

Glomerulopathies after vaccination against COVID-19. Four cases with three different vaccines in Argentina

Glomerulopatías después de la vacunación frente a COVID-19. Cuatro casos con tres vacunas diferentes en Argentina

Dear Editor,

After reading some recent reports on the appearance or de novo recurrence of different glomerulopathies after the application of vaccines against COVID-19^{1–10} we would like to contribute our experience.

Four patients (P) previously asymptomatic began with asthenia (P1, P2), foamy urine (all) and edema (P2, P3) within 2 weeks after the first dose of the COVID-19 vaccine (P1: Sinopharm, P2: Oxford-AstraZeneca, P3 and P4: Gamaleya). All presented hypertension and microscopic hematuria. The first three patients also presented with acute kidney injury, nephrotic range proteinuria, hypoalbuminemia and dyslipidemia. The P4 increased his proteinuria significantly. Renal biopsies performed showed two IgA nephropathy with crescent (Supplementary Fig. S1, A–F) and recurrence of proliferative glomerulonephritis (Supplementary Fig. S2, A and B). P4 did not undergo a new biopsy since she had a previous diagnosis in 2020 of minimal change disease (Supplementary Fig. S2, C and D) and it was interpreted as the beginning of a recurrence of her disease. All received corticosteroids and P1 and P2 also received cyclophosphamide. P1, P2 and P3 presented partial remission and P4 complete remission (Table 1).

Although it is very difficult to prove causation, at the time of this letter there are at least 40 reports of different types of glomerulopathies after receiving the COVID-19 vaccine from different manufacturers (Pfizer, Moderna, AstraZeneca and Sinovac).^{1–10} To our knowledge, our reports would be the first related to the Sputnik V (Gamaleya) and BBIBP-CorV (Sinopharm) vaccines. Undoubtedly, the benefits of vaccines far outweigh the risks, but these findings emphasize the importance of surveillance in patients with previous glomerulonephritis and/or the appearance of foamy urine, edemas, hypertension or laboratory abnormalities.

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Conflict of interest

The author declares that he has no conflict of interest.

Table 1 – Patient demographics and clinical characteristics.

	Patient 1	Patient 2	Patient 3	Patient 4
<i>Clinical presentation</i>				
Age, yr/gender	38/female	53/male	59/female	67/female
Medical history	Obesity	HBP, overweight	HBP, Obesity, MPG (2015, CR)	Sjögren, MCD (2020, CR)
Vaccine/manufacturer	BBIBP-CorV/Sinopharm	ChaAdOx1 nCoV-19/Oxford-AstraZeneca	Gam-COVID-Vac or Sputnik V/Gamaleya	Gam-COVID-Vac or Sputnik V/Gamaleya
Dose (1st/2nd)	1st	1st	1st	1st
Days between vaccine and onset	7	10	14	6
Symptoms or signs	Asthenia, foamy urine.	Asthenia, foamy urine, edemas.	Foamy urine, edemas.	Foamy urine.
BP, mm Hg	160/100	152/94	158/96	136/78

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Table 1 – (Continued)

	Patient 1	Patient 2	Patient 3	Patient 4
Laboratory results				
Serum creatinine, mg/dl	1.74	3.07	1.24	1.03
Urinary sediment	Hb+, protein+++	Hb+++, protein+++	Hb+, protein+++	Hb+
UPCR, g/g	9.37	4.43	5.53 (0.06 prior to vaccination)	0.44 (0.05 prior to vaccination)
Serum albumin, g/dl	2.8	2.9	2.5	–
Dyslipidemia	Yes	Yes	Yes	No
Immunological studies	ENA+	All negative	ANA homogeneous (1/160)	–
Histopathology report				
Glomeruli (G)	8 G; Non globally sclerosed. Diffuse proliferative GN with endocapillary hypercellularity and one cellular crescent.	13 G; 5 globally sclerosed. Diffuse crescentic GN with 62% fibrocellular crescents. Mesangial and endocapillary hypercellularity.	16 G; 1 globally sclerosed. Focal proliferative GN	(Biopsy 2020) 4 G; All with preserved size, morphology and cellularity.
Tubules and interstitium	Mild IFTA. Mild interstitial inflammation with foamy cells.	Mild acute tubular injury. Moderate IFTA. Mild interstitial inflammation.	Non-significant IFTA. Mild interstitial inflammation.	Non-significant IFTA.
Vessels IF	Mild intimal fibrosis. Dominant glomerular IgA staining	Mild intimal fibrosis. Dominant glomerular IgA staining	Mild intimal fibrosis. No evidence of deposits	Mild intimal fibrosis. No evidence of deposits
Electron microscopy	–	–	Glomerular membranes moderately thickened. Podocytes with severe and diffuse pedicellar fusion.	Podocytes with severe and diffuse pedicellar fusion.
Treatment	CS+CP	CS+CP	CS	CS
Follow up	PR	PR	PR	CR

ANA, antinuclear antibodies; CP, cyclophosphamide; CR, complete remission; CS, corticosteroids; ENA, antibodies against extractable nuclear antigens; GN, glomerulonephritis; HBP, high blood pressure; Hb, hemoglobin; IFTA, interstitial fibrosis and tubular atrophy; MPG, mesangial proliferative glomerulonephritis; MCD, minimal change disease; PR, partial remission; UPCR, urine protein-to-creatinine ratio.

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at [doi:10.1016/j.nefro.2021.09.007](https://doi.org/10.1016/j.nefro.2021.09.007).

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Hematuria in patients with IgA nephropathy after vaccine for SARS-CoV-2

Hematuria macroscópica en pacientes con nefropatía IgA tras vacuna para SARS-CoV-2

Dear Editor,

The devastating COVID-19 pandemic has led to rapid mass vaccination of the population in record time. Vaccine types different from classical inactivated virus or conjugate vaccines are being used for this purpose, based on the administration of a purified nucleoside of the virus messenger RNA (Moderna[®], Pfizer[®]) or virus DNA viral vector (AstraZeneca[®]).¹

Recently, several cases^{2–6} of patients with IgA nephropathy who developed macroscopic hematuria after administration of SARS-CoV-2 vaccines have been reported. We present three cases of patients with IgA nephropathy, vaccinated with different types of SARS-CoV-2 vaccine and being followed in our hospital, who developed macroscopic hematuria.

Case 1. A 52-year-old male under follow-up and being treated since 1995 for IgA nephropathy. His renal function was normal and he tested negative for proteinuria. He had not had COVID-19. He attended emergency department 48 h after administration of the second dose of the Moderna[®] vaccine due to onset of macroscopic hematuria. He was totally asymptomatic. After 24 h of observation, the clinical signs and symptoms resolved spontaneously. Macroscopic hema-

turia was confirmed by urgent assessment by the Laboratory Testing Department (Table 1).

Case 2. A 63-year-old male, diagnosed in December 2019 with IgA nephropathy with rapidly progressive component and extracapillary proliferation. He started peritoneal dialysis in October 2020. He was infected with COVID-19 in December 2020, with a good clinical course. He currently experiences bouts of asymptomatic macroscopic hematuria, which are self-limiting and disappear after resolution of the clinical signs and symptoms. Vaccination with the Moderna[®] vaccine started between February and March 2021. Onset of macroscopic hematuria occurred 48 h after the first dose, which disappeared 48 h later. There were no complications in his peritoneal dialysis treatment. The episode recurred after administration of the second dose of the vaccine (Table 1).

Case 3. A 45-year-old male, under follow-up for probable Henoch-Schonlein purpura and IgA nephropathy (episodes of dark urines coinciding with upper respiratory tract symptoms, purpuric dermatosis, etc.). He had not had COVID-19. The first AstraZeneca[®] vaccination dose was administered according to the schedule. After 24 h, macroscopic hematuria developed and continued for 36 h until it disappeared completely. He was asymptomatic at all times. This same clinical

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