Impact of Urinary Tract Infection on Steroid Response in Idiopathic Nephrotic Syndrome in Children

Abstract

Context: UTI is one of the most common infection in nephrotic syndrome and may be a cause of delayed steroid response. Objective: To observe the impact of urinary tract infection on steroid response in idiopathic nephrotic syndrome children aged 2-6 years. Study design: Quasi experimental study. Study period & place: Pediatric ward of Chittagong Medical College Hospital, Chittagong from 01.01.2009 to 31.12.2009. Participants: 52 Nephrotic syndrome children aged 2-6 years with typical clinical features. Group A: Nephrotic syndrome with UTI, Group B: Nephrotic syndrome without UTI. Methods: Heat coagulation test, urine for R/M/E and C/S was done in every patient. Steroid was given according to standard regimen. Date of starting of steroid was recorded. Antibiotic was given in group A cases according to C/S report. Patients were followed for clinical and urinary remission. Group A and B were compared for remission time achieved by statistical method. Results: A male preponderance was noted about 57.7% against female about 42.3%. Generalized swelling of body & scanty micturation found in cent percent study group. Ascitis was found in 23.08%. Scrotal/labial swelling 7.69%. UTI developed in 30.8% of patients of NS. Male female ratio is 1:1. Infection delayed the remission of proteinuria. Mean remission time of NS without UTI patients was 7.39 days and with UTI patients was 9.31 days. In statistical analysis, mean remission time in group A =9.31±2.24 days(mean + SD), in group B=7.39±2.51 days(mean + SD), P value = <0.05, statistically significant. Conclusion: UTI in nephrotic syndrome causes delayed remission of proteinuria and may be asymptomatic. It should be screened in every nephrotic syndrome children routinely.

Key words: Nephrotic syndrome; UTI; proteinuria.

INTRODUCTION

Nephrotic syndrome is a common chronic disease in childhood. Incidence of idiopathic nephrotic syndrome in western countries varies between 2-7new cases with prevalence rates of nearly 16 cases per 1000000\textsuperscript{2}. A study at Bangabandhu Sheik Mujib Medical University (BSMMU) showed that 50-60%of total indoor bed in pediatric renal unit is occupied by the patient of nephrotic syndrome\textsuperscript{1}. Children of nephrotic syndrome are exposed to a variety of infectious complication that result in significant mortality and morbidity especially in developing countries such as ours\textsuperscript{3}. Of all infection UTI are of special interest because of their association with propensity for long term damage and in most cases they are asymptomatic\textsuperscript{4,5}. Information regarding there prevalence in nephrotic syndrome and the extent of impact on steroid response is scant and conflicting. This study add information about the impact of UTI on steroid response in nephrotic syndrome for early diagnosis of UTI to prevent related hazards.
MATERIALS & METHODS
Heat coagulation test, urine R/M/E and C/S was done in every patient. Steroid was given according to standard regimen. Date of starting of steroid was recorded. Antibiotic was given in culture positive cases according to C/S report. Patients were followed for clinical and urinary remission. Culture positive and negative cases were compared for remission time achieved by statistical method.

RESULTS & DISCUSSION
It was a quasieperimental study. In this study, male preponderance was noted in 52.2% cases like other studies. But reasons for male preponderance was obscure. Cent percent patients presented with generalized swelling and scanty micturition followed by 23.8% with ascities and 7.69% with scrotal swelling.
Prevalence of UTI in our study was 30.8% that correlates with previous studies. But both male and female were equally infected with UTI which is not supported by many other studies. Majority of UTI patients (68.8%) was asymptomatic which is consistent with standard reference. Regarding clinical presentation of UTI, we had found fever (60%), lower abdominal pain (20%), dysuria (20%). As we know typical presentation of UTI are dysuria, loin pain & generalized symptoms like fever, anorexia, abdominal pain, vomiting. Our study is consistent with these findings.
In our study, pyuria was found in 62.5% culture positive cases and in 52.8% culture negative cases showing poor correlation between pyuria and definite UTI. This is consistent with observation of M Rahman, K M Rahman. Causative organism of UTI isolated in our study were E coli in 50%, klebsiella in 25%, coliforms & proteus in 18.7% & 6.3% respectively. According to Gulati, Gupte et al, E coli is the commonest organism followed by klebsiella. Our findings is supported by that study.

Table 1: Common organisms of UTI

<table>
<thead>
<tr>
<th>Organisms</th>
<th>Frequency</th>
<th>Percentage (%)</th>
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</thead>
<tbody>
<tr>
<td>E. Coli</td>
<td>08</td>
<td>50.0</td>
</tr>
<tr>
<td>Klebsiella</td>
<td>04</td>
<td>25.0</td>
</tr>
<tr>
<td>Coliform</td>
<td>03</td>
<td>18.7</td>
</tr>
<tr>
<td>Proteus</td>
<td>01</td>
<td>6.3</td>
</tr>
<tr>
<td>Total</td>
<td>52</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The mean remission time of proteinuria was 7.39 days in patients of nephrotic syndrome without UTI & 9.31 days in nephrotic syndrome with UTI patients showing delayed remission UTI patients which is consistent with other studies.

Table 2: Remission time in nephrotic syndrome with UTI and without UTI patients. (with t – test significance)

<table>
<thead>
<tr>
<th>Remission Group A (UTI)</th>
<th>N</th>
<th>Mean</th>
<th>± SD</th>
<th>Median</th>
<th>Range</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>16</td>
<td>9.31</td>
<td>2.24</td>
<td>9.50</td>
<td>6 – 13</td>
<td>P &lt; 0.05</td>
</tr>
<tr>
<td>(Days)</td>
<td>36</td>
<td>7.39</td>
<td>2.51</td>
<td>7.00</td>
<td>4 – 18</td>
<td>Significant</td>
</tr>
<tr>
<td>TOTAL</td>
<td>52</td>
<td>7.98</td>
<td>2.57</td>
<td>8.00</td>
<td>4 – 18</td>
<td></td>
</tr>
</tbody>
</table>

CONCLUSION
Urinary tract infection in nephritic syndrome is mostly asymptomatic and causes delayed remission of proteinuria. Every nephrotic child should be screened for UTI routinely for proper management and to avoid prolonged hospital stay, thereby to prevent long term renal damage.

DISCLOSURE
All the authors declared no competing interest.
REFERENCES