

**Abstract Submission No.: A-0190****Kidney prognosis in patients with gross hematuria following COVID-19 vaccination**

**Dal Sik Shin**<sup>1</sup>, Hyo-Wook Gil<sup>2</sup>, Samel Park<sup>2</sup>, Nam-Jun Cho<sup>2</sup>, Eun Young Lee<sup>2</sup>

<sup>1</sup>Department of Internal Medicine, Soon Chun Hyang University Cheonan Hospital, Korea, Republic of

<sup>2</sup>Department of Internal Medicine-Nephrology, Soon Chun Hyang University Cheonan Hospital, Korea, Republic of

**Objectives :** The coronavirus disease 2019 (COVID-19) vaccination can result in kidney-related complications. Abnormal urine tests, acute kidney injury, newly developed glomerulonephritis, and exacerbation of pre-existing kidney diseases following COVID-19 vaccination have been reported. This research aimed to understand renal complications following COVID-19 vaccination, specifically focusing on gross hematuria, and its impact on kidney disease. The coronavirus disease 2019 (COVID-19) vaccination can result in kidney-related complications. Abnormal urine tests, acute kidney injury, newly developed glomerulonephritis, and exacerbation of pre-existing kidney diseases following COVID-19 vaccination have been reported. This research aimed to understand renal complications following COVID-19 vaccination, specifically focusing on gross hematuria, and its impact on kidney disease.

**Methods :** The retrospective questionnaire survey was performed on the patients visiting Soonchunhyang University Cheonan Hospital's nephrology outpatient department between January 1 and September 30, 2022. The questionnaire included vaccine type, dosage, vaccination date, and complications, including gross hematuria and other systemic symptoms. If gross hematuria occurred, its duration was recorded, and the laboratory parameter was followed up.

**Results :** Primary findings were ten (3.6%) incidents of gross hematuria after COVID-19 vaccination, all of which were associated with mRNA vaccines, including: nine with mRNA-1273 (Moderna) and one with BNT162b2 (Pfizer-BioNTech). The average onset of gross hematuria after vaccination was  $1.6 \pm 0.8$  days, lasting approximately  $5.0 \pm 4.8$  days. Five of these patients had a prior diagnosis of immunoglobulin A nephropathy, two of whom experienced worsening proteinuria following gross hematuria event. Moreover, five new diagnoses emerged, including three with immunoglobulin A nephropathy, one with minimal change disease, and one with rhabdomyolysis.

**Conclusions :** These results suggest that mRNA COVID-19 vaccines might instigate gross hematuria and play a role in the onset or exacerbation of glomerulonephritis. Thus, it is imperative for clinicians to monitor kidney functions closely for those with gross hematuria.

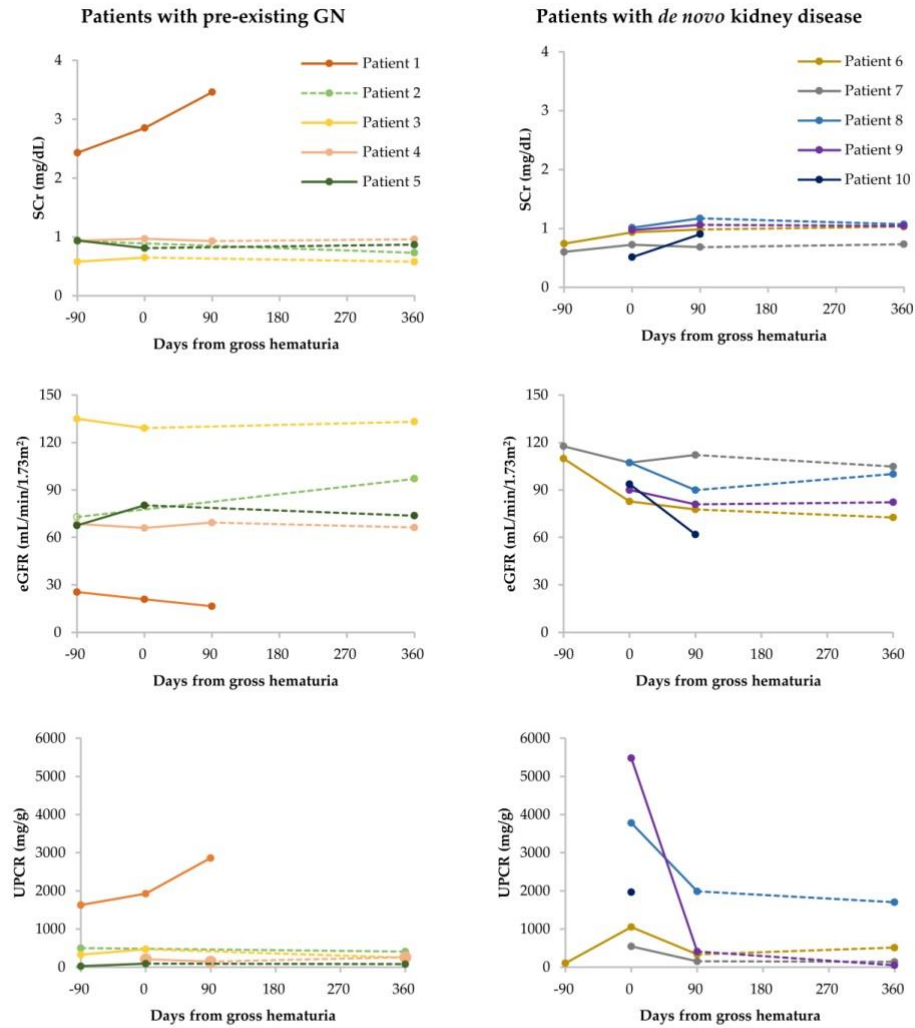
Table 1.jpg

Table 1. Characteristics of presentation of patients with gross hematuria post COVID-19 vaccination

Case	Sex	Age	Vaccine Type	Onset Dose	Onset Time (day)	Duration (day)	Accompanied Symptoms	Before gross hematuria				After gross hematuria			
								SCr (mg/dL)	eGFR (ml/min/1.73m <sup>2</sup> )	UPCR (mg/g)	Treatment	SCr (mg/dL)	eGFR (ml/min/1.73m <sup>2</sup> )	UPCR (mg/g)	Further Treatment
<b>Pre-existing IgAN</b>															
1	F	33	MD* <sup>1</sup> -MD-MD	1	1	2	fever, fatigue, myalgia	2.60	23.3	1174	ARB	4.65	11.5	3001	KT
2	F	49	MD-MD* <sup>1</sup> -MD	2	1	4	fever, fatigue, chilling	0.93	72.9	498	ARB	0.73	97.0	1171	Cons.
3	F	19	MD-MD*	2	1	2	fever, headache, chilling	0.58	135.0	325	ARB	0.65	129.1	393	Cons.
4	F	55	MD*	1	3	14	fatigue, rash, uterine bleeding	0.89	73.2	488	ARB	0.97	65.9	205	Cons.
5	F	58	MD-MD*	2	1	4	dysuria	0.81	80.3	91	ARB	0.87	73.6	121	Cons.
<b>De novo IgAN</b>															
6	F	30	MD-MD*	2	3	14	fever, headache, fatigue, chilling, myalgia, arthralgia, edema	0.74	109.8	355	N/A	0.93	82.7	1050	ARB
7	F	37	MD-MD*	2	2	3	fever, headache, fatigue, chilling, myalgia	0.60	117.6	N/A	N/A	0.72	107.3	543	ARB
8	M	19	MD-MD*	2	1	2	fever, fatigue, chilling, myalgia	N/A	N/A	N/A	N/A	1.01	107.3	3780	ARB
<b>De novo MCD</b>															
9	M	51	MD-MD*	2	1	2	fever, headache, fatigue, chilling, edema	N/A	N/A	N/A	N/A	0.97	90.0	5480	Glucocorticoid, ARB
<b>Rhabdomyolysis</b>															
10	F	77	PF-PF*	2	2	3	headache, fatigue, chilling, myalgia	N/A	N/A	N/A	N/A	0.51	93.7	1969	Fluid

Asterisk highlights the vaccine dose with occurrence of gross hematuria. IgAN, immunoglobulin A nephropathy; MCD, minimal change disease; MD, mRNA-1273 of Moderna; PF, BNT162b2 of Pfizer-BioNTech; SCr, serum creatinine; eGFR, estimated glomerular filtration rate; UPCR, urine protein-to-creatinine ratio; ARB, angiotensin II receptor blocker; KT, kidney transplantation; N/A, not available; Cons, conservative management without addition of other treatments.

Table 1.jpg



**Figure 1.** Trends of laboratory parameters of gross hematuria patients. Outcomes are shown in line chart for each patient from 90 days before gross hematuria events to 360 days after gross hematuria events. SCr, serum creatinine; eGFR, estimated glomerular filtration rate; UPCR, urine protein-to-creatinine ratio.