

Urinary Tract Infections in Children with Nephrotic Syndrome

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Urinary tract infections are one of the most common infectious complication in children with nephrotic syndrome, particularly during relapses. Infections are recognized as an important cause of morbidity and mortality in children with nephrotic syndrome. This study was conducted to determine the incidence of urinary tract infections in children with nephrotic syndrome and also the organisms causing UTIs. One hundred and thirty five children with the diagnosis of nephrotic syndrome between the ages of 1 to 14 years were analyzed retrospectively. Patients with culture proven urinary tract infections were included in this study. Out of 135 patients 36 (26.6%) were found to have urinary tract infections. This was found to be the major infectious complication in patients. Majority of the infections were caused by gram negative bacilli. E.Coli was the predominant organism 23 patients (63.8%) while other organisms were Klebsiella 6 patients (16.6%), Proteus 11%, Pseudomonas only one patient.

Key words: Nephrotic syndrome, Urinary tract infections (UTIs), Infectious complication

Urinary tract infections (UTIs) occur in 3-5% of girls and 1% of boys in normal population.¹ Because of their increased tendency to infections children with nephrotic syndrome are more prone to have UTIs and the incidence of urinary tract infections is increasing in children with nephrotic syndrome.² Infection is the major complication of nephrotic syndrome and has been recognized as an important cause of morbidity and mortality in children with nephrotic syndrome.³ Infectious complications are seen in about 38% of patients with nephrotic syndrome, and urinary tract infections are the commonest.^{4,5} Such infections may have an adverse effect on steroid responsiveness.

Increased susceptibility to infections particularly UTI in patients with nephrotic syndromes is because of multiple reasons some of which are decreased immunoglobulin levels³, protein deficiency⁶, loss of complement factor, immunosuppressive therapy and altered helper and suppressor cell ratio⁷. Other infections which occur because of these factors are spontaneous peritonitis, sepsis, pneumonia, cellulitis⁹.

Aims and objectives:

This study was conducted to determine the incidence of urinary tract infections in patients with nephrotic syndrome, and to identify organisms causing urinary tract infections

Patients and methods:

This was a retrospective analysis of cases with the diagnosis of nephrotic syndrome carried out in the department of pediatrics at Jinnah Hospital, Lahore. A total of 135 patients with the confirmed diagnosis of nephrotic syndrome were analyzed. The patients of age group 0-14 years were included in the study. A midstream specimen of urine voided after washing the external orifice was used for urine culture.

Results

A total of 135 patients with the diagnosis of nephrotic syndrome were analyzed. Fifty three patients (39.25%) were found to have infections. Out of them 37 were males and 16 were females with male to female ratio of 2.3:1. The mean age of the patients with infection was 6.5 years. Twenty eight patients (53%) were between 2 to 7 years of age. There were 22 patients (41%) above 7 years of age, while there were only 3 patients (6%) below 2 years of age.

Out of these 53 patients with infections thirty six (68% of patients with infections) were found to have culture proven urinary tract infections. This was the major infection (26.66%) seen in patients with nephrotic syndrome

E. Coli was the most common organism 28 patients (63.8%). While other organisms were Klebsiella 06 patients (16.6%), Proteus 04 patients (11%), and enterobacter 02 patients (5.5%), Pseudomonas 01 patient (02.7%). None of the patient between 1-2 years had urinary tract infection, while the incidence of infection in age group of 2-7 year was 60% and in children above 7 years of age was 40% (table). Majority of the patients with urinary tract infections were females 24 with male to female ratio of 1:2. Only 3 patients (8.3%) had UTI on their first presentation. Twenty five patients (69.44%) had UTI while on steroids, while 8 patients (22%) had UTI when they relapsed and were not on steroids. Six patients (16.66%) had more than one episode of UTI, 4 while on steroids and 2 in relapse.

Table 1: Organisms causing UTI (n=36)

Organism	No.	%age
E.Coli	23	23
Klebsiella	6.0	06
Proteus	4.0	04
Enterobacter	2.0	02
Pseudomonas	01	01

Discussion:

Nephrotic syndrome is primarily a pediatric problem and is 15 times more common in children than adults. The incidence is 2-3/100,000 children per year¹ and it is said to be as common in Pakistan as in western countries⁸. Infection is a major complication of nephrotic syndrome and it occurs in about 30-40% of children and majority of these children have infections during relapses. Children in relapse have increased susceptibility to bacterial infections owing to urinary losses of immunoglobulins and properdin factor B, defective cell mediated immunity, immunosuppressive therapy, malnutrition. In this study the incidence of infections in children with nephrotic syndrome was 39% and of these patients the incidence of urinary tract infections was 68%. These results are comparable with those reported by Gilati et al⁴. E.Coli was the most common organism 33%, followed by Klebsiella 33%, proteus 33%, pseudomonas 33% and enterobacter 11%.

UTI is said to be an important but often underdiagnosed infection in children with nephrotic syndrome^{4,5} and almost all cases of urinary tract infection in nephrotics are caused by gram negative bacilli.

Conclusion:

Urinary tract infection is the commonest 68% infection in children with nephrotic syndrome. Majority of these infections occur in relapses. Mainly these infections are

caused by gram negative bacilli. E.Coli is the most common organism.

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