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URINARY TRACT INFECTION IN CHILDREN

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ABSTRACT

Objectives: To find out the organisms and their sensitivity to antibiotics involved in urinary tract infection (UTI) in children.

Material and Methods: This observational study was conducted in Department of Child Health in Khyber Teaching Hospital, Peshawar, on children presenting with sign and symptoms of urinary tract infections from December 2009 to December 2010. All the children had their urine collected by non invasive method for culture sensitivity and sent to bacteriological section of Khyber Teaching Hospital Laboratory.

Results: Urine of 126 children; age 1 year to 15 years were analyzed. Sixty (45%) children were culture positive; 24(19%) were male and 36(26%) were female. 66(52%) children were culture negative; 43(34%) males and 23(18%) females. E-coli was found in 11(18.33%) males and 21(35%) females, citrobacter 2(3.33%) in males and 12(20%) in females, enterobactericae 9(15%) in males, proteus 1(1.66%) in males and 2(3.33%) in females, pseudomonas 2(3.33%) in males and 1(1.66%) in females, salmonella 1(1.66%) in males and none in females.

Conclusion: UTI is more common in females. E-coli is the most common organism causing UTI in both the sexes.

Key Words: Urinary tract infection, pyelonephrits, cystitis, uropathgens.

INTRODUCTION

Urinary Tract Infection (UTI) is a common pediatric infection[1,2]. It occurs in 3 to 5 percent of girls and 1 percent of boys[3]. Urinary tract infections in children are associated with high morbidity and long standing complications like renal scarring, hypertension and chronic renal failure. Early diagnosis and prompt treatment can prevent these complications.

It is very difficult to diagnose urinary tract infection in paediatric age group especially in young infants. Infants and children with unexplained fever of > 38°C or with symptoms and signs suggestive of UTI should have a urine sample tested for infection[4,5]. There are invasive and noninvasive methods of urine collection. The noninvasive methods are clean catch of midstream urine in toilet trained children and in infants the application of a sterile sealed adhesive urine collecting bag after disinfection of skin of genital region[6]. The invasive methods are urethral catheterization and suprapubic aspiration[7,8].

The gold standard for diagnosis of urinary tract infection is culture rather than urinanalysis[5]. Culture positive UTI is defined as >100,000 colonies of a single pathogen or 10,000 colonies in symptomatic children[9,10].

The most common organism in both males and females is Escherichia coli followed by klebsiella and proteus[11]. Proteus is more common in males older than 1 year[12,13,4]. Staphylococcus saprophyticus and enterococcus are pathogens of both sexes[15,6]. Viral infections particularly adenovirus also occur, especially is a cause of cystitis[17,18].

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MATERIAL AND METHODS

This observational, cross-sectional study was conducted in Department of Child Health Khyber Teaching Hospital, Peshawar from Deccember 2009 to December 2010. All children presenting with, symptoms suggestive of UTI based on inclusion criteria of; dysuria, frequency, urgency, loin pain, foul smelling urine or infants with fever >38°C and vomiting and no other focus of infection were included in the study. Non probability convenient sampling frame was used and hence all cases suggestive of UTI presenting in paediatric OPD were included in the sample.

Urine samples of all the cases were collected by non invasive methods i.e. clean catch in toilet trained and by infant urine collecting bag in infants and untrained children. The samples were sent immediately to laboratory for culture sensitivity. Study variables included culture result and sensitivity to a wide range of antibiotics. Results were entered in SPSS 17. Frequency counts were used to analyze the result.

Table 1: Percentage of males and females included in the study

Males	Females	Total
67 (53%)	59 (47%)	126

Table 2: Culture results in both genders

Gender	Culture positive result	Culture negative result
Males	24 (19%)	43 (34%)
Females	36(26%)	23(18%)
Total	60 (45%)	66 (52%)

Table 3: Distribution of Causative organisms in both sexes

Causative organism	Number in males	Number in female	Total
E-Coli	11	21	32 (53.33%)
Citrobacter	2	12	14(23.33%)
Enterobac-tericae	9	0	9(15%)
Proteus	1	2	3(5%)
Pseudomonas	2	1	3(5%)
Salmonella	1	0	1(1.6%)

RESULTS

Total numbers of patient included in study were 126. Gender distribution of children included in this study is shown in Table 1. Culture results are shown in Table 2 and 3.

DISCUSSION

Establishing the cause of urinary tract infection is essential to rationalize the use of antibiotics in face of the emerging resistance of organisms to antibiotics. Urinary tract infection is one of the most common infections in children which when diagnosed and treated promptly can prevent renal scaring and in turn hypertension and chronic renal failure.

Urinary tract infection can present with dysuria, frequency, urgency, lion pain, foul smelling urine and fever with no localizing sign. Diagnosing UTI needs a high index of suspicion. The investigation of choice is urine culture sensitivity. Urine analysis is not a liable way as compared to culture, though culture creates a lot of burden on microbiological laboratory for diagnosis of UTI. The reliability of culture depends on the method of collection of urine in stable patients clean catch of mid stream urine is ideal and in hospitalized sick patients suprapubic aspirate or urethral catheterization is acceptable.

In this study Escherichia coli was found to be the most common organism causing UTI in females as well as males[9,2,10]. The same was found in most studies[10,11 and 12,13,14,15]. In males enterobactericae was next common organism[16]. In males amikacine followed by ceftazidime were culture sensitive against E-coli. The same is true in other studies where amikacine was the antibiotic found to be most effective[19,20,21,24]. In females meropenim and amikacin were the antibiotics most effective followed by quinolones against E-coli as in other studies[22,24]. In this study E-coli was found to be the most common organism in both males and females. the same was found in a study in gambi were 53% of the cultures turned out to be E-coli[9]. Similarly in a study by Sumin A et al E-coli was the most common organism[2]. In a local study E-coli was isolated in 65.9% of children followed by Klebsiella[10].

CONCLUSION

E-coli is the most common organism causing urinary tract infection and amikacin is the most effective antibiotic.

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