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Original Research Article

Study of the prevalence of urinary tract infection in febrile children attending paediatric OPD in Government medical college and general hospital, Srikakulam, Andhra Pradesh, India

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ABSTRACT

Background: Children with fever comprise a major proportion of our practice in outpatient department of Paediatric. Among the fever cases Urinary tract infection is the third most common cause of febrile illness in children. The emphasis on identification of urinary tract infections in febrile children is minimal. Very often, children receive antibiotics empirically, without any adequate evaluation for urinary tract infection. The objective of our study is to determine the prevalence of urinary tract infection in all febrile children from 1months to 5 years of age.
Methods: A prospective study was undertaken in the department of Pediatrics, Government medical college, Srikakulam. Urine was collected from enrolled febrile patients and sent for routine microscopic examination as well as for culture and sensitivity.
Results: The study included 500 children. Females were 256(51.2%) and males were 244(48.8%). The total prevalence of UTI cases were 6%. The incidence in <1 year was 7.05%, 1-2 years was 5.97 % and >2 years was 5.35%. The prevalence of UTI was higher among females (7.68%) than males (4.68%). Apart from fever, the commonest symptoms were dysuria, abdominal pain, vomiting, chills and rigors and loss of appetite. Urine culture shows *E. coli* followed by *Klebsiella* were found to contribute the maximum number of cases.
Conclusions: Possibility of Urinary Tract Infection must be considered in all febrile children and urine culture specimen must be collected as a part of diagnostic evaluation.

Keywords: *E.coli*, Incidence, Febrile illness, Urinary tract Infection, Urine culture, Under five.

INTRODUCTION

Children with fever comprise a major proportion of our practice in outpatient department of Paediatric. Unlike occult bacteremia, very little attention has been focused on the identification of urinary tract infections in febrile children in the paediatric department, despite the current information which suggests a very high prevalence of urinary tract infections and associated significant morbidity in those children.[1] UTI is one of the commonest bacterial illness among febrile infants and preschool children with a reported prevalence between 4.1% to 7.5%.[2-4] UTI is responsible for 4 to 10% of febrile children admitted to the hospital. It is also the third commonest infection in pediatric age group after respiratory and gastrointestinal infections.[5]

Typical urinary complaints are rare, often vague, below the age of 5 years. Most of these infections in the first 2 years of life are "occult" and most infection remains

undiagnosed, unless detected in are not routinely tests. The children may be represented with characteristic features of upper and lower UTI like, abdominal pain, vomiting and fever with chills and rigors, and/or suprapubic pain.6 Sometimes only fever is present, and it has been accepted as a clinical marker of pyelonephritis-renal parenchymal involvement.[6]

Fever and significant bacteriuria and pyuria in children with undocumented sources of infections must be presumed to be symptoms of pyelonephritis, an invasive infection of the renal parenchyma requiring prompt treatment. Recent studies on urinary tract infection have revealed that more than 75% of children under 5 years of age with febrile urinary tract infection have pyelonephritis.[7]

Pyelonephritis leads to renal scarring in 27% to 64% of children with urinary tract infections in this age group, even in the absence of underlying urinary tract abnormalities.[8,9] Most urinary tract infections that lead to scarring or diminished kidney growth occur in children younger than 4 years of age especially among infants in the first year of life.[9] Among children under 3 years of age with recurrent urinary infections, putting them at higher risk for renal scarring, as many as one-third being asymptomatic.[10] It is essential to identify urinary tract infections in febrile children and institute prompt treatment to reduce the potential for lifelong morbidity.

The present study is undertaken to estimate the prevalence of urinary tract infection in febrile children below 5 years of age. The aim of this study is to determine the prevalence of urinary tract infection in all febrile children, from 1 months to 5 years of age.

METHODS

It was a cross-sectional, prospective, observational study, carried out to analyze the prevalence of urinary tract infection in febrile preschool children (one month to 5 years of age) in febrile children visiting Government general Hospital (Government Medical College) Srikakulam. The study was conducted in Department of Pediatrics, Government General Hospital, Srikakulam, Andhra Pradesh between January 2019 to June 2019. Sample size is all cases which meet the inclusion criteria within the study period

Inclusion criteria

- Febrile children between 1 month and 5years attending outpatient department or admitted in Department of Paediatrics, Government general Hospital, srikakulam were enrolled into the study.
- Fever (axiliary temperature ≥37.8°C)

Exclusion criteria

- Children below 2 months and above 5 years.
- Any child who has received antibiotics 48 hours prior were not be included in the study.
- Children with known congenital genitourinary anomalies.

Operational definition

Febrile child

Children with history of fever (Temperature; rectal ≥38.3°C or axillary temperature ≥37.8°C).[11]

Urinary tract infection

Urinary tract infection is defined as growth of a significant number of organisms of a single species in the urine, in the presence of symptoms. Significant bacteriuria is growth with a colony count of >105/ml of a single species in a mid-stream clean catch urine sample.[12]

500 children were included in the study, data related to age, sex, nutritional status, socioeconomic status and predisposing risk factors like urethral instrumentation, bowel habits etc., were noted. A complete history related to the onset, duration of fever and associated symptoms such as nausea, vomiting, diarrhea, urinary disturbances, other system involvement was obtained.

A thorough physical examination with relevant investigations was carried out in all patients.

Children with symptoms suggestive of UTI were interviewed using structured case record form (CRF). All symptomatic children were referred for urine routine microscopy and culture tests.

Remaining cases Routine blood counts, urine analysis was done and those showing pus cells >5 per HPF in centrifuged urine sample were taken as study group and urine culture sensitivity was done in them, USG examination was done,

From all children, sample of urine was collected. In children less than 2 years of age urine was collected by a bag and in others midstream sample was collected. Urine culture was done using blood agar and Mac Conkey agar by using a 0.001 ml calibrated wire loop and observed for 48 hours.

RESULTS

During the 6-month study period, a total number of 500 patients were studied between the age group of 1 months to 5 years, to determine the prevalence of urinary tract infection in all febrile patients. Among the 500 children included in our study majority of the children were in the age group of 2-5 years (44.8%) as shown in Table 1.

Among the 500 children selected for study, females were 244(48.8%) and males were 256(51.2%). Incidence of

UTI in male 4.68%, the incidence of UTI in female 7.37% shown in Table 2.

Table 1: Age distribution among the study population.

Age	Male	Female	Total
1 month to 1 year	68	74	142
1-2 years	60	74	134
2-5 years	128	96	224

Table 2: Gender wise distribution of total cases along with UTI.

		Growth (UTI)
Male	256	12
Female	244	18

The incidence of UTI is more common among the <1 year age group. Males are commonly affected.

The incidence in < 1 year was highest (7.04%), 1-2 years had an incidence of 5.97 % and >2 years the incidence was 5.35 % as shown in Table 3.

Table 3: Age wise distribution among culture positive UTI cases.

Age	Growth(UTI)	No
1 month to 1 year	10 (male 6, female 4)	132
1-2 years	8(male 4,female 4)	126
2-5 years	12(male 2,female 10)	212

Table 4: Distribution of the culture positive cases of UTI according to symptoms.

Symptoms	Culture positive cases number	Culture positive cases %
Fever	30	100%
dysuria	18	60%
Abdominal pain	15	50%
Vomiting	14	46.6%
Chills and rigors	12	40%
Loss of apatite	11	36.67%
Increased frequency	10	33.3%
Passing high coloured urine	10	33.3%
Burning micturition	8	26.7%
Dribbling of urine	6	20%
Foul smelling urine	2	6.7%

In this study males are commonly affected below <1 year, more than >2 years females are most commonly affected.

According to symptomatology (Table 4), it is obvious that all the children of study group had fever as the commonest symptom we have screened febrile children for diagnosis of UTI. Apart from fever, the commonest symptoms were dysuria (60%) abdominal pain (50%), vomiting (46.6%), chills and rigors (40%) and loss of appetite (36.67%) for UTI found in the present study.

Among the 30 UTI cases *E. coli* followed by *Klebsiella* were found to contribute the maximum number of cases as shown in Table 5.

Table 5: Urine culture growth patterns among the UTI cases.

Culture growth	Male	Female	Total	%
E. coli	8	10	18	60%
Klebsiella	4	4	8	26.6%
Pseudomonas	0	3	3	10%
Proteus	0	1	1	3.3%

DISCUSSION

UTIs remain the commonest bacterial infection in childhood.[13] The incidence of UTI in children at the age of 6 years of age is 1%-2% in boys and 3-7% in girls.[13] Authors have screened total 500 preschool children (under 5 years of age) with fever. Out of this total 500 febrile children, 30 children found to be culture positive cases for UTI. The prevalence of culture positive cases for UTI in this study was 6%.

Prevalence of febrile UTI in infants in our study is almost similar to study by Dharaka D et al, who reported a prevalence of 5.4% in febrile infants, Hoberman et al, who reported prevalence of 5.3% in infants.[14,15]

As the commonest symptom as authors have screened febrile children for diagnosis of UTI, it is obvious that all the children of study group had fever. The other commonest symptoms were dysuria (60%), abdominal pain (50%), vomiting (46.6%), chills and rigors (40%) and loss of appetite (36.67%) for UTI found in the present study. In the study done by Shetty, et al, the similar type of symptomatology found-dysuria (45%), irritability (30%), increased frequency (25%), decreased appetite (25%), and refusal of feeds (15%).[16] Vague and variable signs and symptoms may present in early childhood as the patient becoming more specific as the child grows older.

Among culture positive cases 60% had *E. coli* followed by *Klebseilla* 26.6% and 10% of pseudomonas, 3.3% of proteus species, which correlates well with other studies. Bryan CS et al, reported *E. coli* as the common urinary pathogen in 85% of cases.[17] According to Bagga A et al, 90% of first symptomatic urinary tract infection and 70% reccurence infections were due to *E. coli.*[18]

The most common organism for UTI isolated was *E. coli* (80%) followed by *Klebsiella* in the study done by

Shetty, et al.[16] Ultrasound abdomen was done in culture positive UTI cases, of which 2 cases had hydronephrosis

CONCLUSION

Urinary tract infections are common in childhood. Nearly all UTIs are caused by bacteria that enter the opening of the urethra and move upward to the urinary bladder and sometimes the kidneys. Rarely, in severe infections, bacteria may enter the bloodstream from the kidneys and cause infection of the bloodstream or of other organs. During infancy, boys are more likely to develop urinary tract infections. After infancy, girls are much more likely to develop them. UTIs are more common among girls because their short urethras make it easier for bacteria to move up the urinary tract.

Possibility of urinary tract Infection must be considered in all febrile children and urine culture specimen must be collected as a part of diagnostic evaluation.

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REFERENCES

1. Shaw KN, Gorelick MH. Urinary tract infection in the pediatric patient. Pediatric Clinics. 1999 Dec 1;46(6):1111-24.
2. Hoberman A, Wald ER, Reynolds EA, Penchansky L, Charron M. Pyuria and bacteriuria in urine specimens obtained by catheter from young children with fever. J Pediatr. 1994 Apr 1;124(4):513-9.
3. Fallahzadeh MH, Alamdarlu HM. Prevalence of urinary tract infection in pre-school febrile children. Iranian J of Med Sci. 1999;24:35-9.
4. Shaw KN, Gorelick M, McGowan KL, Yakscoe NM, Schwartz JS. Prevalence of urinary tract infection in febrile young children in the emergency department. Pediatrics. 1998 Aug 1;102(2):e16.
5. Alper BS, Cirry SH. Urinary tract infection in children. Am Fam Physician. 1005;72:2483-8.
6. American Academy of Pediatrics. Committee on Quality Improvement. Subcommittee on Urinary Tract Infection. Practice parameter: the diagnosis, treatment, and evaluation of the initial urinary tract infection in febrile infants and young children. Pediatrics. 1999;52:843-52.
7. Majd M, Rushton HG, Jantausch B, Wiedermann BL. Relationship among vesicoureteral reflux, P-fimbriated Escherichia coli, and acute pyelonephritis in children with febrile urinary tract infection. J Pediatr. 1991 Oct 1;119(4):578-85.
8. Rushton HG, Majd M, Jantausch B, Wiedermann BL, Belman AB. Renal scarring following reflux and nonreflux pyelonephritis in children: evaluation with 99mtechnetium-dimercaptosuccinic acid scintigraphy. J Urology. 1992 May;147(5):1327-32.
9. Berg UB. Long-term followup of renal morphology and function in children with recurrent pyelonephritis. J Urology. 1992 ;148(5 Part 2):1715-20.
10. Cohen M. urinary tract infections in children i. females aged 2 through 14, first two infections. Pediatr. 1972 Aug 1;50(2):271-8.
11. Edelu BO, Ojinnaka NC, Ikefuna AN. Fever detection in under 5 children in a tertiary health facility using the infrared tympanic thermometer in the oral mode. Italian J Pediatr. 2011 Dec;37(1):8.
12. Schmiemann G, Kniehl E, Gebhardt K, Matejczyk MM, Hummers-Pradier E. The diagnosis of urinary tract infection: a systematic review. Deutsches Ärzteblatt Int. 2010 May;107(21):361-7.
13. Beetz R. May we go on with antibacterial prophylaxis for urinary tract infections?. Pediatr Nephrol. 2006 Jan 1;21(1):5-13.
14. Dharnidharka VR, Kandoth PW. Prevalence of bacteriuria in febrile infants. Indian Pediatr. 1993 Aug;30(8):987-9.
15. Hoberman A, Chao HP, Keller DM, Hickey R, Davis HW, Ellis D. Prevalence of urinary tract infection in febrile infants. J Pediatrics. 1993 Jul 1;123(1):17-23.
16. Shetty PN, Prashanth S, Jagadeeshwara S. Prevalence of urinary tract infection among preschool febrile children attending the pediatric OPD. Int J Contemp Pediatr. 2017;4(2):561-7
17. Bryan CS, Reynolds KL. Community-acquired bacteremic urinary tract infection: epidemiology and outcome. J Urol. 1984;132(3):490-3.
18. Bagga A, Sharma J. Urinary tract infections clinical features, evaluation and treatment. Pediatr Today. 2000;3:395-401.

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