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Gross hematuria and kidney consequences after COVID-19 vaccination

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Objectives: Among the kidney-related complications of coronavirus disease-19 (COVID-19) vaccination, abnormal urine tests and decreased renal function are complications that can only be identified by testing, and are known to be uncommon. However, macroscopic hematuria is easily detectable without special tests and is considered a very worrisome problem for most people. In this study, we examined the frequencies of kidney complications focusing on gross hematuria and its impact on clinical course of 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: A total of 283 vaccinated patients were enrolled. Ten gross hematuria events were observed. All the cases were related to the mRNA vaccine (9 with mRNA-1273 of Moderna and 1 with BNT162b2 of Pfizer-BioNTech). Three patients experienced gross hematuria after the first dose of vaccination and seven cases after the second dose. The mean onset time was 1.6 ± 0.8 days, and the duration was 5.0 ± 4.8 days. Fever, headache, fatigue, and chilling were frequent accompanied symptoms. Five patients had already been diagnosed with Ig A nephropathy by renal biopsy. Two patients experienced the aggravation of proteinuria. Five patients were newly diagnosed with glomerulonephritis (3 of Immunoglobulin A nephropathy, 1 of minimal change disease) and systemic disease (1 of rhabdomyolysis).

Conclusions: The mRNA COVID-19 vaccination could provoke gross hematuria and could be related to the new development and/or aggravation of glomerulonephritis. Physicians should recognize the potential harm of vaccination and carefully monitor kidney function after the gross hematuria event.