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Case Report

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Nephrotic Syndrome in a Child Following a Bee Sting

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ABSTRACT

Bee stings have previously been implicated in the development of nephrotic syndrome, though the reported cases in the literature are poorly documented. A three-years-old girl developed generalized edema eight days after a bee sting. The physical examination and laboratory findings were relevant with nephrotic syndrome. Her serum IgE level was to be increased. Prompt remission with resolution of edema and normalization of the laboratory findings was obtained after given the corticosteroid treatment. Due to existence of association between development of nephrotic syndrome and hypersensitivity, cases of bee sting must be closely followed-up for multiple immune-mediated complications. *©2006, Fırat Üniversitesi, Tıp Fakültesi*

Key words: *Nephrotic syndrome, bee sting, child.*

ÖZET

Arı Sokması Sonrası Gelişen Nefrotik Sendrom Olgusu

Arı sokmaları daha önceleri nefrotik sendromun bir nedeni olarak suçlanmış olmakla birlikte, literatürde fazla sayıda olgu bildirilmemiştir. Üç yaşında kız olgu arı sokmasından sekiz gün sonra gelişen yaygın ödemleri nedeni ile başvurdu. Fizik muayene ve laboratuvar bulguları nefrotik sendrom ile uyumlu idi. Serum IgE düzeyi yüksek bulundu. Kortikosteroid tedavisinden sonra ödemlerinin hızla gerilediği ve laboratuvar bulgularının ise normale geldiği görüldü. Nefrotik sendrom gelişimi ve aşırı duyarlılık arasında ilişki olması nedeni ile arı sokması vakaları gelişebilecek bir çok immün-aracılı komplikasyonlar yönünden yakından izlenmelidir. *©2006, Fırat Üniversitesi, Tıp Fakültesi*

Anahtar kelimeler: *Nefrotik sendrom,arı sokması, çocuk.*

The most common type of nephrotic syndrome in childhood is the idiopathic one, which histologically presents as a minimal lesion disease with excellent response to corticosteroid treatment (1). The etiology and pathogenesis of the idiopathic nephrotic syndrome remains obscure (2). Numerous examples of abnormal immune responsiveness have been described in minimal change nephrotic syndrome. The association of minimal change nephrotic syndrome with allergy and with certain genetic markers of immune responsiveness, as well as the excellent response of proteinuria to immunomodulatory agents, has suggested a causal relationship between the immunological and renal abnormalities. Studies of humoral and cellular immune functions support the hypothesis that immune regulation is abnormal in this clinical entity (3). The association between nephrotic syndrome and allergic phenomena was originally recognized about 40 years ago, when case reports appeared which described nephrotic syndrome triggered by bee sting, poison ivy and pollen hypersensitivity (4, 5).

A rare case of nephrotic syndrome following a bee sting in a female child was reported.

CASE REPORT

A three-years-old girl was presented with appearance of generalized edema. Her history revealed that, eight days before the admission she had a bee sting on her neck, which produced redness and edema in the same area. Eight days after from this event the child had marked edema to be onset from her eyelids and face; afterwards the edema extended to legs and eventually the whole body. She had no fever. There was no history of atopy. Generalized edema and ascites were determined on her physical examination, and arterial blood pressure measurements were within normal limits. The laboratory investigations revealed an erythrocyte sedimentation rate of 70 mm/h and normal complete blood count. Serum total protein was 4.08 g/dl, albumin 1.51 g/dl, total cholesterol 420 mg/dl, triglycerides 280 mg/dl, serum urea 42 mg/dl, serum creatinine 0.4 mg/dl, creatinine clearance 65 ml/min. Complement C3 was 1.04 g/L (0.90-1.80 g/L), C4 0.25 g/L (0.10-0.40 g/L), IgA 2.08 g/L (0.90-3.95 g/L), IgM 1.20 g/L (0.40-2.30 g/L), IgG 8.82 g/L (7-16 g/L) and IgE 490 ıu/ml (0.00-190 ıu/ml). HBs antigen was negative. Examination of her urine revealed marked proteinuria with the presence of one to two leukocytes per high-power field; this prompted referral for hospital treatment. The total proteinuria was 3.5 g/day.

Human albumin was administered once because of her marked edema and ascite; then prednisolon treatment introduced at the dose of 60 mg/m2/day. On the fourth day of treatment the child's urine was protein free, and there was a significant increase in her diuresis (3.2 ml/kg/h) and resolution of the edema. The steroid regimen was changed to every other day. Following next months at the steroid regimen was tapered gradually and stopped end of sixth month. Three months after end of the treatment, recurrence was not observed.

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DISCUSSION

Numerous studies have confirmed that there is an increased incidence of atopy (infantile eczema, allergic rhinitis and asthma) both in patients with steroid-sensitive nephrotic syndrome and their first degree relatives, although the occurrence of overt atopic disease at the time of nephrosis is uncommon (6, 7). Several authors have reported a role for allergy in the development and maintenance of this disease, especially during childhood (2). There appears to be a pathogenic relationship between respiratory and food allergy and proteinuria in some cases of nephrotic syndrome (8). Atopic individuals presenting with nephrotic syndrome, especially if the nephrosis is frequently relapsing, may have increased levels of serum IgE and interleukin-4 (IL-4). Hypersensitivity type I responses with increased IgE and IL-4 have long been known to be involved in atopic diseases (9, 10).

In the literature there are reports on the occurrence of nephrotic syndrome after insect sting, particularly bee stings (1-11), but these are very rare case. Shishkin (8) presented a series of 52 patients with various morphological forms of glomerulonephritis and history of allergy; 71% of his patients had elevated serum concentrations of IgE. Most of these patients had minimal change nephrotic syndrome and in one case the nephrotic syndrome ensued after insect sting. Also, in this study it was reported that normal levels of IgE were more frequently associated with steroid-resistant nephrotic syndrome characterized by a progressive decline of renal functions and severe damage to the glomeruli.

In a study by Elming and Solling (12), it was suggested that there may be a nonspecifically increased urinary excretion of albumin following insect sting, but none of their patients had developed nephrotic syndrome during follow up period.

Cuoghi et al. (13), in a series of 180 children with nephrotic syndrome found that three children had relapses triggered by the insect sting and all of them went to remission with steroid treatment. Clinical severity of nephrotic syndrome following bee sting and response to steroid / cytotoxic treatment is variably different (14, 15).

Nephrotic syndrome in the case presented here was caused by a bee sting and also her serum IgE level was found elevated. Thus, existence of association between development to be of nephrotic syndrome and hypersensitivity can be considered, because it is reported that minimal change nephrotic syndrome patients with atopy history have increased levels of serum IgE (2, 9, 10). Also in agreement with the relevant literatures, our case had a very favorable clinical course with prompt response to corticosteroid treatment. All this conditions reveal that minimal change nephrotic syndrome associated with allergy has a very favorable response to corticosteroid treatment.

Cases of insect sting, particularly bee stings, must be closely followed up because of the multiple problems, especially for immune-mediated complications such as nephrotic syndrome.

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