Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

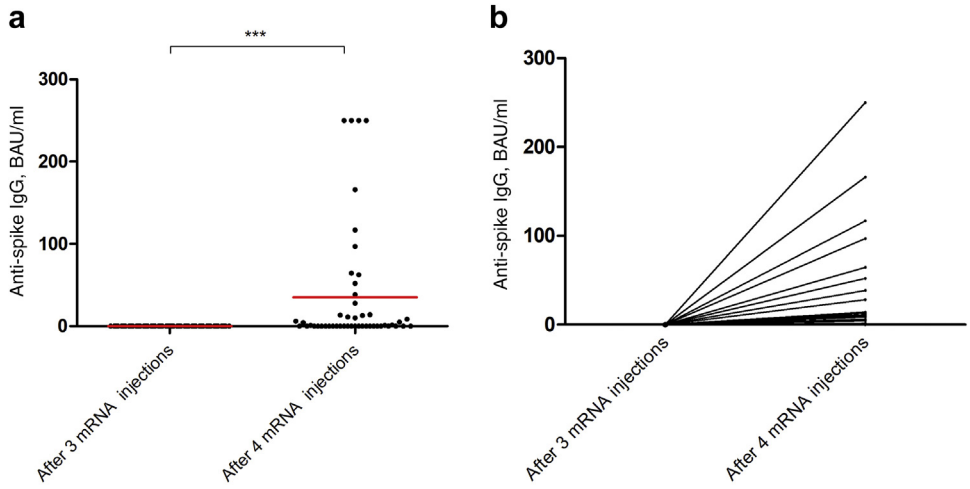

Figure 1 | (a) Anti-spike IgG titers (binding antibody unit [BAU]/ml) following the third and fourth mRNA injection in kidney transplant recipients. (**b**) Evolution of IgG anti-spike titers in strictly seronegative patients after 3 injections, having received a fourth mRNA vaccine. ***$P < 0.001$.

after the fourth injection. History of biopsy-proven acute rejection seemed more frequent in seronegative patients, but the clinical significance of these data may be hard to assess as most cases in this group (4 of 6) occurred >5 years ago.

Our report highlights the results of a fourth mRNA vaccine in strictly nonresponder kidney transplant recipients, resulting in seroconversion in 43% of them. Only 4 patients developed a strong humoral response that can be considered as protective from SARS-CoV-2 infection; other patients may benefit from another booster dose to improve their antibody titer.[6] Further studies are required to clearly determine risk factors of nonresponse after a fourth mRNA vaccine in this selected population. A fourth mRNA vaccine in strictly nonresponder kidney transplant recipients induced a humoral response in 43%; however, this response remained globally weak and was probably not protective enough against COVID-19. Monoclonal antibody provides a quicker and higher protection for these patients, and thus may be considered, especially during a high-incidence SARS-CoV-2 infection period when risk of contamination is higher.

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New-onset class III lupus nephritis with multi-organ involvement after COVID-19 vaccination

To the editor: Vaccination against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) can trigger an autoimmune response. Two cases of lupus nephritis after the administration of the mRNA vaccine (BNT162b2, Pfizer–BioNTech) and the adenoviral vector vaccine (AZD1222 [ChAdOx1-S], AstraZeneca) have been reported.[1,2] We present a case of lupus nephritis with multi-organ involvement after the administration of the AZD1222 vaccine.

In 2015, a 60-year-old woman was treated with oral corticosteroids for a skin rash at a private dermatologic clinic. The rash was an itchy, brownish skin lesion with erythematous

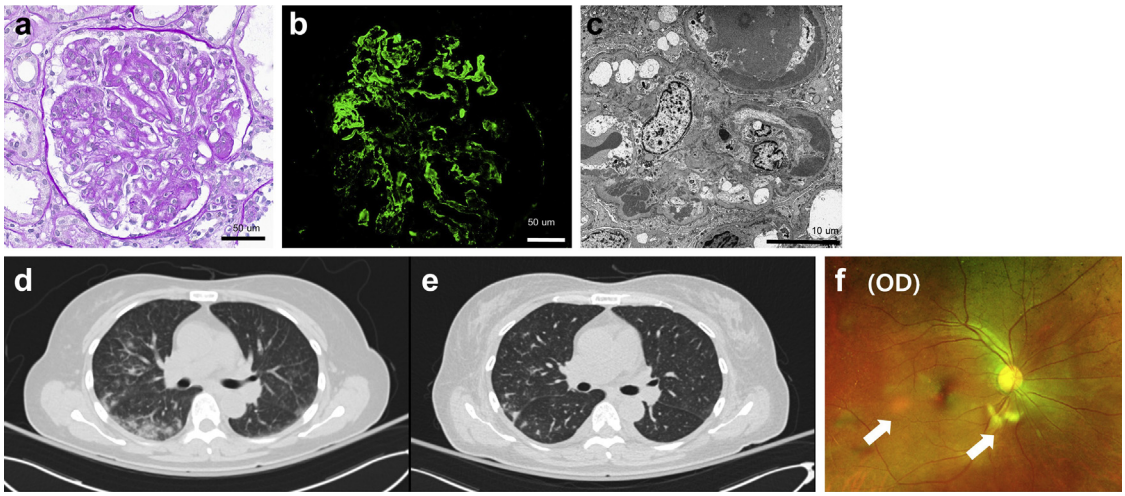

Figure 1 | Representative micrographs from the kidney biopsy. (**a**) Light microscopy shows endocapillary hypercellularity with wire loop formation (periodic acid–Schiff stain; bar = 50 μm). (**b**) A representative image of positive C1a staining (bar = 50 μm). Direct immunofluorescence also identified other deposits of IgG, IgA, IgM, C3, C4, C1q, kappa, and lambda chains along the peripheral capillary wall and in the mesangium. (**c**) Electron microscopy shows subendothelial capillary wall immune deposits and a few small subepithelial electron-dense deposits (bar = 10 μm). Chest computed tomography (**d**) at the time of admission and (**e**) after immunosuppressive treatment. (**f**) A cotton wool spot (white arrow) found on the right eye. OD, oculus dexter. To optimize viewing of this image, please see the online version of this article at www.kidney-international.org.

macular patches on both medial malleolar areas. At that time, she was told she might have an autoimmune disease, based on a positive test result for antinuclear antibody, but further detailed tests for autoantibodies were not done. Blood and dipstick urine tests showed a serum creatinine level of 0.66 mg/dl and negative results for protein and blood. A skin biopsy was not performed. The skin lesion resolved promptly, and she had not visited the hospital thereafter. She had no prior coronavirus disease 2019 (COVID-19) infection and no other medical disease. She had not been on any medications. She had received flu shots every year without health problems. On June 30, 2021, she underwent a general health checkup, which showed a serum creatinine level of 0.74 mg/dl and negative urine test results. Following the second dose of 0.5 ml of COVID-19 vaccine on August 31, she became asthenic and did not eat well. Her symptoms worsened, and she developed foamy urine in late October. Physical examination revealed bilateral pitting edema and a body temperature of 38.7 °C. Her nasopharyngeal COVID-19 polymerase chain reaction test was negative. A neutralizing antibody test with chemiluminescent immunoassay (Siemens Healthineers, Erlangen, Germany) was positive for the SARS-CoV-2 S protein (>75 Index). Laboratory tests showed lymphopenia, anemia, and thrombocytopenia. Her serum creatinine level was 1.81mg/dl, and the spot urine protein-to-creatinine ratio was 4.82 g/g, with many dysmorphic red blood cells. C3 and C4 levels were 19.5 and 4.30 mg/dl, respectively, and she had an antinuclear antibody ratio of 1:1280, anti-double stranded DNA of >379 IU/ml, and positive results for anti-smith antibody. A kidney biopsy demonstrated class III lupus nephritis. Light microscopy identified 16 glomeruli, of which 7 showed endocapillary hypercellularity, 2 cellular crescents, and wire loop lesions (Figure 1a). Immunofluorescence revealed a typical "full-house" pattern (Figure 1b). Electron microscopy confirmed electron-dense deposits (Figure 1c). A chest computed tomography scan showed patchy, nodular consolidations (Figure 1d). A cotton wool spot lesion was seen on funduscopic examination (Figure 1f).

We started treatment with i.v. pulse methylprednisolone (15 mg/kg for 3 consecutive days) and i.v. cyclophosphamide (500 mg biweekly) followed by oral prednisolone (1 mg/kg) and hydroxychloroquine (100 mg bid). Ten days after treatment, her serum creatinine and urine protein-to-creatinine ratio levels decreased to 0.93 mg/dl and 1.64 g/g, respectively. A repeat chest computed tomography scan showed a marked resolution of consolidations (Figure 1e).

The incidence of glomerulonephritis, including minimal change disease, membranous nephropathy, and IgA nephropathy, after COVID-19 vaccination has been increasing. The AZD1222 vaccine can induce Th1 responses with an expansion of CD8+ T cells and enhance cytokine production. A hypothesis for why this happens is that cross-reactivity occurs between antibodies against the SARS-CoV-2 S protein and different tissue antigens, leading to autoimmune diseases.[3,4] Thus, we believe that the COVID-19 vaccine was a key trigger that elicited an autoimmune response and the development of lupus nephritis in our patient.

DISCLOSURE

All the authors declared no competing interests.

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Letter regarding "diagnosis and treatment of arterial hypertension 2021"

To the editor: We applaud *Kidney International* for its new series focused on hypertension. As members of the Kidney Disease: Improving Global Outcomes (KDIGO) 2021 Blood Pressure (BP) Guideline writing committee, we worked to design a guideline that would save lives and improve quality of life for chronic kidney disease (CKD) patients worldwide.[1] We were therefore disheartened to discover that the lead article in this new series, focusing on the diagnosis and treatment of hypertension, states that "The BP target of Kidney Disease: Improving Global Outcomes for hypertensive patients with chronic kidney disease are not applicable for clinical practice because they heavily rely on 1 study that used a study-specific, nontransferable BP measurement technique and excluded the most common cause of chronic kidney disease, namely, diabetic nephropathy."[2(p36)] Professors Ott and Schmieder, the authors of the review, have either misinterpreted the KDIGO BP guideline or willfully misrepresented it. We feel strongly that the KDIGO BP guideline, when appropriately applied, should be widely adopted into clinical practice. The authors put forward 3 arguments for why the KDIGO 2021 BP guideline should be considered not applicable. We address each sequentially below.

Reliance of the KDIGO 2021 BP guideline on a single study

The KDIGO 2021 BP guideline that suggests a target for standardized office systolic BP <120 mm Hg (Recommendation 3.1.1) in adults with high BP and CKD[1] does rely heavily on the results of the Systolic Blood Pressure Intervention Trial (SPRINT).[3] There is, however, good reason for this: SPRINT was a high-quality trial that remains the largest randomized trial of patients with CKD testing the effect of 2 different BP targets on cardiovascular outcomes and death. Focusing on these outcomes is critical because patients with CKD are much more likely to die than progress to kidney failure. As noted in the KDIGO guideline, other randomized trials of BP targets in CKD populations had smaller sample sizes and shorter follow-up times, and because their primary endpoints focused on CKD progression, cardiovascular events were not adjudicated.[1] Ott and Schmieder claim to not understand why KDIGO relied so heavily on SPRINT and cite the American Heart Association (AHA)/American College of Cardiology (ACC) guidelines as a contrasting example.[4] However, the 2017 AHA/ACC guideline also relied heavily on SPRINT for recommending a lower BP target in CKD. The AHA/ACC guideline is quite similar, suggesting a target systolic BP (SBP) <130 versus <120 mm Hg by KDIGO because the committee feared many practices would rely on casual rather than standardized BP measurements, while KDIGO requires standardized measurement for its implementation. It is known that casual BP measurements run 7–10 mm Hg higher than standardized measurements, with a high degree of variability.[5] Ott and Schmieder also overlook the fact that the KDIGO guideline highlighted a systematic review of BP trials that was limited to participants with CKD. Including over 18 trials and nearly 16,000 participants with CKD, this systematic review confirmed that more intensive SBP lowering decreased mortality in CKD, a result that was similar with or without inclusion of SPRINT.[6] These data provided additional support for the recommendations of the KDIGO BP guideline.

Exclusion of patients with diabetes from SPRINT

The KDIGO BP guideline readily acknowledges that SPRINT excluded persons with diabetes and, therefore, that the benefits of intensive SBP lowering are less certain in patients with CKD and diabetes. However, as noted in the guideline, all previous trials testing BP targets in diabetes with and without CKD favored more, and not less, intensive BP lowering, including the Action to Control Cardiovascular Risk in Diabetes (ACCORD) trial. In ACCORD, the BP intervention was very similar to SPRINT and also evaluated a primary cardiovascular endpoint. While the trial did not reach statistical significance for its primary composite cardiovascular endpoint (hazard ratio [HR], 0.88; 95% confidence interval [CI], 0.73–1.06), the SBP <120 mm Hg arm led to a substantial reduction in stroke, a prespecified secondary outcome and the cardiovascular endpoint most consistently linked with hypertension (HR, 0.58; 95% CI, 0.39–0.89). Second, a meta-analysis of SPRINT and ACCORD showed that their effect estimates were similar (low heterogeneity), with a statistically significant summary estimate favoring the SBP target <120 mm Hg (risk ratio, 0.81; 95% CI, 0.72–0.92).[7] A third analysis focusing on the subset of high-risk ACCORD participants who would have been eligible to participate in SPRINT save for their diabetes again found that intensive BP lowering