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Clinical profile of nephrotic syndrome in a tertiary health institute in north India

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Abstract

Background: Clinical profile of Nephrotic syndrome in a tertiary health Institute in North India.

Material and methods: This prospective study was conducted from July 2021 to January 2022 in the department of Pediatrics of a tertiary care institution of North India. A total 39 children diagnosed with Nephrotic Syndrome were included in the study. Detailed information on age, sex, age at first episode, presenting complaint, history of presenting illness, social, and family history was taken. Detailed general physical examination, systemic examination, investigations, and response to management were recorded on a pre structured proforma.

Results: of 39 cases of Nephrotic Syndrome, 5(12.8%), 11(28.2%), 7(17.9%), 9(23.07%),7(17.9%) were in the age group of 1-3 ,3-6,6-9,9-12 and 12-15 years respectively and among them the most common age group was 3-6 years (28.2%). There were 26 (66.67%) males and 13 (33.33%) females with a male-to-female

ratio of 2:1. It was found that 18(46.2%) subjects were newly diagnosed and 21(53.8%) were relapse cases. Out of which 16(76%) were frequent relapsers and 21(non-frequent relapsers). Also, the most common symptoms were puffiness of face followed by decreased frequency of micturition. The most common signs were pitting edema followed by Ascites and Hepatomegaly. About 10(25.6%) were hypertensive. All cases were given steroids. None of the case had steroid toxicity. **Conclusion:** It can be concluded from our study that the most common age group of presentation is 3-6 years with a male predominance. Also, hypertension was not uncommon among hospitalized cases of NS.

Keywords: Puffiness, Oliguria, Oedema

Introduction

Nephrotic syndrome (NS) is a renal disease with high incidence compared with other kidney disease.[1, 2] NS is characterized by massive proteinuria, hyperlipidemia, hypoalbuminemia and edema[3]. It is 15 times more common in children than adults. It is a quite common clinical condition in our country affecting usually the young children [4]. Most children (90%) with NS have a form of Idiopathic Nephrotic Syndrome (INS)[5]. Most frequent type (85%) of INS is minimal change NS (MCNS) and more than 95% MCNS well responded to steroid therapy[4].

But INS is a chronic relapsing disease[6]. Frequency of relapses is highly variable. In a year, some patients have 6 relapses (frequent relapses)[3]. International study of kidney disease in children originally reported a relapse rate of 60% but later data suggests up to 76-90% with frequently relapsing rate up to 50%[7,8]. Infection is an important cause of relapse in MCNS. Prevention and treatment of which could reduce proteinuria without necessity of steroid [9,10]. An Upper Respiratory Tract Infection (URTI) or a febrile episode often precipitates a relapse; occasionally there is no obvious cause[3]. Asymptomatic UTI might be an important and under diagnosed cause of relapse [11]. In view of paucity of data of cases of Nephrotic Syndrome in this part of India, the study was planned in our institute.

Materials and methods

This prospective observational hospital-based study was conducted in the Department of Pediatrics in ASCOMS Hospital, Jammu. The study included children aged 1–15 years with newly diagnosed as well as previously diagnosed NS who presented with relapse. Diagnosis of Nephrotic syndrome was based on the following criteria – clinical profile as puffiness of face, oliguria and oedema; massive proteinuria as (protein excretion greater than 3.5 g/24 hours); hypoalbuminemia<200 mg/dl. The study excluded patients whose parents did not give consent to participate in the study, who presented with co-morbidities not related to complications of NS and known cases of steroid resistant Nephrotic Syndrome (SRNS).

Clearance from the Institutional Ethical Committee was taken before the start of the study video No. ASCOMS/IEC/RP&T/2021/438.

- Detailed information on age, sex, age at first episode, and the locality was noted. The presenting complaint, detailed history of presenting illness, diet history, and social and family history were taken.
- Detailed general physical examination, vitals, anthropometry, and systemic examination was done.
- All these parameters were recorded on a preformed pro forma sheet.
- Hypertension was defined as BP >95th centile for age, gender and height.

- Complete Remission (CR) was defined as urine protein nil or trace on 3 consecutive days.
- Frequent relapsing nephrotic syndrome (FRNS) was defined as 2 or more relapses within the first 6 months of presentation or 4 or more relapses in any 12 months[12].
- Non-Frequent Relapsing Nephrotic Syndrome (NFRNS) was defined as relapse 2 to 3 times in a 12-month period. Steroid Resistant Nephrotic Syndrome (SRNS) was defined as absence of remission in spite of daily prednisolone regimen of 2mg/ kg/day for 4 weeks[12].
- Secondary Steroid Resistant Nephrotic Syndrome (SSRNS) was described as development of resistance in a child who had previously been steroid sensitive[12].

Results

In the present study majority of the patients were in the age group of 3-6 years i.e., 28.2% followed by 9-12 i.e., 23.07%. About 66.66% of the cases were males while 33.33% were females, with male: female ratio of 2:1 suggesting male preponderance. 46.2% of cases presented for the first time (first attack), whereas 53.8% of patients had one or more relapse at the time of presentation, out of which 76% were frequent relapsers as described in Table 1.

Table 1: Distribution of demographic variables of the patients.

Age group(yrs.)	No.	Percentage (%)
1-3	05	12.8
3-6	11	28.2
6-9	07	17.9
9-12	09	23.07
12-15	07	17.9
Total	39	100
Sex	No.	Percentage (%)
Male	26	66.67
Female	13	33.33
Total	39	100
Rural	21	53.8
Urban	18	46.1
New	18	46.2
Relapses Frequent Relapse (FR) Non-Frequent Relapse (NFR)	21 16 5	53.8 76 23

The most common symptoms were puffiness of face (56.4%), followed by decreased frequency of urination (35.8%), abdominal distension (28.2%), vomiting (25.6%), genital edema (23.09%), dragging abdominal pain (17.9%) and fever (15.3%), The most common signs were pitting edema in 82.05% followed by, ascites (30.7%), hepatomegaly (28.2%), pallor (23.07%), hypertension (25.6%) and pleural effusion (10.2%) as described in Table 2.

Table 2: Distribution of Patients as per the Clinical Presentation.

Presenting symptoms	No.	Percentage (%)
Peri-orbital puffiness	22	56.4
Decreased frequency of urination	14	35.8
Abdominal distension	11	28.2
Vomiting	10	25.6
Genital Edema	9	23.09
Abdominal Pain	7	17.9
Fever	6	15.3
Signs on physical examination		
Pitting Edema	32	82.05
Ascites	12	30.7

Hepatomegaly	11	28.2
Pallor	9	23.07
Pleural effusion	4	10.2
Hypertension	10	25.6
Oliguria	10	25.6

(*Majority of the patients were having more than one signs)

Discussion

This study was conducted on 39 children who were diagnosed to have nephrotic syndrome in our institution. In the present study the age distribution of cases ranged from 1 year to 15 years. The mean age at presentation was 7.8 years, with majority falling in the age group of 3-6 years followed by 9-12 years with a male preponderance. These findings are in confirmation with Sahana et al[12] where most common age of presentation was between the ages of 2-15 years with mean age of 7.4 years with male to female ratio of 3.27:1. Pandya and Mehta[13] reported mean age as 4.08 years and Kiran and Kumar reported the mean age at presentation as 6.7 years[14]. In the present study (n=39) male: female ratio was noted to be 2:1 similar observation was made by Aggarwal et al.[15]

On clinical examination, we found that edema was seen in most of the patients 82.05% and ascites 30.7%. Hypertension & oliguria was seen in 25.6% of subjects, and pleural effusion in 10.2% subjects. Sahana[12] found that all patients presented with puffiness of face and swelling of limbs. In our study Oliguria was present in 25.64% of subjects which may be due to decreased intravascular volume of fluid due to shifting from intravascular to extravascular space or may be due to renal failure which was a feature of atypical NS. Sahana[12] observed it in 53.1% subjects whereas Kiran and Kumar[14] found oliguria in 40% subjects. Similar observations were seen in many studies, [16,17,18.] Kiran and Kumar observed edema in 96% of the subjects, ascites in 90%, and pleural effusion in 30% of subjects. Pandya and Mehta[13] found that hypertension was presented in 6.7% of children with steroid sensitive nephrotic syndrome (SSNS). Incidence of hypertension was lower in their study may be due to lesser number of subjects with relapse. A similar study done by Patil and Bendale[19] found more hypertension than in our study (53.13%) which could be due to small sample size and more cases of higher age group.

Relapsers were more in number as compared to the ones who had first episode. Though commonly nephrotic syndrome is seen in pre-school children in our study the mean age was 7.8 years as majority of cases (53.8%) were relapses. Younger the age of onset of nephrotic syndrome more likely is the chance of MCNS[20]. Fever presented in 15.3% of subjects which was due to infections such as upper respiratory tract infection, UTI, and pneumonia and these infections could be triggering factors for relapses in NS. Among the frequent relapsers, none of the patients had features of steroid toxicity. The study had a few limitations such as small sample size and it did not differentiate between treatment-related and disease related complications.

Conclusion

It is concluded from our study that the most common age group of presentation of Nephrotic Syndrome is 3-6 years with a definite male predominance. Also, hypertension was not uncommon among hospitalized cases of NS.

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