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Case Report Nephrology

Nephrotic syndrome following hepatitis B vaccination: A 17-year follow-up

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ABSTRACT

Some case reports described nephrotic syndrome (NS) associated with administering various vaccines in two last decades. They report only 1 year follow-up. We want to summarize the 17-year clinical follow-up of the patient who had been reported in 2000 because of developing NS after hepatitis B vaccination. Our patient first suffered from NS following hepatitis B vaccination in 4 years old. He had been treated with standard prednisolone regimen resulting in complete remission. After the first diagnosis, he had three relapses in following years. Each relapse developed after Salk, pneumococcal, and flu vaccines, respectively. Relapses had been easily controlled by prednisolone. He had seven relapses until 14 years of age. Fortunately, no relapse has been observed between 2009 and 2016. Although he has been taking alendronate and Vitamin-D for osteoporosis, he is a healthy young adult now. We think that some vaccines may induce relapses in NS, as a triggering factor without being the primarily responsible factors.

Keywords: Children; nephrotic syndrome; vaccination.

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Nephrotic syndrome (NS) is anecdotally reported after the vaccination in PubMed. This reports described NS associated with administering various vaccines such as hepatitis B, influenza, pneumococcus, and tetanus-diphtheria-poliomyelitis in two last decades [1–6] Only two of them were children. Reported children had NS only after hepatitis B vaccine. The follow-up of all reported cases in PubMed is only 1 year. One of these reported children was ours [2]. Herein, we want to summarize the 17-year clinical follow-up of the patient who had been reported in 2000 because of developing NS after hepatitis B vaccination [2]. A distinctive feature in our case was the development of NS relapse after varicella vaccine [3–6].

CASE REPORT

Our case was a 4-year-old in 2000 he suffered from NS after the third injection of hepatitis B vaccination. He had been treated with standard prednisolone regimen resulting in complete remission. After this first NS attack, İşlek et al. reported this complication as "Letter to Editor" in Pediatric Nephrology Journal [2].

Interestingly, he is a 21-year-old medical student at Hacettepe University, Faculty of Medicine in Ankara, now the first author of this presentation. İşlek et al. reported this association between NS and hepatitis B vaccination at Pediatric Nephrology Journal in 2000 [2]. After the first diagnosis, he had three relapses in the fol-

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Table 1. The follow-up of the patient with nephrotic syndrome

Attack no.	Date	Suspected reason (vaccine or disease)	Clinical presentation	Treatment
1	December 4, 1998	Hepatitis B vaccine	NS	Prednisolone
2	April 30, 1999	Polio vaccine	NS	Prednisolone
3	July 21, 1999	Pneumococcal vac.	NS	Prednisolone
4	November 3, 1999	Flu vaccine	NS	Prednisolone
5	March 24, 2000	Absent	NS	Prednisolone
6	December 6, 2000	Absent	Steroid-dependent NS	Cyclophosphamide
7	July 9, 2002	Varicella disease	NS	Prednisolone
8	May 30, 2006	Absent	NS	Prednisolone
9	October 1, 2009	Absent	NS	Prednisolone

Table 2. Nephrotic syndrome cases following the vaccination in literature [1]. (Courtesy of Biomed Central, BMC nephrology)

Summary of MCNS following vaccination in literature						
Vaccination against	Tetanus-diphteri-poliomyelitis-vaccination[1]	Pneumococcus[3]	Influenza[4]	Hepatitis B[5]	Hepatitis B[6]	Hepatitis B[2]
Age (years)	82	67	65	3	40	4
Gender	Female	Female	Female	Male	Female	Male
Baseline creatinine	76 µmol/l	No data	Normal	44 µmol/l	Normal	No data
Peak creatinine	138 µmol/l	274 µmol/l	158	No data	No data	No data
Baseline proteinuria	Negative in dip stick	Past history unremarkable	No data	Past history unremarkable	Past history unremarkable	Past history unremarkable
Peak proteinuria	12 g/day	10.4 g/day	13.2 g/day	24.8 g/day	8 g/day	1.25 g/day
Vaccination to onset of symptoms	4 weeks	4 months	4 days	17 days	After 2nd inoculation	8 days
Biopsy	Typical minimal change lesion (MCL)	MCL and mild interstitial nephritis	Typical minimal change lesion (MCL)	Not indicated	Minimal change nephropathy	Not indicated
Treatment	Steroid 1 mg/kg bw ACE inhibitor	750 mg steroids for 3 days; followed by 40 mg/day	Non specific	Steroid 2 mg/kg bw	Steroid (12 mg every other day)	Steroid 2 mg/kg bw
Renal function/ follow up	80 µmol/l 6 months after diagnosis	Urinary protein neg. after one year; 15 mg steroid/day	Clearance 95 ml/day after one year	No data	No data	Complete remission

lowing years. Each relapse developed after vaccinations of polio, pneumococcal, and flu vaccine, respectively. All relapses had been easily treated by prednisolone. He had eight relapses until 14 years old (Table 1). Fortunately, no relapse has been observed between 2009 and 2017, not necessitating the kidney biopsy.

Because of long-term steroid use, he took alendronate and Vitamin-D for osteoporosis between 2014 and 2017. Another interesting finding was Fuchs' uveitis associated with the cataract in his left eye causing the green color change in 2017. Although he suffered from recurrent infections, osteoporosis, and cramps on the legs and hips because of long-term steroid and cyclophosphamide use, he is healthy and happy young adult now. We obtained informed consent from the patient.

DISCUSSION

Idiopathic NS is still an important health problem in children. Current evidences mostly suggest systemic T-cell dysfunction leading to increased glomerular permeability. The result is foot process fusion, severe alteration of glomerular filtration, and marked proteinuria [1, 7].

To the best of our knowledge, six patients of NS following vaccination were reported in the literature (Table 2) [1]. Hepatitis B vaccine was suspected in three of them, influenza in one, pneumococcus in one, and tetanus-diphtheria-poliomyelitis in another one. One of them (6th case in Table 2) was our case [1]. Unfortunately, these authors did not report the follow-up exceeding 1 year. We first report the 17-year clinical follow-up after first attack NS associated with vaccination. Apart from these six patients, acute proliferative glomerulonephritis following varicella infection was described in a 4-year-old boy [8]. This case and our case show that varicella may also induce NS.

It has been shown that various vaccines may be associated with a higher relapse of steroid-sensitive NS. However, the benefit of the preventive medicine exceeds the risks of triggering a relapse of these patients [1]. Considering our long-term follow-up, we think that some vaccinations may induce relapses in NS, as a triggering factor without being the primarily responsible factors.

Informed Consent: Written informed consent was obtained from the patient for the publication of the case report.

Conflict of Interest: No conflict of interest was declared by the authors.

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