Is Helminthiasis a Precipitating Factor for Frequently Relapsing Nephrotic Syndrome?

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ABSTRACT

Nephrotic Syndrome (NS) is a common childhood illness. It is a disease of relapse and remission with major concern to manage the cases with relapse. Helminthiasis also a common problem in our subcontinent. So, it is very important to find out any relation with helminthiasis and relapse in children. In our study, 88 patients, clinically diagnosed as minimal change nephrotic syndrome, were studied to find out any relationship with helminthiasis and frequent relapse. 36 patients (40.9%) had no helminthic infection, 34 patients (38.6%) had helminthiasis and 18 patients (20.5%) had atopic disorders. 62 patients were successfully followed up for 6 months. Relapses occurred 47.8% (11/23) patients in non-helminthiasis group. 88.5% (23/26) in helminthiasis group and 84.6% (11/13) in atopic group, patients who completed follow up. Thirteen percent (3) patients in non-helminthiasis group, 50% (13) in helminthiasis group and 38.5% (5) in atopic group were found to be frequent relapser. The differences were statistically significant.

Key words: *Nephrotic syndrome, Helminthiasis, Atopy, Relapse.*

INTRODUCTION

Prevalence of minimal change nephrotic syndrome is high in Asian subcontinent[1]. Atopy is associated with 34 to 60% of children with minimal change nephritic syndrome [2,3]. Several studies suggested that in the last half-century there is a strong association between nephrotic syndrome and atopy accompanied by increased levels of serum immunoglobulin E (IgE)[4,5]. Helminthiasis is also a common problem in this subcontinent. In a study, it was concluded that helminthiasis has strong association with frequent relapse of nephrotic syndrome 8% and Infrequent relapse 4%[6]. The study was aimed to see whether there is any association of helminthiasis with minimal change nephrotic syndrome and their subsequent relapses.

MATERIALS AND METHODS

This prospective study was conducted in the renal ward of Dhaka Shishu (Children) Hospital from July 1998 to June 2000. Study population comprised of 88 nephrotic syndrome patients having characteristic clinical course of minimal change type. A detailed history, with special emphasis on atopy, asthma, and helminthiasis was recorded. Stool routine examination was done on three consecutive days following admission. Peripheral eosinophil count was also seen. To compare the incidence of ascariasis, random stool examination were done in 88 patients of same age, sex and social group, without nephrotic syndrome or gastrointestinal problems. Study patients were then divided into three groups — (1) Non-helminthiasis group (n-36): No history of passage of worm in stool or vomitus in last three months and stool examination for ova of helminths was negative. (2) Helminthiasis group (n-34): History of passage of worm in stool or vomitus and/or stool examination for ova of helminths was positive. (3) Atopic group (n-18): History of bronchial asthma, atopic dermatitis, urticaria, food allergy, and atopic rhinitis was present. On discharge parents were advised to come for monthly follow-up for the next 6 months. Any precipitating factor and any features of relapse were noted during follow up.

RESULTS

A total of 88 patients were studied during the study period. 36 patients (44.9%) were in non-helminthiasis group, 34 patients (38.6%) in helminthiasis group and 18 patients (20.5%) were in atopic group. Relapse cases were more in helminthiasis group (23/34, 67.6%) and in atopic group (11/18, 61.1%), than non-helminthiasis (16/36, 44.4%) group (Table 1). Mean age patients was 31.4 months in non-helminthiasis group, 57.3 months in helminthiasis group and 58.3 months in atopic group. Upper respiratory tract infection was the commonest precipitating factor in non-helminthiasis group, helminths in helminthiasis group and asthma in atopic group. Ova of helminths (Ascaris lumbricoides) in stool examination were found in 33 nephrotic patients (42%) in comparison to non-nephrotic (hospitalized) patients (26.6%).

Table. 1-Outcome of study patients in three groups

	Non-Heliminthiasis (n=36)			Heliminthiasis (n=34)			Atopic (n=18)			
	First attack	Relapse	Total	First attack	Relapse	Total	First attack	Relapse	Total	p value
Initial enrolment	20	16	36	11	23	34	7	11	18	<0.05
Follow-up completed	10	13	23	8	18	26	4	9	13	
	(50%)	(81.2%)	(63.9%)	(72.7%)	(78.3%)	(76.5%)	(57.1%)	(81.8%)	(72.2%)	
Relapse occurred	3	8	11	5	18	23	3	8	11	<0.01
	(30%)	(61.5%)	(47.8%)	(62.5%)	(100%)	(88.5%)	(75%)	(88.9%)	(84.6%)	
Frequent relapse	-	3	3	2	11	13	2	3	5	<0.05
			(13%)			(50%)			(38.5%)	
Steroid dependent	-	2	2	-	4	4	-	2	2	
Infrequent relapse	3	3	6	3	3	6	1	3	4	

The difference was statistically significant (p <0.05). Serum total protein and serum albumin was significantly lower in helminthiasis group (p value <0.05 and <0.02 respectively) and in atopic group (p value <0.05 and <0.01), compared to non-helminthiasis group. Eosinophilia was not significant in atopic or helminthiasis group in comparison to non-helminthiasis group.

Sixty-two patients were successfully followed up: 63.9% (23/36) in non-helminthiasis group, 76.5% (26/34) in helminthiasis group and 72.2% (13/18) in atopic group. Forty-eight percent (11) patients in non-helminthiasis group, 88.5% (23) in helminthiasis group and 84.6% (11) in atopic group developed relapse among follow up completed patients. The differences of relapse in three groups were statistically significant (p value <0.01). Three patients (13%) in non-helminthiasis group, 13 (50%) in helminthiasis group and 5 (38.5%) in atopic group were found to be frequent relapser; the differences were statistically significant (p value <0.05).

DISCUSSION

Atopy is a well-defined underlying association in minimal change nephrotic syndrome. As Asian subcontinent is an endemic zone for helminthiasis and incidence of minimal change nephrotic syndrome is also more in Asian subcontinent. It is likely that both genetic predisposition and environmental factor (helminthiasis) may play a role in high incidence of nephrotic syndrome in this subcontinent. For instance, *Strongyloides* Stercoralis, which is a human pathogenic parasitic roundworm causing the disease strongyloidiasis. There are reports of Nephrotic Syndrome associated with Strongyloidiasis. Abdullah et. al. presented a case of disseminated strongyloidiasis in a patient with minimal change nephrotic syndrome treated with high-dose corticosteroids. The remission of nephrotic syndrome after treatment of strongyloidiasis suggests a possible causal relationship between Strongyloidiasis and nephrotic syndrome[7]. Miyazaki et. al. also presented a case of strongyloidiasis complicated with steroid-resistant minimal change nephrotic syndrome in a 69-year-old male[8].

Our present findings show that atopic group comprised 20.5% of total patients; helminthiasis and non-helminthiasis group are 38.6% and 40.9% respectively. Relapse cases were more in helminthiasis group (67.6%) and in atopic group (61.1%), in comparison to non-helminthiasis group (44.4%). In our study 20.5% of total patients had history of atopy in comparison to other studies, where it was 34 to 60%[2,3]. In this study allergic disorders were present in 11.4% of patients before onset, much higher than the findings of Meadow et a1[3], which was only 2.8%. Prevalence of helminthic infections as a whole has been found to be high in Bangladesh by all the workers in this field. MN Sarker et al (2012) concluded that helminthiasis causes frequent relapse in 8% cases and infreuent relapse in 4% whereas history of atopy was associated with frequent relapse in 52% and

infrequent relapse in 22% respectively[6]. Our study showed relapse cases were more in helminthiasis group (67.6%) and comparatively less in atopic group (61.1%). Different authors have also mentioned the incidence of ascariasis in their community. Muazzam et a1 (1967) found ascariasis to have the highest incidence (33.9%); Muttaleb et al (1970) also found ascariasis to be the most common (40%) infection[9,10]. Mahmood et al (l985) reported 58% in Dhaka city among school children and 44.7% in pediatric ward of Raj shahi Medical College Hospital[11]. In our study we found that 26.6% of hospitalized non-nephrotic patients had ova of Ascaris lumbricoides in comparison to 42% in nephrotic patients.

Total 62 patients (70.4%) completed follow up. Relapses occurred 11 patients (47.8%) in non-helminthiasis group, 23 (88.5%) in helminthiasis group and 11 (84.6%) in atopic group. Most-of the frequent relapser was in helminthiasis group (50%) and atopic group (38.5%), compared to non-helminthiasis group (13%).

CONCLUSION

Allergic conditions are frequently found in children with minimal change disease and causing relapse of nephrotic syndrome, which is established by many studies. Despite this fact our study also concluded that helminthiasis, similar to allergic condition, which also cause more relapse in children with nephrotic syndrome and is a special concern to our geographical area.

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