



Original Article

Clinical Profile and Risk Factors of Childhood Urinary Tract Infection at Jalalabad Ragib Rabeya Medical College Hospital, Sylhet

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ABSTRACT

Urinary tract infection (UTI) is a common childhood bacterial infection. It may cause significant morbidity in children. Most of the cases, clinical symptoms are non-specific. There are numerous risk factors that predispose UTI which depend on socioeconomic status and cultural habits. The aim of the study was to determine the clinical profile and risk factors of UTI in children. This was a hospital based cross sectional study, conducted in the paediatric outpatient and inpatient departments of Jalalabad Ragib-Rabeya Medical College Hospital, Sylhet from January 2018 to December 2018. Total 62 patients presented with symptoms of UTI and urine culture positive were enrolled for the study. Male to female ratio was 1:1.9. Fever (66%) was the commonest clinical presentation followed by dysuria (52%), abdominal pain (52%), increase frequency of micturition (34%) and nausea and vomiting (34%). Among the various risk factors malnutrition (37%) was highest in number followed by constipation (35.5%), inadequate water intake (32.3%), cleaning perineum from back to front (30.6%), uncircumcised boy (30.6%), voluntary withholding of urine (25.8%) and worm infestation (22.6%). The knowledge about clinical presentation and risk factors of UTI is necessary for the early diagnosis and management. So the prevalence of childhood UTI can be reduced by identifying the risk factors of UTI.

Keywords: Risk factors, Childhood, Urinary tract infection.

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INTRODUCTION

Urinary tract infection (UTI) is defined as the invasion and multiplication of micro-organisms in significant number in the urinary tract¹. It occurs in 3-5% of girls and 1% of boys. By the age of 5 years the first UTI usually occurs in girls, with peaks during infancy and toilet training. There is 60-80% chance to develop second UTI within 18 months of first UTI in girls. In

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boys, during the first year of life most UTIs occur. The male: female ratio is 2.8-5.4:1 during first year of life. But after 1-2 years, the ratio is reversed (1:10)².

The patient with UTI in neonatal period and early infancy usually present with nonspecific symptoms like fever, abnormal crying, vomiting, diarrhea, jaundice, poor feeding and weight loss. On the other hand, older children and adolescent present with classic signs of UTI like dysuria, urgency, frequency, suprapubic pain, incontinence and malodorous urine. Because of nonspecific signs and symptoms in younger children, they may remain unrecognized and ultimately

leads to development of renal insufficiency or end stage renal disease^{2,3,4}.

The risk factors that predispose to UTI are numerous and depend on socioeconomic status and cultural habits. Unfortunately fewer studies are available worldwide to determine the actual risk factors of UTI in terms of different social and cultural aspects. If all the risk factors of UTI can be identified, it will help in the management and prevent recurrence of UTI in children. So it is better to analyze risk factors in different countries, different ethnic groups so that, the factors which is differing from population to population can be identified and different management strategies can be formed⁵. The aim of this study was to determine the clinical profile of UTI patients and to analyze the risk factors of UTI in children.

MATERIALS AND METHODS

This was a hospital based cross sectional study, conducted in the paediatric outpatient and inpatient department of Jalalabad Ragib-Rabeya Medical College Hospital, a tertiary care hospital situated in Sylhet city, Bangladesh, from January, 2018 to December, 2018. All the infants and children, aged 2 months to 12 years, attended with signs and symptoms of UTI or other nonspecific symptoms like fever, vomiting, abdominal pain etc. were primarily selected. Consent was taken from the parents before enrolling them in the study. After primary enrollment, detailed history taking and examinations were done. Weight was taken in every patients and their nutritional status was classified according to Gomez classification⁶. Urine samples were sent for culture. The infants were advised to collect urine samples by using sterile plastic bags or wide-open mouth container supplied by the laboratory. Catheterization was advised for critical hospital admitted patients. Older children and adolescents were asked to collect clean catch mid-stream urine. Urine samples thus collected were sent for bacteriological culture. Culture positive UTI was considered, if a single organism was grown in culture media at concentration of more than 10^5 colony forming unit per ml of urine. Only culture positive 60 patients of UTI were finally enrolled for the study. Data regarding socio-demographic characteristics, clinical profile and risk factors were collected by using a preformed questionnaire. Data were then analyzed using SPSS version 21. Informed consent was taken from the legal guardian.

RESULTS

Total 108 cases of suspected UTI were primarily selected and urine sample was sent for culture. Total 62 cases were found as culture positive. Among them, male patients were 21 (34%) and female patients were 41 (66%). Male to female ratio was 1:1.9. Male patients were predominant in below 1 year age group and the ratio was 1.75:1. But the ratio was reversed after 1 year. Male to female ratio was 1:2.20 in 1-5 year age group and 1:3.75 above 5 years. Mean age was 46.65 ± 38.61 . Among total UTI patients, 35.5% was female children between 1-5 year age group (Figure-1). Among several clinical features, fever (66%) was the commonest presenting complaints followed by dysuria (52%), abdominal pain (52%), increase frequency of micturition (34%) and nausea and vomiting (34%) (Figure-2). Fever was present in 91% of cases below 1 year where as lower urinary tract symptoms like dysuria and increase frequency of micturition were common in children older than 1 year (Table-I). Abdominal tenderness was present in 14 (22.6%) cases and tenderness was mostly suprapubic (42.9%). Among the cases, 97% had no change in the smell of urine in this study. Malnutrition was present in highest number of cases (37.1%) among various risk factors followed by constipation (35.5%), inadequate water intake (32.3%), cleaning perineum from back to front (30.6%), uncircumcised boy (30.6%), voluntary withholding of urine (25.8%) and worm infestation (22.6%). Poor sanitation at home and school were present in 8.1% cases (Figure-3). Among malnourished children, 6.5 % were suffering from severe malnutrition and 11.3% were moderately malnourished (Table-II).

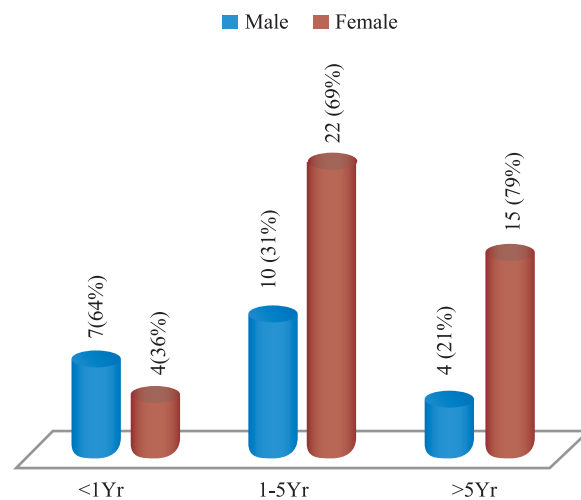


Figure-1: Age and sex distribution of children with UTI (n=62).

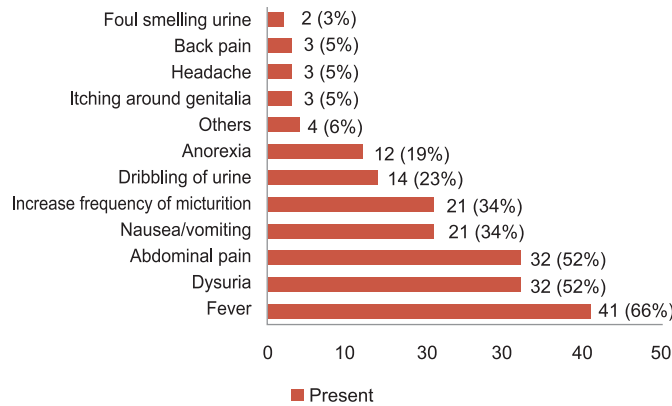


Figure-2: Clinical features of UTI (n=62).

(More than one reason were considered in one respondents)

Table-I: Commonest symptoms of UTI in different age group (n=62).

Age	Fever		Dysuria/Crying During Micturition		Increase Frequency of Micturition	
	Present n (%)	Absent n (%)	Present n (%)	Absent n (%)	Present n (%)	Absent n (%)
2 months to <1year	10 (91)	1 (9)	5 (45)	6 (55)	0 (0)	11 (100)
1 to 5 year	22 (69)	10 (31)	16 (50)	6 (50)	15 (47)	17 (53)
>5 year	9 (47)	10 (53)	11 (58)	8 (42)	6 (31)	13 (69)
Total	41 (66)	21 (34)	32 (52)	30 (48)	21 (34)	41 (66)

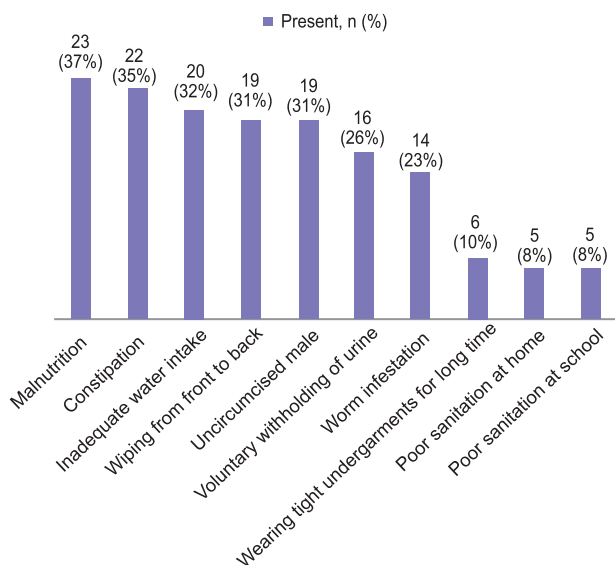


Figure-3: Risk factors of UTI in children (n=62).

(More than one reason were considered in one respondents)

Table-II: Nutritional status of children with UTI (n=62).

Nutritional status	Number	Percentage
Normal	39	62.8
Mild malnutrition	12	19.4
Moderate malnutrition	7	11.3
Severe malnutrition	4	6.5
Total	62	100

DISCUSSION

Urinary tract infection is one of the commonest bacterial infections among children causing acute as well as long term morbidities including renal insufficiency or end stage renal disease. In our study, majority of the patient (51.6%) belonged to 1 to 5 year age group and this coincided with other national and international studies^{3,7,8}. This age group was more susceptible to infection because of their toilet training problems⁸. UTI was more predominant in females in our study which was consistent with many previous reports^{3,4,7,8}. Overall, in terms of gender distribution, this study showed that, UTI was 1.9 times more frequent in girls which was very close to the value of a study conducted at a Bangladeshi Hospital (1.7 times)⁷ and at a Chilean Hospital (1.78 times)⁸. The reason of UTI being more common in female child was probably short urethra in female and close proximity of anal canal and urethral opening besides other factors.

Fever was the most common symptom and was present in two third of the cases, which was similar to other studies^{3,8,9}. Fever was more common in younger age group and was present in 91% in below 1 year age group and only 47% in >5 year age group. Dysuria and abdominal pain were present in 52% cases in our study which was similar to a study done by Singh et al. where dysuria and abdominal pain were found in 54.1% and 51.9% cases respectively³. In the present study, 34% of cases presented with nausea and vomiting as well as 34% of cases presented with increase frequency of micturition which was lower than the study done at Dhulikhel Hospital, Nepal (52.6% and 53.3% respectively)³. Other symptoms were dribbling of urine (23%), anorexia (19%), headache, back pain and itching around genitalia (5%). Other studies also suggest high association of these symptoms and UTI^{3,4,8,9}.

Significant number (97%) of children had no change in the smell of urine in this study. Similar result was reported by a study conducted at Prof. Dr. R. D. Kandou Hospital, Manado⁸. Different result was found in another study done by Kumar et al. where one third cases presented with foul smelling urine⁴. Regarding the risk factor of UTI in children, the current study result showed 37% cases had malnutrition. Among them 6.5% were severely malnourished. A review article by Uwaezuoke showed that, severe acute malnutrition (SAM) was a major risk factor of UTI and the prevalence rates ranged from 6 to 37%¹⁰. This study finding supported our results. Constipation was another important risk factor of UTI found in different

studies^{4,5,11}. This study showed that, 35.5% cases had constipation.

In our study, one third cases had history of inadequate water intake which was supported by the study done by Kabita et al⁵. Another study done by Koirala et al. showed that, inadequate water intake was present in 72.58% cases, which was higher than our study¹¹. Other risk factors found in this study include poor toilet training (30.6%), uncircumcised male (30.6%), voluntary withholding of urine (25.8%), worm infestation (22.6%), wearing tight undergarments for long time (9.7%), poor sanitation at home and school (8.1%). Several other studies found these features as risk factors of UTI^{4,5,11}.

CONCLUSION

Early diagnosis and treatment of urinary tract infection in children is crucial, because it may cause destruction and scarring of renal parenchyma. Clinical presentation of childhood UTI is mostly non-specific especially in younger age group. UTI should always be kept in mind when a young child present with fever, abdominal pain, anorexia, nausea and vomiting. Most of the risk factors of childhood UTI are avoidable. The knowledge about the clinical profile and risk factors help in early diagnosis and management as well as reduce the prevalence of childhood UTI.

REFERENCES

1. Kabir ARML, Pediatric Practice on Patients' Presentation. 1st ed. Dhaka: Dr. Naznin Kabir; 2011.
2. Kleigman RM, Behrman RE, Jenson HB, Stanton BF. Urinary tract infection. In: Elder JS, editor. Nelson text book of pediatrics. 19th ed. Philadelphia: WB Saunders; 2008. p 2223-4.
3. Singh SD, Madhup SK. Clinical profile and antibiotics sensitivity in childhood urinary tract infection at Dhulikhel Hospital. Kathmandu Univ Med J 2013; 11(44): 319-24.
4. Kumar GV, Aaron G, Viswanathakumar HM. Study of clinical profile and risk factors associated with febrile urinary tract infection in preschool children. Int J Contemp Pediatr 2016; 3(1): 243-6.
5. Kavitha J, Aravind MA, Jayachandran G, Priya S. Risk factors for urinary tract infection in pediatric patients. Int J Contemp Pediatr 2018; 5(1): 184-9.

6. Khan MR, Rahman ME. Nutritional problems. *Essence of Pediatrics*. 4th ed. New Delhi: Elsevier; 2011. p 72.
7. Nazme NI, Alamin A, Jalil F, Sultana J, Fatema NN. Bacteriological Profile of Urinary Tract Infection in Children of a Tertiary Care Hospital. *Bangladesh J Child Health* 2017; 41(2): 77-83.
8. Umboh V, Umboh A. Clinical and laboratory profile of urinary tract infection among children at Prof. Dr. R. D. Kandou Hospital Manado. *JBM* 2016; 8(2): 119-24.
9. Ojha AR, Aryal UR. Profile of children with urinary tract infection and the utility of urine dipstick as a diagnostic tool. *J Nepal Health Res Counc* 2014; 12(28): 151-5.
10. Uwaezuoke SN. The prevalence of urinary tract infection in children with severe acute malnutrition: a narrative review. *Pediatric Health Med Ther* 2016; 7: 121-7.
11. Koirala R, Nagila A, Lopchan M, Dhungana G, Sharma M. Incidence and contributing factors of urinary tract infection in children under 6 year. *Int J Rece Scien Res* 2017; 8(8): 19071-5.