Original Article

Urinary Tract Infection as a Cause of Parenteral Diarrhea in Children

UTI as a Cause of Parenteral Diarrhea

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ABSTRACT

Objective: To determine the frequency of UTI in children presenting with diarrhea.
Study Design: Descriptive / cross sectional study
Place and Duration of Study: This study was conducted at the Department of Paediatrics, Khyber Teaching Hospital, Peshawar from July 2017 to December 2017.
Materials and Methods: 88 patients presenting with diarrhea were elected through non randomized convenient sampling. Patients were catheterized under aseptic technique for Urine sample collection before starting Antibiotics. Common clinical features were noted along with urine culture report. The cases were then managed according to standardized management criteria. Children presenting with diarrhea below 5 years age. Children above 5 years age. Children with history of Antibiotic use within 48 hrs of presentation.
Results: Out of 88 patients presenting with diarrhea 27 patients had culture proven urinary tract infection. Leading organism isolated was E.Coli (15 cases) followed by Citrobacter (8 cases) and Psudomonas (4 cases).
Conclusion: In our study we found out that E.Coli was the most common cause of diarrhea secondary to UTI comprising of 15 patients. 8 and 4 patients had Cetrobacter and Psudomonas as a causative agent respectively. Diarrhea is one of the commonest diseases in infancy and association between UTI and diarrhoea are often overlooked. Children presenting with diarrhea should be screened for underlying UTI.
Key Words: Diarrhea, Urinary tract infection

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INTRODUCTION

UTI is the most common bacterial infection in childhood[1,2]. Urinary tract infections (UTI) is a common bacterial infection in infants and young children resulting in morbidity and mortality[3]. Urinary tract infections are common in children with an estimated incidence of 1-3% in boys and 3-10% in girls. The long term consequences of UTI are renal parenchymal damage and renal scarring that can cause hypertension and progressive renal damage [3,4.]

In first year of life, UTIs are more common in boys (3.7%) than in girls (2%). This is even more pronounced in febrile infants in the first 2 mo of life, with an incidence of 5% in girls and 20.3% in uncircumcised boys, as demonstrated in oneprospective study of >1000 patients using urine specimens obtained by catheterisation[5]. Later, the incidence changes, and about 3% of prepubertal girls and 1% of prepubertal boys are diagnosed with a UTI[6,7].

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For urine collection from infants and young children, suprapubic aspiration or transurethral catheterization generally is recommended. Urethral catheterization is more likely than aspiration to obtain a sufficient sample of urine[8].

The signs and symptoms of UTI are nonspecific in infants and young children and also they do not usually pertain to the genitourinary tract[9]. Gastrointestinal symptoms of poor feeding, vomiting, abdominal pain and diarrhea are reported in many infants with UTI and also diarrhea can predispose infants and young children to develop UTI[10,11]. Older children with UTI may have dysuria, frequency, urgency, hesitancy, small-volume voids, or lower abdominal pain. Infants with UTI more commonly present with nonspecific symptoms such as fever, irritability, jaundice, vomiting, diarrhea or failure to thrive. Unusual odor of the urine is not helpful in predicting UTI[12]. Diarrhea may be the presenting symptom in younger children with UTI [13]. Under diagnosis of UTI results in inadequate treatment of UTI putting them at risk for renal scarring and the long term sequalae of hypertension and renal failure[3].

Diarrhea is a major health problem[14].Diarrhea is an important cause of morbidity and mortality in children from developing countries[15]. The vast majority of deaths from diarrhea are among children under-five years of age living in low- and middle- income countries[16].

The term parenteral diarrhea implies that the cause of the symptoms is outside the gastrointestinal tract. Chronic otitis media and urinary tract infections

especially in infants are some of the conditions that may present with chronic diarrhea[17].

In our country, diarrhea is one of the commonest diseases in infancy but data regarding association between UTI and diarrhoea are limited. This study was done to evaluate the incidence of UTI in infants and young children with diarrhoea.

MATERIALS AND METHODS

This study was conducted at private hospital, Khyber children hospital, Peshawar from July 2017 till December 2017. A cross-sectional descriptive study design was used and 88 patients presenting with diarrhea were elected through non randomized convenient sampling.

Patients were catheterized under aseptic technique for Urine sample collection before starting Antibiotics.

Common clinical features were noted along with urine culture report. The cases were then managed according to standardized management criteria.

Inclusion Criteria: Children presenting with diarrhea below 5 years age.

Exclusion Criteria: Children above 5 years age.

Children with history of Antibiotic use within 48 hrs of presentation

RESULTS

Out of 88 patients there were 57 (64%) male and 31 (36%) female, Male patients having UTI as a cause of diarrhea were 11(19.2%) and females were 16 (51.6%). The most common age group presenting with UTI and diarrhea was below 1 year almost 16 (59%) followed by between 1 year and 2 years 10 (37%). More than 2 year age group presenting with UTI and diarrhea was that of 1 (0.3%) . Commonest organism isolated was E.Coli 15 (55.5%) Patients followed by Citrobacter 8 (29.6%) and Pseudomonas 4 (14.8%) Patients.

Table No.1: Gender wise presentation of UTI with diarrhea.

Gender	UTI with diarrhea	Diarrhea	Total
Male	11 (19.2%)	46	57 (64%)
Female	16 (51.6%)	15	31 (36%)
Total	27 (30.6%)	61	88

Table No. 2: Age wise presentation of UTI with diarrhea.

Age Group	No of Cases	%age
<1 year	16	59%
1-2 years	10	37%
>2 years	1	0.3%

Table No.3: Organisms isolated in Culture..

Organism	No of Cases	%age
E.Coli	15	55.5%
Ceterobacter	8	29.6%
Pseudomonas	4	14.8%

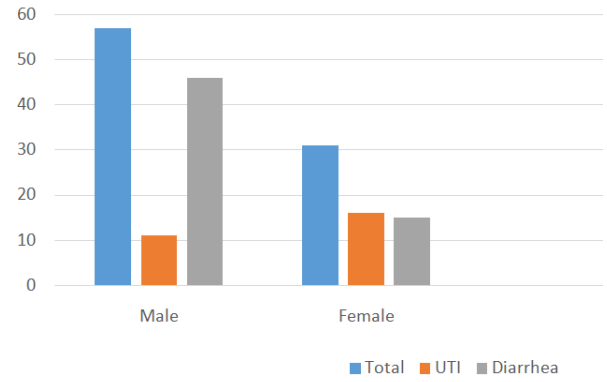

Chart **No.1: Gender wise presentation of UTI with diarrhea.**

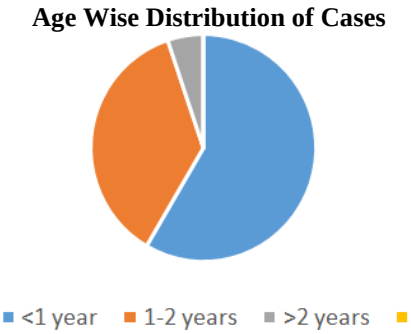

Chart No.2: Age wise presentation of UTI with diarrhea.

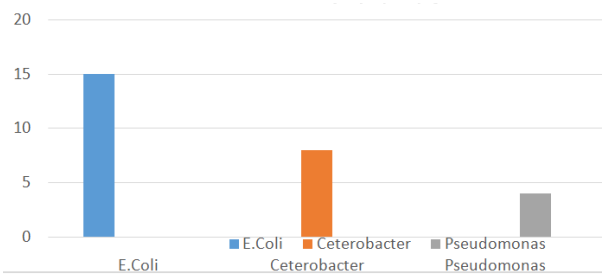

Chart No.3: Organisms isolated in Culture..

DISCUSSION

The incidence of UTI varies in early infancy and childhood, being more common in boys in first three months of life with reported male to female incidence of 5:1. In later childhood the reported male to female ratio was 1:10[18]. Diarrhea is defined as an abnormal increase in daily stool fluidity, frequency, and volume from what is considered normal for an individual. Diarrhea kills an estimated 2.5 million people each year, with about 60-70% of them being children under five years of age [19]. Children with UTI can present with diarrhoea but the definite cause for association is not known. Diarrhoea could be the result of infection of urinary tract similar to parenteral diarrhoea seen with other infections or could be the the cause of infection of

urinary tract by ascending infection. Urinary tract infection (UTI) is common in children with diarrhoea, but little is known about risk factors, aetiology and outcome of such children.

In our study total 88 patients were included. Diarrhoea with UTI (confirmed by culture) constituted 27cases (30.6%) and those without UTI constituted 61 cases (69.4%), similar findings of 25% cases of UTI associated diarrhea were reported by R. Das et al[19]. In our study E.Coli 55.5%, Ceterobacter 29.6% and Pseudomonas 14.8% were the isolated causative organisms. Escherichia coli (69%)and Klebsiella (15%) were the most commonly isolated pathogens in study by R.Das etal[19]. In our study 19.2 % males and 51.6% females had culture proven UTI, while another study by Sabahat etal[20] shows 19% male and 26% female with culture proven UTI. In our study it was found that about 59% cases of UTI were among age group of less then 1 year old and 41% cases were above 1 year age group while in a study conducted by D. Narayanapa et al[22]. Thus the most common age group with UTI presenting with diarrhea was found to be less than 1 year age which was similar to Narayanapa D, et al[21].

The overall prevalence of UTI in diarrhoea cases was 30.6% in this study while in studies done by Thakhar R et al[9], balat A et al[22], Srivaths PR et al[23], Bagga A et al[24], Jeena et al[25], Dharindharka et al[26], it ranged from 8% to 24%.

Most of the children presenting with diarrhea could not be included in study because they had history of Antibiotic use within 48 hours prior to presentation

CONCLUSION

In our study we found out that E.Coli was the most common cause of diarrhea secondary to UTI comprising of 15 patients. 8 and 4 patients had Cetrobacter and Psudomonas as a causative agent respectively. Diarrhea is one of the commonest diseases in infancy and association between UTI and diarrhoea are often overlooked. Children presenting with diarrhea should be screened for underlying UTI. Prompt treatment of UTI is mandatory to prevent long term consequences of UTI such as renal parenchymal damage and renal scarring leading to hypertension and progressive renal damage.

The present study shows that signs and symptoms of UTI in children are nonspecific and usually do not pertain to the genitourinary tract. Since diarrhea could be one of the manifestations of UTI in young children or gastroenteritis may contribute to colonisation of periurethral region and cause ascending infection, high index of suspicion is necessary and all children presenting with acute diarrhea must be screened for UTI.

Author's Contribution:

Concept & Design of Study:	Jan Muhammad Afridi
Drafting:	Sabahat Amir
Data Analysis:	Yasir Rehman, Fazlur Rahim
Revisiting Critically:	Jan Muhammad Afridi, Sabahat Amir
Final Approval of version:	Jan Muhammad Afridi

Conflict of Interest: The study has no conflict of interest to declare by any author.

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