



## Macroscopic hematuria in two children with IgA nephropathy remission following Pfizer COVID-19 vaccination

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Received: 22 February 2022 / Accepted: 22 February 2022 / Published online: 18 March 2022  
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To the Editors,

We read with great interest the recent article of Niel & Florescu who reported a case with IgA nephropathy (IgAN) presenting as rapidly progressive glomerulonephritis following the administration of the first dose of Corona virus disease 2019 (COVID-19) vaccine in a pediatric patient [1]. Japanese government agencies expanded vaccinating children aged 12 years and older in September 2021, following approval in the USA in May 2021. COVID-19 vaccination has been reported as an exacerbating factor of IgAN, resulting in macroscopic hematuria [2] and acute kidney injury. Herein, we report on two adolescents in IgAN remission who presented with macroscopic hematuria approximately 2 days after administration of Pfizer–BioNTech (BNT162b2) vaccine, which contains mRNA encoding the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). They had no history of COVID-19 infection before vaccination nor any other relevant medical history. The first patient is a 15-year-old girl who developed a 38.5 °C fever the day after the second dose of BNT162b2. She was diagnosed with IgAN after kidney biopsy at the age of 10 years; at 11 years of age, she was already in remission with multiple-drug therapy that utilized prednisolone, lisinopril, warfarin, and dipyridamole. The day after vaccination, she noticed macroscopic hematuria; mild proteinuria was also detected on urinary tests performed at a hospital. Although the urinary findings persisted for 3 days, kidney dysfunction

was not observed. She completed the treatment for IgAN 9 months before the COVID-19 vaccination. The second patient is a 16-year-old girl with a 15-month history of microscopic and occasional macroscopic hematuria and mild proteinuria (0.5–1.0 g/gCr). She underwent a kidney biopsy and was diagnosed with IgAN, as evidenced by diffuse mesangial proliferative glomerulonephritis with IgA deposits. Following multiple immunosuppressive treatments, including prednisolone, mizoribin, warfarin, and dipyridamole, her urinalysis results normalized. Thirty-six hours after she received her second dose of BNT162b2, she developed a fever of 37.7 °C, headache, and macroscopic hematuria. Although the macroscopic hematuria and the other adverse reactions continued for 2 days, we confirmed 5 days later that her serum creatinine level did not increase and that her urinalysis results had normalized. Her antibodies for SARS-CoV-2 spike IgG increased to 529 AU/ml (< 50, Abbott Japan) but she was negative for SARS-CoV-2 IgG 5 months after vaccination.

Macroscopic hematuria after the second vaccine dose in adolescent patients with IgAN can also occur even in remission and pediatricians and pediatric nephrologists need to be aware of the adverse reactions associated with this vaccination not only pre-/under treatment but also after treatment. As COVID-19 vaccination of younger children increases, the incidence of macroscopic hematuria in patients with IgAN and/or chronic glomerulonephritis might increase and this adverse event should be more carefully monitored.

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**Acknowledgements** The authors would like to thank Dr. Miki Murakoshi, Dr. Toru Kanamori, Dr. Tomoya Nakamizo, and Dr. Mika Okutsu for their support and help in the management of the patients. The authors thank all the patients and their families.

**Author contribution** All authors contributed to drafting, reviewing, and revising this paper.

## Declarations

**Ethics approval** This article does not contain any studies with human participants or animals performed by any of the authors. Informed consent was obtained from the patients and their parents for publication of this case report.

**Conflict of interest** The authors declare no competing interests.

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