Case Series

Effect of Inhalation Steroids in Children with Coexistent Atopic Disorders & Nephrotic Syndrome on Prevention of Relapses of Nephrotic Syndrome

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ABSTRACT

In many nephrotic syndrome children, it has been observed that onset of rhinitis and/or wheezing attacks precipitate the relapse of nephrotic syndrome. This association is known since long time. We decided to observe the response of inhalation steroids in prevention of relapses of nephrotic syndrome in children who presented with frequently relapsing nephrotic syndrome and coexistent atopic disorders.

Key words: *Atopy, Inhalation steroids, Nephrotic syndrome, Relapse*

Association of idiopathic nephrotic syndrome and atopic disorders has been observed by fanconi et al for the first time in 1951 and then by many observers [1-3]. Whether it is a type of allergic disorder, the evidence is scarce [4]. We share our experience of seven patients with asthma and rhinitis who also had idiopathic nephrotic syndrome with frequent steroid responsive relapses. These were given inhalational steroids for allergic rhinitis or asthma; however, it also prevented the further relapses of nephritic syndrome.

CASE DETAILS

It was a prospective observational study conducted in pediatric nephrology clinic of a tertiary care hospital from July 2010 to June 2012. We found that, out of 55 patients of idiopathic nephrotic syndrome, seven patients (12.7%) had atopic disorders which were diagnosed clinically. We could not perform serum Ig E levels or allergy test in these children because of economic constraints. Renal biopsies were not done as there was no indication. The clinical details and their response to steroids are depicted in table - 1. Each relapse of nephrotic syndrome was precipitated by an episode of exacerbation of wheezing or rhinitis. The frequency of relapses varied from 3-8/ year.

These were treated with oral prednisolone 2mg.kg/day till remission and 1.5mg/kg/alternate day for 4 weeks along with the treatment of underlying infection. When they went into remission oral steroids were stopped and because of history of recurrent wheezing /rhinitis episodes, followed by relapses of NS, we started them on inhalation steroids. During 12 months followup after starting inhalation steroids, these patients neither had any exacerbation of asthma /rhinitis nor did they had any relapse of nephrotic syndrome.

DISCUSSION

Association of atopy with idiopathic nephrotic syndrome was first time observed by Fanconi et al in 1951 [1]. Children with idiopathic nephrotic syndrome have been reported to have relapses on exposure to various allergens [5-8]. The prevalence of atopy in patients with idiopathic nephrotic syndrome varies from 10-50%, and tendency for increasing prevalence has been observed [9-11]. In our

study, the prevalence was 12.5%. This association has been suggested by following: presentation with and precipitation by allergic disorders (both aero and food allergens) [2,5-8], seasonal variations [12,13], increase serum IgE levels in patients with steroid responsive nephrotic syndrome and more so in frequent relapsers [2,4,9,13], increased levels of Interlukin-13 [14-16], and association with HLA B12 antigen [17].

Table-1 Clinical details of patients and their response to inhalation steroids

S no	Age (years) /Sex	Associated atopic disorder	Relapses in previous year	Inhalation Steroids (Doses in µg)	Relapses after treatment
1	3 F	Asthma	3	MDI Budesonide (200), 1 puff BD	None
2	5 M	Asthma	4	MDI Fluticasone + Salmeterol (125+25), 1 puff BD	None
3	6 M	Asthma	4	MDI Budesonide (200), 1 puff BD	None
4	8 M	Asthma	6	MDI Budesonide (200), 1 puff BD	None
5	11 M	Asthma	4	MDI Budesonide (200), 1 puff BD	None
6	5 M	Allergic rhinitis	4	Fluticasone nasal spray (50) OD	None
7	6 F	Allergic rhinitis	3	Fluticasone nasal spray(50) OD	None

Association of idiopathic nephrotic syndrome (minimal change disease) with atopy is probably the result of underlying immune system which predisposes them to both diseases. Interlukin-13 has been found to be increased in patients with minimal change disease. Interlukin-13 cause switchover from IgM to IgE in B cells and induces increased CD80 expressions by podocytes which leads to proteinuria [4].

Patients with first episode of nephritic syndrome is treated with oral prednisolone 2mg/kg/day daily in divided doses for 6 weeks and then 1.5 mg/kg/alternate day single dose for 6 weeks. The treatment for relapse of steroid sensitive FRNS is treatment of underlying infection and if required oral prednisolone 2mg.kg/day till remission and 1.5mg/kg/alternate day for 4 weeks. A frequently relapsing and steroid dependent NS is treated with prolong course (9–18 months) of oral prednisolone 0.5 to 0.7mg/kg, alternate day. Immunotherapy may cause remission in these patients but results are not consistent [5,18]. Further molecular studies could result in novel therapies, such as the use of CTLA-4 IgG that specifically target CD80.

In this study group, all the patients had frequent wheezing or rhinitis episodes which every time precipitated the relapse of nephrotic syndrome. These patients were referred to asthma clinic for frequent wheezing / rhinitis episodes and inhalational steroids were prescribed to them for rhinitis/ asthma. However, on follow up, we found there were no relapses of nephrotic syndrome also along with decreased incidences of wheezing attacks and all these patients remained in remission during one year followup with inhalation steroids only. However, this was a simple observation only and we could not find any previous studies.

We could not confirm the association of inhalational steroids and prevention of relapses of nephrotic syndrome by any immunological study due to limitations of resources. However, further large scale studies can be conducted to explore this potential modality of treatment to prevent relapses in nephrotic syndrome. Our study has other limitations also as only seven patients were studied, no controls were used and no immunologic criteria used for identifying and diagnosing allergy.

CONCLUSION

The study has given an insight that the patients with idiopathic nephrotic syndrome should be evaluated for associated atopic disorders. In a child with steroid sensitive FRNS and associated recurrent wheezing or rhinitis, trial of inhalational steroids after remission may decrease or prevent further relapses.

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