Section: Paediatrics

Original Research Article

PREVALENCE AND CLINICAL FEATURES PATTERN IN FEBRILE CHILDREN AGED 5-15 YEARS SUSPECTED OF URINARY TRACT INFECTION

Kancherla Poojitha[1], Monica D[2], Ajay K R[3]

[1,2,3]*Assistant Professor, Department of Paediatrics, Chandramma Dayananda Sagar Institute of Medical Education and Research, Kanakapura, Karnataka, India*

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Corresponding Author:
Dr. Kancherla Poojitha,
Assistant Professor, Department of Paediatrics, Chandramma Dayananda Sagar Institute of Medical Education and Research, Kanakapura, Karnataka, India.
Email: kancherlapooja11@gmail.com

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ABSTRACT

Background: Urinary tract infection is infection in any part of the urinary system, including the kidneys, ureter, urethra, and bladder. It is growth of significant number of microorganisms within the urinary tract. In general, the lower urinary tract is more affected than the upper urinary tract. The objective is to estimate the overall prevalence and clinical profile of urinary tract infection in children suspected to have urinary tract infection aged from 5 years to 15 years in a tertiary care hospital.

Materials and Methods: This Prospective Observational Study was conducted among Febrile children with symptoms of UTI aged between 5 to 15 years admitted to the Department Of Pediatrics, PESIMSR Hospital, Kuppam. Duration of study was 18 months (Jan 2019 – Jun 2020).

Results: In our study UTI is most common in girls (57%) when compared to boys (43%). UTI is more common in low socio economic status. Among 100 cases in the study, most common clinical features in the presence of fever were abdominal pain (61%) followed by vomiting (59%) and burning micturition (43%). Most common clinical sign which was elicited was supra pubic tenderness (31%) followed by renal angle tenderness. Risk factors were present in 43% of study subjects; voiding difficulty is most common, followed by tight clothing and history of previous urinary tract infection. Those patients with risk factors were counseled to maintain genital hygiene, avoidance of tight clothing and constipation.

Conclusion: Among 100 cases in the study, most common clinical features in the presence of fever were abdominal pain (61%) followed by vomiting (59%) and burning micturition (43%). Risk factors were present in 43% of study subjects; voiding difficulty is most common, followed by tight clothing and history of previous urinary tract infection. Those patients with risk factors were counseled to maintain genital hygiene, avoidance of tight clothing and constipation.

Keywords: Prevalence, Clinical features, febrile children, aged 5-15 years, urinary tract infection.

INTRODUCTION

Pediatric age group urinary tract infection is one of the very frequently faced infections worldwide. It is associated with significant mortality and long-term morbidity due to inconspicuous clinical manifestations.

If this is not identified and treated early, it may lead to significant morbidity by producing irreversible damage to the renal system. Hence, the early recognition of subtle symptoms and signs provides a good outcome.

UTI recurs easily if anatomical anomalies of the urinary system accompany it. Suppose it is not treated adequately or occurs recurrently. In that case, UTI may develop into chronic pyelonephritis resulting in hypertension and loss of renal function, a condition seen in 15–20% of the cases of chronic renal failure.[1]

UTI accounts for around 5% of febrile illnesses, and fever is the most common reason to visit the emergency outpatient pediatric department in children 5 to 15 years of age. Quite often, the child receives antibiotics empirically without adequate evaluation for urinary tract infection.[1]

Indian Academy of Paediatrics defines urinary tract infection as the growth of a significant number of organisms of single species in urine culture with UTI symptoms. Positive urine culture is a primary requirement to diagnose urinary infection.[2]

Urinary tract infection is a growth of a significant number of organisms of a single species in urine in symptoms' presence. Significant bacteriuria is growth with a colony count of more than 105/ ml of a single species in mid-stream clean catch urine sample. In all the age groups most common organism causing UTI is Escherichia coli (65-75%), Klebsiella pneumonia (23%), Proteus mirabilis (7%).[3,4]

Nazme Ishrat et al., in 2017, studied bacteriological profile and prevalence of urinary tract infection in children of 0 to 15 years a total of 180 children between the age group of 0 to 15 years and found that UTI was more common in girls than boys. Also, UTI is more common in an age less than five years and lowest in the age above ten years.[5]

Hence the present study is undertaken to estimate the overall prevalence and clinical profile of urinary tract infection in children suspected to have urinary tract infection aged from 5 years to 15 years in a tertiary care hospital.

MATERIALS AND METHODS

This Prospective Observational Study was conducted among Febrile children with symptoms of UTI aged between 5 to 15 years admitted to the Department Of Pediatrics, PESIMSR Hospital, Kuppam. Duration of study was 18 months (Jan 2019 – Jun 2020).

Sampling Method: Purposive Sampling

Sample size: 100

Sample size calculation is based on a study of Gupta P, Mandal J et al.(2015) Profile of urinary tract infections in pediatric patients. Indian Journal of Medical Research.[6]

Inclusion Criteria

Febrile children aged between 5 to 15 years admitted to the pediatric ward with clinically suspected UTI with one or more following symptoms or signs:

- Abdominal Pain,
- Vomiting,
- Burning Micturition,
- Dysuria,
- Increased Frequency Of Micturition
- Suprapubic Tenderness
- Renal Angle Tenderness

Exclusion Criteria

- Children who received antibiotics within 48 hours before admission.
- Children with known congenital Genitourinary Anomalies.
- Children with definitive foci of infection other than urinary tract as the cause of fever.

Methodology: Ethical committee approval was obtained. Febrile Children with symptoms and signs suggestive of urinary tract infection between 5-15 years age group were chosen.

Informed written consent was taken from the child's parent or guardian. The child's history is then recorded in the proforma, clinical examination was done and findings were noted in the same proforma.

Then the parent or guardian was explained to collect a clean-catch midstream urine sample. It was advised for boys to wash genitalia with water, then retract the prepuce gently and collect the Mid-stream urine sample. In the same way,girls were advised to wash genitalia with water, separate both labia and collect the midstream urine sample. Then the collected sample was sent to laboratory for analysis.

In the laboratory urine physical, biochemical and pathological examination were done. And urine culture was done for all the suspects.

USG abdomen was done to determine kidney, ureter, urinary bladder and urethral abnormalities and the USG findings were recorded.

Statistical Analysis: The analysis and interpretation of this study were based on the data collection during the study period. The results are compared with the help of descriptive and inferential statistics. The data was recorded in excel sheets and analyzed by using STATA14.1. A probability of less than 0.05 is considered significant.

RESULTS

Total subjects in this study were 100. The study subjects taken for this study have fever and other symptoms of urinary tract infection, aged between 5 to15 years.

Table 1: Distribution of Study Subjects According to Age

AGE	No. of subjects	Percentage
5-8 Years	50	50%
9-11 Years	36	36%
12-15 Years	14	14%
Total	100	100%

Of 100 patients with UTI, 50 were between the 5-8years, 36 were between 9-11 years, and 14 were

between 12-15years. Hence the major portion of UTI was present in the age group of 5 to 8 years in the present study.

Table 2: Distribution of Study Subjects According to Gender

Gender	No. of subjects	Percentage
Male	43	43%
Female	57	57%
Total	100	100%

Of 100 cases in this study, 57% were females and 43% were males, hence the incidence of UTI was more in females.

Table 3: Distribution of Study Subjects According To SES

SES	No. of subjects	Percentage
Class-I	10	10%
Class-II	17	17%
Class-III	19	19%
Class-IV	22	22%
Class-V	32	32%
Total	100	100%

Cases are classified according to the modified Kuppaswamy's socioeconomic status scale and divided as follows, 10%, 17%, 19%, 22%, and 32% belong to Class I, II, III, IV, and V respectively.

Table 4: Distribution of Study Subjects According To Symptoms& Signs

Variable		No. of subjects	Percentage
Fever Duration	< 3 days	27	27%
	3-5 days	40	40%
	> 5 days	33	33%
	Total	100	100%
Abdominal Pain	Yes	61	61%
	No	39	39%
Vomiting	Yes	59	59%
	No	41	41%
Burning Micturition	Yes	43	43%
	No	57	57%
Dysuria	Yes	23	23%
	No	77	77%
Increased Frequency	Yes	20	20%
	No	80	80%
Supra Pubic Tenderness	Yes	31	31%
	No	69	69%
Renal Angle Tenderness	Yes	10	10%
	No	90	90%

Of 100 cases, 27%, 40% and 33% had fever of <3 days, 3-5days and >5days respectively.
The most common symptoms were pain abdomen, vomiting, and burning micturition found in 61%, 59%, and 43% cases, respectively, in decreasing order.
Other symptoms were dysuria and increased frequency of micturition and were found in 23% and 20% of cases.
Other signs like suprapubic tenderness and renal angle tenderness were present in 31% and 10% of cases.

Table 5: Distribution of study subjects based on Risk Factors for urinary tract infection

Risk factors	No. of subjects	Percentage
Present	43	43%
Absent	57	57%
Total	100	100%

Risk factors for UTI were present in 43% of study subjects.

Table 6: Distribution of Study Subjects with following Risk Factors in UTI

RISK FACTORS	No. of subjects	Percentage
Tight Clothing	10	23.3%
History of Previous UTI	6	13.9%
Constipation	1	2.3%
Labial Adhesions	3	6.9%
Phimosis	6	13.9%
Voiding Difficulty	13	30.3%
Worm Infestation	4	9.4%
Total	43	100%

Of 43% of cases having risk factors 23%,14%, 2%, 7%, 14%, 30% and 10% had tight clothing, h/o UTI, constipation, labial adhesions, phimosis, voiding difficulty and worm infestation respectively. Voiding difficulty and tight clothing were the major risk factors causing UTI.

DISCUSSION

Urinary tract infection (UTI) is a common bacterial infection in infants and children. The risk of having a UTI before the age of 14 years is approximately 1-3% in boys and 3-10% in girls.[1,7] The diagnosis of UTI is often missed in infants and young children, as urinary symptoms are minimal and often non-specific.

UTI accounts for around 5% of febrile illnesses, Fever is the most common reason to visit emergency outpatient pediatric department. It may lead to significant morbidity by producing irreversible damage to renal system, if not identified early. Hence, early recognition of subtle symptoms and signs provides good outcome.[8]

In a study done by Nazme Ishrat et al., in 2017, found that UTI was more common in girls when compared to boys between the age group of 5 to 15 years. And they concluded that, UTI was lowest in age above 10 years.[5] In the present study, UTI is most common in girls (57%) when compared to boys (43%) between the age group of 5 to 8 years (50%).

In a study done by Kavitha J et al., in 2017 found that the most common risk factor causing UTI were Phimosis (86%), with holding of urine(33.6%) and reduced water intake (34.6%). In the present study, voiding difficulty (30.3%), tight clothing (23.3%), h/o prev UTI is (14%) were common risk factors for UTI. In comparison of these studies, voiding difficulty in both these studies was similar.

In a study by Mazzola BL et al., it was concluded that withholding urine/ voiding difficulty (47%), reduced fluid intake (10%), constipation(25%) were found to be predisposing UTI in girls aged between 4 – 18 years.[9] In comparison with present study, voiding difficulty is the major risk factor for UTI.

In comparison of socioeconomic status of the present study with Kavitha J et al, it is found that UTI is more common in Lower socio economic status in both the studies.

In a study by Rehmanur-aniset al,[10] it is found that fever, dysuria, vomiting, pain abdomen and increased frequency of micturition were the major clinical presentations. In comparison with that of the present study, dysuria, vomiting, pain abdomen and increased frequency are also the major clinical presentations excepting for fever which is an inclusion criteria. Hence the present study is in concordance with that of Rehman Ur Anis study.[10]

In a study by A Sharma et al11, the most common clinical feature in UTI were fever (65%), increased frequency of micturition (52%) and abdominal pain (48%). Apart from fever, abdominal pain is the most common clinical feature which is similar to our study.

In a study by April Gamier Bay et al,[12] taking all children with Urinary infection in Philippines, deduced that fever and abdominal pain were the most common clinical presentations. Excluding for fever, pain abdomen here too is the most common clinical feature which is similar to our study.

In a study by Qureshi AM et al,[13] fever was the most common presentation but percentage was very high (92%) and dysuria was second common presentation with 68% of children presenting with it. This study involved children up to fifteen years of age at Abbottabad. Supra pubic tenderness was the most common clinical finding but it was seen only in 39.3% of children. In the present study, dysuria is present in 23% of cases and supra pubic tenderness is present in 31% of cases. The number of cases with suprapubic tenderness in both studies was almost similar. Sharma et al.[11]

Note: In the present study, UTI was studied in children with fever, hence fever is excluded.

CONCLUSION

In our study UTI is most common in girls (57%) when compared to boys (43%). UTI is more common in low socio economic status. Among 100 cases in the study, most common clinical features in the presence of fever were abdominal pain (61%) followed by vomiting (59%) and burning micturition (43%). Most common clinical sign which was elicited was supra pubic tenderness (31%) followed by renal angle tenderness. Risk factors were present in 43% of study subjects; voiding difficulty is most common, followed by tight clothing and history of previous urinary tract infection. Those patients with risk factors were counseled to maintain genital hygiene, avoidance of tight clothing and constipation.

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