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Original Research Article.

The Risk Factor Associated with Relapse in Childhood Nephrotic Syndrome

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ABSTRACT

Objective: In this study our main goal is to evaluate the risk factor associated with Relapse in Childhood Nephrotic Syndrome.

Methodology: This Cross-sectional comparative study conducted at Tertiary Medical College Hospital, Dhaka from January 2017 to December 2018. During the study, 100 study subjects were included with relapsed NS out of them 50 having FRNS (Group-A) and 50 having IFRNS (Group-B) were taken using simple random sampling technique.

Results: During the study, most of the patients in group-A and group-B belongs to ≥ 5 Years age group, 61% and 64 %.). Only 25% patients were completed their graduation and most of them belong to poor economic condition. Chi-square test revealed no statistically significant differences between the relapsed and non-relapsed groups were seen in hypertension, infection, serum creatinine level, or hematuria. However, a statistically significant difference in subjects' nutritional status was observed between the relapsed and non-relapsed groups (P=0.02).

Conclusion: Nutritional status of patients at the time of diagnosis can be used as risk factor for relapse in pediatric nephrotic disease. Clinicians should provide nutritional therapy if the NS patient is poorly nourished and reevaluate at least six months after steroid therapy.

Keywords: Relapse, Childhood Nephrotic Syndrome, Nutritional Status.

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INTRODUCTION

Nephrotic Syndrome (NS) is a common childhood illness considered by massive proteinuria, hyperlipidemia, hypoalbuminemia & edema. NS is a disease of relapse and it is a main problem to manage the cases with frequent relapse.[1]

It is the most common kidney disease of children generally occurring in school-aged children less than 14 years of age. Information from the USA and UK showed that NS affects 2-7/100,000 children per year, with a prevalence of 12-16/100,000 children; whereas a report from Indonesia displayed that NS affects 6/100,000 children under 4 years of age per year. The ratio of boys to girls was reported to be 2:1. Findings of nephrotic syndrome requires the presence of edema, massive proteinuria (>40 mg/m²/hour) or a urine protein/creatinine ratio (>2.0 mg/mg) and hypoalbuminemia (<2.5 gm/dl). The annual frequency is 2-3 cases per 100000 children per year and higher in underdeveloped countries resulting predominantly from malaria.[1-4]

In this study our main goal is to evaluate the risk factor associated with Relapse in Childhood Nephrotic Syndrome.

OBJECTIVE

General Objective

- To assess the risk factor associated with Relapse in Childhood Nephrotic Syndrome.

Specific Objective

- To detect sociodemographic factors of the patients with Nephrotic Syndrome (NS)
- To identify infection rate of the patients.

METHODOLOGY

Type of Study: Cross-sectional comparative study

Place of Study: Tertiary Medical College Hospital, Dhaka

Study Period: January 2017 to December 2018

Study Population: 100 study subjects were included with relapsed NS out of them 50 having FRNS (Group-A) and 50 having IFRNS (Group-B) were taken using simple random sampling technique.

Sampling Technique: Purposive

Method

The subjects were divided into two groups: group I was comprised of children with INS who had relapsed after receiving up to 6 months of steroid therapy, whereas group II was comprised of children with IFRNS. Patients with systemic and chronic diseases, congenital nephrotic syndrome, steroid resistance, and incomplete medical records (demographic and laboratory data) were excluded from the study. The following variables were recorded for all subjects: age, sex, height, body weight, history of infection, blood pressure, and laboratory findings such as serum protein, serum albumin, serum cholesterol, serum creatinine, complete blood count, as well as urinalysis, at the time of the NS diagnosis.

Statistical Analysis

First data were edited to the validity and consistency of the data. After proper verification data were coded and entered into computer by using SPSS software programs. Descriptive analysis was done by percentage, mean and standard deviation. Association was observed by appropriate statistical test at 95% confidence interval eg. odds ratio, Chi-squiare, t-test .

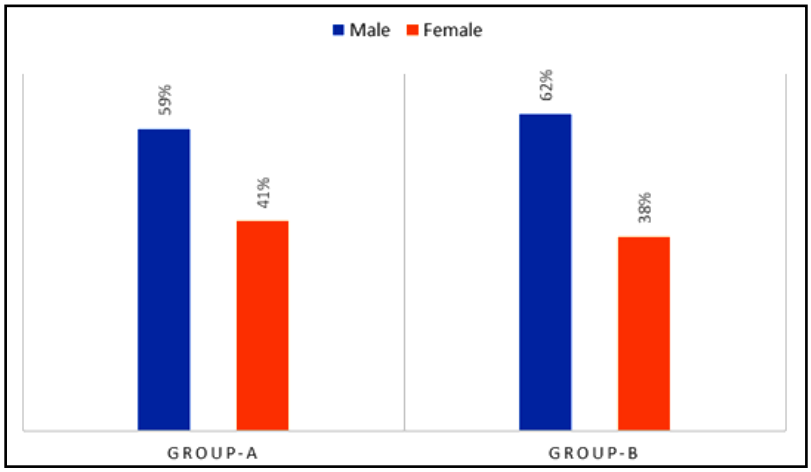

Figure 1: Gender distribution of the patients.

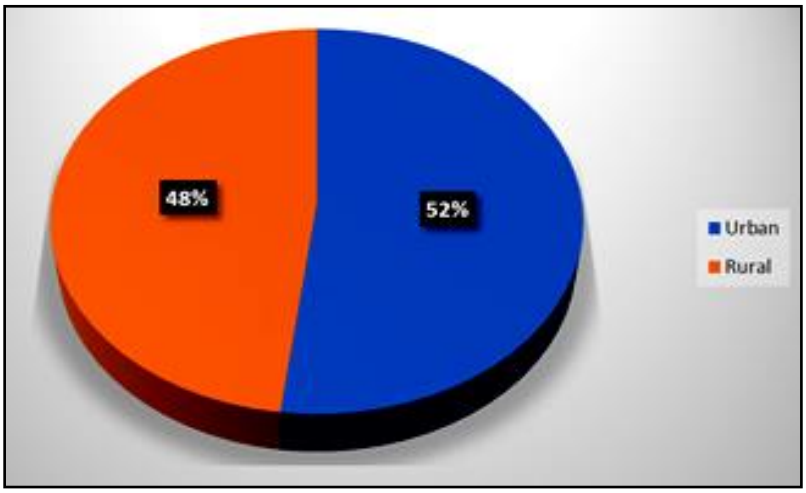

Figure 2: Distribution of the patients according to residential area.

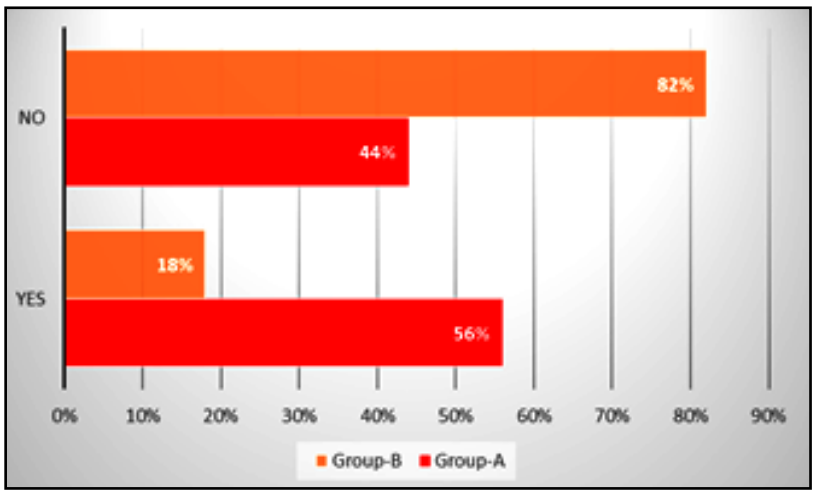

Figure 3: Distribution of the patients according to infection rate.

Table 1: Age distribution of the patients

Age group (years)	Group A= Relapse, %	Group B= Non-Relapse, %
≥ 5 Years	61%	64%
<5 Years	39%	36%

Table 2: Distribution of the patients according to sociodemographic factors

Variable		Group-A, %	Group-B, %
Economic condition of parents	Poor	60%	70%
	Middle class	25%	20%
	Upper class	15%	10%
Occupation of patient's parents	Housewife	25%	20%
	Teacher	25%	15%
	Service holder.	10%	9%
	Businessman	35%	36%
	others	5%	10%
Education of patients parents	Illiterate	2%	5%
	Primary	9%	12%
	Secondary	23%	40%
	Higher-secondary	41%	10%
	Graduation or more	25%	8%

Table 3: Comparison of possible risk factors for relapse between the relapsed and non-relapsed groups

Variable		Group-A,	Group-B	P value
Nutritional status	Normal	48%	43%	0.024
	Undernourished	40%	46%	
	Poorly nourished	12%	11%	
Hypertension	Yes	30%	16	0.820
	No	70%	84%	
Creatinine level	Normal	10%	13%	0.616
	Increased	90%	87	
Hematuria	Yes	49%	52%	0.885
	No	51%	4%	

RESULTS

In table-1 shows age distribution of the patients where among 100 patients here, most of the patients in group-A and group-B belong to ≥ 5 Years age group, 61% and 64%.

In figure-1 shows gender distribution of the patients where male patients were higher in both group-A and Group-B.

In figure-2 shows distribution of the patients according to residential area where 52% patients from urban and 48% from rural.

In table-2 shows distribution of the patients according to sociodemographic factors where only 25% patients were completed their graduation and most of them belong to poor economic condition.

In table-3 shows comparison of possible risk factors for relapse between the relapsed and non-relapsed groups where the possible risk factors for relapse were compared between the two groups. Chi-square test revealed no statistically significant differences between the relapsed and non-relapsed groups were seen in hypertension, infection, serum creatinine level, or hematuria. However, a statistically significant difference in subjects' nutritional status was observed between the relapsed and non-relapsed groups (P=0.02).

In figure-3 shows distribution of the patients according to infection rate where 56% patients had infection in group-A whereas 18% had infection in group-B.

DISCUSSION

In our study among 100 patients here, most of the patients in group-A and group-B belongs to ≥ 5 years age group, 61% and 64%.Also, male patients were higher in both group-A and Group-B.

In one study reported that, the age of patients at the time of diagnosis was classified into either the ≤ 5 years of age group or >5 years of age group. A bivariate analysis revealed no statistically significant difference between the relapsed and non-relapsed groups in age at the time of diagnosis (P<0.697), similar to a study by one article. (P=0.708).[4]

During the study, the possible risk factors for relapse were compared between the two groups. Chi-square test revealed no statistically significant differences between the relapsed and non-relapsed groups were seen in hypertension, infection, serum creatinine level, or hematuria. However, a statistically significant difference in subjects' nutritional status was observed between the relapsed and non-relapsed groups (P=0.02).

One study noted similar finding like our study where they found the only statistically significant difference between the relapsed and non-relapsed groups was for nutritional status, with a higher percentage of poorly nourished subjects experiencing relapse.[5] In contrast, another study found no statistically significant difference according to nutritional status of their patients.[6] We found no statistically significant differences between the relapsed and non-relapsed groups in serum creatinine or hematuria levels, respectively. However, another article reported that found low levels of protein and serum albumin to be risk factors for frequent relapse.[5]

CONCLUSION

In conclusion, nutritional status of patients at the time of diagnosis can be used as risk factor for relapse in pediatric nephrotic disease. Clinicians should provide nutritional therapy if the NS patient is poorly nourished and reevaluate at least six months after steroid therapy. We recommend that further studies be performed without a six-month time limit to further assess other possible risk factors for relapse in pediatric nephrotic syndrome.

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