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Original Research Article

Study of the clinico-epidemiological profile of children suffering from urinary tract infection

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ABSTRACT

Background: Urinary tract infections (UTIs) are common bacterial infections in children. The diagnosis of UTI is very often missed in young children due to minimal and nonspecific symptoms.
Methods: Hospital based observational prospective study conducted 100 clinical cases age group of 1-month to 14 years admitted in hospital with a probable diagnosis of urinary tract infections that is later confirmed by a positive urine culture.
Results: According to presenting history, maximum patients presented with abdominal symptoms (72%), urinary symptoms (23.0%), followed by respiratory symptoms in 18.0% cases, CNS symptoms (8.0%) and non-specific symptoms in 47.0% cases. Fever was the most common presenting complaint followed by vomiting, pain abdomen, oliguria, diarrhea, generalized swelling, burning micturition, cough, decreased appetite, respiratory distress, excessive cry, chills and rigor, abnormal body movement, yellow color of urine, headache while least common present history was chest pain and joint swelling where 1 case each was found.
Conclusions: UTI is a common childhood illness. Females were more commonly affected than males. Fever being most common presenting symptom followed by vomiting and pain abdomen.

Keywords: UTI, Females, Fever

INTRODUCTION

Urinary tract infections (UTIs) are common bacterial infections in children. The diagnosis of UTI is very often missed in young children due to minimal and nonspecific symptoms. The developing renal cortex in young children is vulnerable to renal scarring resulting in hypertension and chronic renal failure. These morbidities in adults often have their origin in childhood. A clinically suspected case of UTI should be defined and documented with urine culture report. After the diagnosis of UTI, its category should be defined. This helps in guiding a clinician about the appropriate radio/nuclear imaging evaluation, choice of antimicrobial agent, duration of treatment and need of chemoprophylaxis. Even a single confirmed UTI should be taken seriously.[1]

The risk of having a UTI before the age of 14 years is approximately 1-3% in boys and 3-10% in girls. Complications include renal parenchymal damage and renal scarring that can lead to hypertension and progressive renal insufficiency in later life. In children, UTI may be the first presentation of an underlying congenital anomaly of the urinary tract. Therefore, rapid diagnosis, institution of early treatment and further evaluation by imaging modalities is important to preserve the function of the growing kidney.[2]

Etiological agents of UTI are variable and usually depend on time, geographical location and age of patients. However, *Escherichia coli*, *Proteus mirabilis*, *Enterobacter agglomerans*, *Citrobacter freundii* and *Klebsiella pneumonia* account for over 70% of cases.[3-5]

METHODS

Study design

Hospital based observational prospective study design was used for the current study.

Sample size

Total 100 clinical cases were included in this study.

Sampling method

Random sampling method used in this study.

Study place

The study carried out in department of pediatrics, government medical college, Barmer.

Inclusion criteria

All children in the age group of 1-month to-14 years admitted in hospital with a probable diagnosis of urinary tract infection that is later confirmed by a positive urine culture.

Exclusion criteria

Infants below 1 month old were excluded.

Data collection

Patients from the age of 1 month to 14 years presenting with urinary symptoms (dysuria, urgency, frequency, incontinence, hematuria and suprapubic pain) and those with fever without focus were enrolled in the study. History was noted and children clinically examined. Complicated UTI (involvement of upper urinary tract) was diagnosed if there was presence of any one or all of the following-fever >39^{0}C, systemic toxicity, persistent vomiting, dehydration, renal angle tenderness and raised serum creatinine. Recurrent UTI was considered if there was a previous history of one or more episodes of proven UTI.

Data analysis

To collect required information from eligible patients a pre-structured pre-tested Proforma was used. For data analysis statistical software Epi-info was used and data were analyzed with the help of frequencies, figures, proportions, measures of central tendency, appropriate statistical test.

RESULTS

In present study, out of total 100 cases, majority of cases were between 1 to 5 years (42%) followed by 6-10 years (28%), more than 10 years (18%) and less than 1 year (12%).

Table 1: Distribution of cases according to age.

Age group (years)	Total	
	No.	%
<1	12	12.0
1-5	42	42.0
6-10	28	28.0
>10	18	18.0
Total	100	100

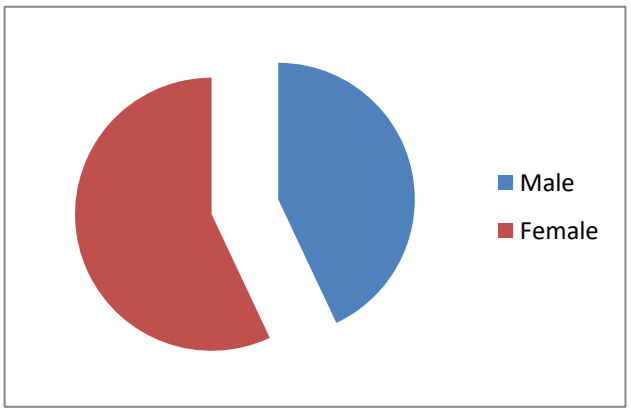

Figure 1: Distribution of cases according to gender.

Female were more effected than male children.

Table 2: Distribution of cases according to socioeconomic status.

Socioeconomic status	No. of cases	Percentage (%)
Lower	24	24.0
Middle	64	64.0
Upper	12	12.00
Total	100	100

Out of total 100 cases, majority of patients i.e., 64.00% were from middle socioeconomic status followed by 24.00% belonged to lower socioeconomic status, 12.00% cases belonged to upper socioeconomic status.

According to presenting history, maximum patients presented with abdominal symptoms (72%), urinary symptoms (23.0%), followed by respiratory symptoms in 18.0% cases, CNS symptoms (8.0%) and non-specific symptoms in 47.0% cases. Fever was the most common presenting complaint followed by vomiting, pain abdomen, oliguria, diarrhea, generalized swelling, burning micturition, cough, decreased appetite, respiratory distress, excessive cry, chills and rigor, abnormal body movement, yellow color of urine, headache while least common present history was chest pain and joint swelling where 1 case each was found.

Table 3: Clinical distribution of cases according to present history.

Present history	No. of cases	Percentage (%)
Fever	60	60.00
Abdominal symptoms		
Vomiting	32	32.0
Pain abdomen	24	24.0
Diarrhoea	12	12.00
Constipation	2	2
Urinary symptoms		
Oliguria	22	22.0
Burning micturition	12	12.00
Yellow colour of urine	4	4.00
Frequent urination	3	3.00
Haematuria	3	3.00
Respiratory symptoms		
Cough	10	10.0
Respiratory distress	7	7.0
CNS symptoms		
Abnormal body movement	5	5.00
Altered sensorium	2	2.0
Vertigo	2	2.0
Non-specific		
Generalized swelling	14	14.0
Decreased appetite	8	8.0
Excessive cry	7	7.0
Chills and rigor	6	6.0
Headache	4	4.0
Groin pain	3	3.00
Nausea	2	2.00
Not gaining weight	2	2.00
Skin lesion	2	2.00
Leg pain	1	1.00
Chest pain	1	1.00
Joint swelling	1	1.00

DISCUSSION

UTI was more common in children of 1-5 age groups. Ineffective toilet training and the resultant ascending infection from urethra may be predisposing children of this age group for UTI. In consensus statement of Indian pediatric nephrology group, it has been mentioned that during the first year of life, male was more effected, beyond 1-2 years, there is female preponderance with male.

Taneja et al also found maximum number 38.7% cases between 1-5 year, 35.7% of cases were between 5-12 year.[5] They also found male predominance in infancy, which correlate with our study. Sharma et al in his study found 50.0% of cases in age group of 1 to 5 years followed by 27.5% of cases between 6 to 10 year.[6] In the study by Krishnan et al UTI was more common in children of 1-5 age groups (35.5%), which was in concordance with our study, they also found male predominance below 1 year.[7]

Female are more likely than male to get UTI because urethra is shorter in female so bacteria can reach the bladder more easily. Due to longer course of urethra and the bacteriostatic action by prostatic secretions in them, the incidence of UTI is low in male.

Badhan et al observed that majority of pathogens were isolated from female (54.2%) patients.[7] Al-Mardeni et al observed that out 529 culture positive culture 432 (81.7%) were female.[8]

However unlike to our study, Kalantar et al in his prospective study of 1696 children aged up to 5 years reported male to female ratio of 1.07:1.[9]

In our study Out of total 100 cases, majority of patients i.e., 64.00% were from middle socioeconomic status followed by 24.00% belonged to lower socioeconomic status, 12.00% cases belonged to upper socioeconomic status according to modified B.G. Prasad scale.

In a study by Rao et al most of the cases were from lower classes with 76.6% and 23.3% incidence in middle class, which is not in concordance with our study.[10]

In our study according to presenting history, maximum patients presented with abdominal symptoms (72%), urinary symptoms (23.0%), followed by respiratory symptoms in 18.0% cases, CNS symptoms (8.0%) and non-specific symptoms in 47.0% cases. Fever was the most common presenting complaint followed by vomiting, pain abdomen, oliguria, diarrhea, generalized swelling, burning micturition, cough, decreased appetite, respiratory distress, excessive cry, chills and rigor, abnormal body movement, yellow color of urine, headache while least common present history was chest pain and joint swelling where 1 case each was found.

In a study by Badhan et al, presenting symptoms were urinary symptoms alone in 29.2%, fever without urinary symptoms in 23.1%, fever with urinary symptoms 18.7%, pain abdomen in 23.3%.[8]

In studies conducted by other authors Sharma et al (65.0%), Krishnan et al shows fever was seen in majority of patients.[6,7]

CONCLUSION

UTI is a common childhood illness. This study shows age and gender distribution in accordance to available literature. Females were more commonly affected than males. Fever being most common presenting symptom followed by vomiting and pain abdomen.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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