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Original Research Article

A Retrospective Study to Assess the Clinical Spectrum and Outcome in Children with Nephrotic Syndrome.

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Abstract

Aim: The aim of the present study was to assess the clinical spectrum and outcome in children with nephrotic syndrome.

Methods: This was a retrospective study conducted at pediatrics department at Darbhanga Medical College and Hospital, Laheriasarai, Darbhanga, Bihar, India from January 2018 to December 2018. 100 children who were diagnosed with nephrotic syndrome at Darbhanga Medical College and Hospital, Darbhanga, Bihar, India in whom steroid treatment was not started yet were included for study purpose. Patients with first attack and relapse both were included in this study.

Results: 70% were male and 30% were females. In the present study, 100% had swelling followed by 88% had puffiness. 100% had pitting edema and 80% had ascites. The hemoglobin, serum albumin, serum creatinine was 10.5±1.46, 1.7±0.43 and 0.62±0.18 respectively. 34% had complete remission and 15% had relapse.

Conclusion: In our study clinical and laboratory findings were in similarity with usual nephrotic syndrome in children. There was no any significant difference in pattern of nephrotic syndrome and response to treatment from other studies.

Keywords: Nephrotic syndrome, Steroid resistance, Complete Remission

Introduction

Nephrotic syndrome is characterized by altered perm selectivity of the glomerular filtration barrier, is a common chronic renal disorder in children characterized by oedema, hypoalbuminemia and proteinuria which ranges from milligrams to grams. [1] Minimal Change Disease (MCD) is a renal or kidney disease in which protein is lost in the urine in moderate to severe amounts. It is one of the most common causes of nephrotic syndrome worldwide. The most noticeable clinical symptom of MCD is often oedema, or swelling, which can range from mild, moderate or profound. Oedema typically starts in the feet and legs, but can move into the hips and abdomen, and also causes puffiness of the face. Proteinuria develops very rapidly in minimal change nephrotic syndrome when compared to other systemic causes. Other clinical or laboratory findings of nephrotic syndrome include elevated blood pressure, high cholesterol, and altered coagulation profile. Renal biopsy and histopathological examination provides and confirms the nature of the disease as all the types of nephrotic syndrome commonly present with similar clinical features. Renal biopsy tissue is sampled to histology by light microscopy and immunofluorescence provides clear demarcation between MCD where the glomeruli are normal or nearly normal in MCD under microscopy and in Non-MCD glomeruli show significant changes depending upon the type of the disease. [2]

Nephrotic syndrome (NS) is one of the commonest renal diseases in children. The majority of children with nephrotic syndrome run a steroid-sensitive course with a good long-term prognosis. Children with nephrotic syndrome (NS) have a higher likelihood of developing infections. Although in developed nations, the occurrence of infections in children with NS has reduced, it still remains a significant issue in developing countries. [3] Untreated nephrotic syndrome in children increases

the risk of mortality, primarily due to bacterial infections. Prior to the use of corticosteroids and antibiotics, 40% of children died, with 50% of these fatalities resulting from infections. [4] Several significant risk factors for infections include urinary loss of immunoglobulins and alternative complement pathway factors B and I, the presence of edema, and treatment with steroids and other cytotoxic agents. [5]

The aim of the present study was to assess the clinical spectrum and outcome in children with nephrotic syndrome.

Materials and Methods

This was a retrospective study conducted at pediatrics department at Darbhanga Medical College and Hospital, Laheriasarai, Darbhanga, Bihar, India from January 2018 to December 2018. 100 children who were diagnosed with nephrotic syndrome at Darbhanga Medical College and Hospital, Darbhanga, Bihar, India in whom steroid treatment was not started yet were included for study purpose. Patients with first attack and relapse both were included in this study.

Nephrotic syndrome was diagnosed based on the following criteria's – 1) massive proteinuria > 40mg/m2/hr. or protein creatinine ratio >2- 3:1 2) hypoalbuminemia <2.5gm/dl 3) generalized edema and lastly 4) hypercholesterolemia >200 mg/dl. Nephrotic syndrome secondary to systemic causes was not taken into consideration. Informed written consent was taken from the parents/guardians.

Pre structured proforma was used for taking history, appropriate examination and investigations were done, investigations like complete blood count, peripheral smear, serum albumin, urine examination and culture etc. were done in all the patients. Sulfosalicylic acid test was used for urine proteins, Eshbach's albumin meter was used for protein creatinine ratio and 24 hours urine protein. BP, weight, intake and output chart, abdominal girth, urine for proteinuria were done daily on all patients. Patients were started treatment with steroids according to IAP protocol, along with fluid and salt restriction and their response was noted. Statistical analysis was done by standard descriptive statistics including chi-square test and calculating the p value. Institutional ethical committee approved this study.

Results

Table 1: Age and sex wise distribution of cases

Age	Male	Female	Total
1-5	15	10	25
6-10	49	18	67
11-15	6	2	8
Total	70	30	100

70% were male and 30% were females. Most of the patients belonged to 6-10 years age group.

Table 2: Presenting symptoms and signs in nephrotic syndrome

Symptoms	**N**	**%**
Vomiting	12	12
Fever	24	24
Abdomen Pain	70	70
Swelling	100	100
Puffiness	88	88
Burning	8	8
Signs		
Pitting edema	100	100
Ascites	80	80
Pallor	44	44
Hepatomegaly	12	12
Hypertension	14	14

In the present study, 100% had swelling followed by 88% had puffiness. 100% had pitting edema and 80% had ascites.

Table 3: Laboratory profile of Nephrotic syndrome

Variables	Mean ± SD
Hemoglobin	10.5±1.46
Sr. Albumin	1.7±0.43
Sr. Creatinine	0.62±0.18
Blood urea	23±6.34
ESR	71±27
Total count	7576±1232

The hemoglobin, serum albumin, serum creatinine was 10.5±1.46, 1.7±0.43 and 0.62±0.18 respectively.

Table 4: Outcome of nephrotic syndrome in cases

Outcome	N (%)
Complete remission	34 (34%)
Relapse	15 (15%)
Initial steroid resistance	5 (5%)
Steroid dependent	11 (11%)
Deaths	2 (2%)

34% had complete remission and 15% had relapse.

Discussion

Nephrotic syndrome (NS) is the most common childhood kidney disease worldwide [6] estimates on the annual incidence of nephrotic syndrome range from 2-7 per 100,000 children [7] and prevalence from 12-16 per 100,000. There is epidemiological evidence of a higher incidence of nephrotic syndrome in children from south Asia. [8] Nephrotic syndrome (NS) is characterized by substantial loss of protein in the urine (primarily albuminuria), leading to hypoproteinemia (hypoalbuminemia) and its result, edema. Hyperlipidemia, hypercholesterolemia, and increased lipid Uria are usually associated. Although not commonly thought of as part of the syndrome, hypertension, hematuria, and azotemia may also occur. NS is usually due to a glomerular disease and is currently categorized into primary and secondary forms. [9,10]

70% were male and 30% were females. In Safaei A et al [11] there were 29 boys (66%) and 15 girls (34%), male: female ratio was 1.9/1; this was in accordance with our study. In the present study, 100% had swelling followed by 88% had puffiness. 100% had pitting edema and 80% had ascites. In this study swelling was most common symptom seen in all the patients which was in accordance with Sahana KS et al [12] where as in a study done by Safaei A et al [11], it was found to be 54.5%. other common symptoms were abdominal distention 70% and pain 68%. Other symptoms noted by various studies Chowdhary EUA et al [13] and Safaei A et al [11] include anorexia, lethargy, abdominal pain and diarrhea. In this study hypertension was seen in 14% cases. While in a study by Struss.J et al [14] hypertension was found to be present in 20.7% of cases with MCNS and in 25.7% of cases with other histological types.

The hemoglobin, serum albumin, serum creatinine was 10.5±1.46, 1.7±0.43 and 0.62±0.18 respectively. 34% had complete remission and 15% had relapse. Iron deficiency anemia in nephrotic syndrome is attributed to loss of transferrin in the urine. serum albumin was in normal range 1.2-2.2 gm/dl and mean ± SD was1.8±0.45. Similar observations made Hiraoka M et al. [15] In this study steroid resistance was seen in 6% cases which was in similarity with Sahana KS et al [12] with 3% cases showing initial resistance and Banh TH et al [16] reported 2.5% cases with initial resistance. While in Kim JS et al [17] it was found to be about 15 %, which was higher than our study which may be due to larger sample size.

Conclusion

In our study clinical and laboratory findings were in similarity with usual nephrotic syndrome in children. There was no any significant difference in pattern of nephrotic syndrome and response to treatment from other studies.

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