Report of Three Cases of Minimal Change Disease Following the Second Dose of mRNA SARS-CoV-2 COVID-19 Vaccine

To the Editor: SARS-CoV-2 mRNA vaccination has been associated with the occurrence of glomerular diseases, including minimal change disease (MCD).[1–3] Herein, we report the first series of *de novo* and relapsing MCD evolved within 1 month of receiving the respective second vaccination dose.[4]

The first patient is a 33-year-old woman with a biopsy-proven diagnosis of MCD at 9 years of age, which has been in remission since she was 17 years of age. She presented with abrupt lower extremity edema, headaches, nausea, vomiting, and hypertension after 3 weeks of receiving the second dose of the Moderna mRNA-1273 vaccine. Laboratory tests revealed nephrotic-range proteinuria (urine protein:creatinine ratio [UPCR], 6.4 g/g) with hypoalbuminemia (albumin, 2.3 g/dl). A kidney biopsy showed features consistent with MCD (Figure 1a, d).

The second patient is a 41-year-old woman with a history of asthma and no prior history of kidney disease. Five days after receiving the second dose of the Pfizer BioNTech COVID19 vaccine, she presented with fever, progressive lower extremity swelling, weight gain, and hypertension. Laboratory tests revealed nephrotic-range proteinuria (UPCR, 14.4 g/g), hypoalbuminemia (albumin, 2.6 g/dl), and hematuria (20 urinary red blood cells/hpf.). A kidney biopsy specimen showed features consistent with MCD (Figure 1b, e).

The third patient is a 34-year-old woman with a history of steroid-sensitive MCD at age 4 years. After 4 weeks of receiving the second dose of Pfizer BioNTech COVID19 vaccine, she developed progressive lower extremity swelling and abdominal pain. Laboratory tests revealed nephrotic-range proteinuria (UPCR, 12.9 g/g) and hypoalbuminemia (albumin, 2.8 g/dl). A kidney biopsy specimen showed features consistent with MCD (Figure 1c, f).

The increasing number of SARS-Cov-2 mRNA vaccine–associated MCD cases reported so far suggests

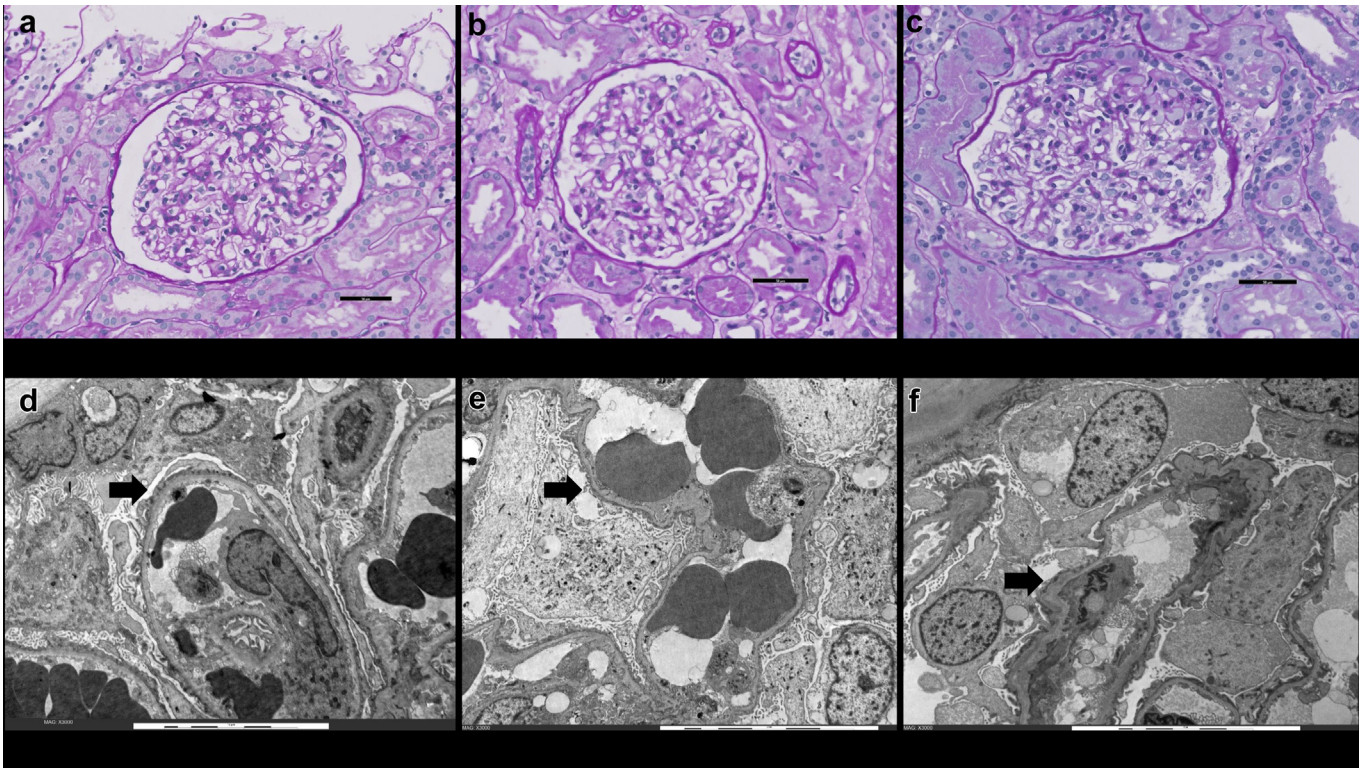

Figure 1. (a–c) Microscopic examination by light microscopy of kidney biopsy specimens from patients 1, 2, and 3, respectively, reveals relatively normal glomeruli. Periodic acid–Schiff, original magnification ×40. Bar = 50 μm (for each figure part). Immunofluorescent studies from all biopsy specimens show no evidence of immune complex deposits (not shown). (d–f) Electron microscopy examination of kidney biopsy specimens from patients 1, 2, and 3, respectively, shows diffuse effacement of foot processes of podocytes (arrows) without evidence of immune-type dense deposits. Transmission electron microscopy, original magnification ×3000. Large bar, 5 × 2 μm =10 μm (for each figure part).

a causal link and warrants careful monitoring in patients with glomerular diseases. An in-depth study of the innate and adaptive immune reactions elicited by SARS-CoV-2 mRNA vaccine may provide a unique opportunity to unravel pathogenic mechanisms responsible for these diseases.

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