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NEPHROLOGY - LETTER TO THE EDITOR

Relapse of minimal change disease after inactivated SARS-CoV-2 vaccination: case report

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Editor,

Minimal change disease (MCD) constitutes 10–15% of adult idiopathic nephrotic syndrome (NS) cases. MCD patients generally present with nephrotic level proteinuria, hypoalbuminemia, and generalized edema. While no pronounced histopathological change occurs at light microscopy, foot process effacement, and adhesion are visible findings on electron microscopic images. The first hypotheses proposed for the pathogenesis of the disease involved factors known as circulating permeability factors increasing the permeability of the filtration barrier [1, 2]. T-cell dysfunction was subsequently implicated in the pathogenesis. This hypothesis is based on the disease entering into remission following measles infection causing cell-mediated immune suppression, its accompanying lymphoid malignancies such as Hodgkin's disease, atopic patients frequently being more disposed to the disease, its entering into remission with cell-mediated immunity-suppressing drugs, and the fact that in contrast to other glomerular diseases, immune deposits not being detected. Various drugs, particularly non-steroidal anti-inflammatory drugs, malignancies such as hematological solid organ tumors, infections, vaccines, and allergens are all involved in the etiology [3].

We report a case of MCD relapsing following administration of inactivated SARS-CoV-2 vaccine.

Case report

Proteinuria, hypoalbuminemia, and edema were determined in a 33-year-old health worker (nurse) presenting to our clinic due to generalized edema, foamy urine, and weight gain. Her vital findings at examination were stable, and generalized edema was determined. The patient's laboratory test results are shown in Table 1. Proteinuria at 7.54 g/day was detected in 24-h urine, and the patient's serological tests (ANA, DNA, ANCAp, ANCAc, C3, C4, HBsAg, HCV, and HIV) were negative. The patient had no history of drug use or allergy, and abdominal ultrasonography was normal. NS was suspected, and percutaneous renal biopsy was performed. Forty glomeruli were detected in the renal biopsy material. No immune deposits were determined in the glomeruli. Under light microscopy, the glomeruli were normal in size and cellularity, the capillary loops were open, and the basal membrane was of normal thickness. The case was diagnosed as MCD. The patient was started on 1 mg/kg/day methylprednisolone therapy. Following methylprednisolone, the proteinuria decreased to 196 mg/day in the first month. Steroid therapy was tapered and stopped at the end of the sixth month. The patient had been followed up in full remission for 7 months and received her first dose of inactive SARS-CoV-2 vaccine in January 2021. She experienced no symptoms after the first dose and received the second dose of inactive SARS-CoV-2 vaccine after 28 days. Foamy urine and edema commenced 14 days after the second dose. The patient's test results are shown in Table 1. MCD relapse was determined, and since she responded to steroid therapy, the patient was started on 1 mg/kg methylprednisolone therapy and placed under follow-up.

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Table 1 Biochemical parameters of the patient

	Baseline	First month	Sixth month	First dose of vaccine	14 days after second dose vaccine
Glucose (mg/dl)	96	102	86	90	85
BUN (mg/dl)	25	12	10	8	7
Creatinine (mg/dl)	0.98	0.51	0.60	0.51	0.57
T. protein (g/dl)	4.41	6.04	6.56	6.36	5.47
Albumin (g/dl)	1.98	3.87	4.71	4.33	3.09
Total cholesterol	477.9	324	207	257	331
Triglyceride	359.8	74	100	130	161
HDL	49	105	83	73	97
LDL	357	204	104	158	202
Calcium	7.7	9.5	9	8.7	8.2
Phosphorus	3.8	3.37	3.67	3.83	3.03
Sodium (mmol/l)	135	140	137	135	138
Potassium (mmol/l)	4.7	4.05	4.1	4	4.1
Uric acid (mg/dl)	3.6	3.2	3.5	3	3.2
Hemoglobin (g/dl)	13.81	13.1	12.3	11.7	11.5
Platelet (10^3/ul)	267	285	230	250	270
24-h urine protein (mg/day)	7542	196	244	165	6034

HDL high-density lipoprotein, *LDL* low-density lipoprotein

Discussion

MCD is the most common cause of childhood NS, but it is also seen in significant numbers in adults. While the etiopathogenesis is not yet fully understood, T-cell-mediated immune system disorder has been implicated [3]. A history of allergy has been determined in 30% of MCD patients. Hypersensitivity reactions to various vaccines can also result in MCD. Cases have been reported of MCD developing following influenza, diphtheria, tetanus, poliomyelitis, and pneumococcal vaccines, but our scan of the literature to date revealed no cases of MCD developing or relapsing after COVID 19 vaccine administration [1, 4, 5]. The present case is the first report of MCD relapsing after COVID 19 vaccination.

In conclusion, COVID 19 is a major health problem, and research into a vaccine is still continuing. The disease has been observed to exhibit a more severe course in individuals with comorbid disease, particularly kidney failure. However, since there is insufficient information about vaccination in individuals with comorbid diseases, the kind of vaccination to be administered to individuals with kidney failure, and whether or not vaccination should be performed in cases of glomerulonephritis in whose etiology allergens have been implicated are still the subject of debate. We describe a case of MCD relapse after a second dose of inactive SARS-CoV-2 vaccine. We think that relapse should be borne in mind in the vaccination of MCD patients, and that patients should be informed accordingly.

Declarations

Conflict of interest We report no conflict of interest.

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