]

E. coli majority isolated organism which was expressively higher (p value was <0.01) than previous studies. Probable cause of this prevalence of intestinal bacteria was due toantibiotic therapy for treating infections outside the urinary tract which contaminate the urinary tract.[10]

Bacteria demonstrations higher degree of resistance against most of the continuing antibiotics used for sensitivity due to irrational consumption of most of the antibiotics during the past decade in our south Asian sub continent.[11]

Resistance to amikacin is only 1% and it is cheap, so it is wise to use it as parental empirical antibiotics in UTI.

Resistance was suggestively increased in resistance pattern in year 2016 for ceftriaxone, cefixime, Amoxicillin and amoxiclav possibly because random use of these antibiotics with insufficient dose and period which is a public health concern in Bangladesh.[12]

According to guideline by Infectious Diseases Society of America (IDSA) in the year 2011, an antibiotic is no longer suggested for empirical treatment of acute UTI if there is >20% resistance occurrence to that specificantibiotic.[11]

The antibiotics displays resistance more than 20% are according to this guideline of IDSA, most of the antibiotics used in our study should not be used for experiential treatment of acute UTI.

In our country there is crucial need of constant monitoring with culture and sensitivity outline of specific pathogens in different health care center. Community awareness program should be started for adherence to treatment protocol considering bacterial resistance and emerging multidrug resistant strains. It is essential to conduct a regional research on the culture and sensitivity patterns of the bacteria.

## CONCLUSION

From our study, we can say that E. coli is the most common uropathogen. Antibiotics such as amoxycillin, amoxiclav, cephradine and cefixim have limited value for the treatment of UTI.Routineobserving of susceptibility patterns is necessary, which will help in the empirical treatment of UTI to the clinicians and also for the planning of antibiotic policy of the individual foundation.

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