# Two Cases of Double-Positive Antineutrophil Cytoplasmic Autoantibody and Antiglomerular Basement Membrane Disease After BBV152/ Covaxin Vaccination

**To the Editor:** Antineutrophil cytoplasmic autoantibody (ANCA)–associated glomerulonephritis after vaccination with the Pfizer-BioNTech COVID-19 vaccine has been recently reported.[1] We describe 2 patients who developed double-positive ANCA and antiglomerular basement membrane (GBM) disease within 2 weeks of receiving BBV152/Covaxin (Bharat Biotech, India) vaccination (Table 1).

Double-positive disease is defined as ANCA vasculitis phenotype on biopsy and antiGBM antibody in the serum or anti-GBM phenotype on biopsy with ANCA positivity in the serum. Double-seropositive vasculitis after seasonal influenza vaccine administration has been reported.[2] To best of our knowledge, double-positive ANCA and anti-GBM disease after SARS-CoV-2 vaccination has not been reported previously. Temporal association suggests a possible link between the vaccine administration and the development of vasculitis, though a direct link cannot be established.

BBV152/Covaxin is developed using whole-virion inactivated vero cell–derived platform technology. It also contains immune potentiators, known as vaccine adjuvants, which are added to the vaccine to increase and boost its immunogenicity. It has been postulated that molecular mimicry, in which a foreign antigen shares structural similarities with self-antigens, could be the cause for the development of the autoimmunity.[3] Vaccine adjuvants can also give rise to postvaccination adverse reactions known as "autoimmune syndrome induced by adjuvants."[4]

To conclude, clinicians should be aware of the rare possibility of vasculitis being the cause for acute kidney injury requiring renal replacement therapy after SARS-CoV-2 vaccination.

## DISCLOSURE

All the authors declared no competing interests.

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**Table 1.** Clinical details, investigations, treatment, and outcome of patients 1 and 2

| Patient | 1 | 2 |
|---|---|---|
| Age/sex | 58/male | 45/male |
| Comorbidity | None | None |
| Smoking | Nonsmoker | Nonsmoker |
| SARS-CoV-2 infection (RT-PCR) | Negative | Negative |
| Vaccine dose | 2 | 1 |
| Duration between vaccination and onset of symptoms | 14 d | 12 d |
| Presenting symptoms | Hemoptysis, breathlessness | Generalized edema, oliguria, hemoptysis, breathlessness |
| Pulmonary hemorrhage | Yes | Yes |
| Laboratory investigations | | |
| Serum creatinine at the time of biopsy | 8.4 mg/dl | 9 mg/dl |
| Antinuclear antibodies | Negative | Positive |
| ANCA | c-ANCA positive | MPO-ANCA positive |
| Anti-GBM titer | Elevated | Normal |
| Renal biopsy—light microscopy | Crescents in 15/17 glomeruli | Crescents in 7/9 glomeruli |
| Renal biopsy—immunofluorescence microscopy | Linear staining for IgG on the GBM | Linear staining for IgG on the GBM |
| Treatment and outcome | | |
| Treatment | Pulse glucocorticoids, cyclophosphamide, and 8 sessions of plasma exchange | Pulse glucocorticoids, cyclophosphamide, and 4 sessions of plasma exchange |
| Follow-up duration (in d) | 56 | 32 |
| Outcome | Hemodialysis free for last 10 d<br>Good urine output | Hemodialysis free for last 11 d<br>Significant improvement in urine output |
| Last creatinine | 5.1 mg/dl | 2.1 mg/dl |

ANCA, antineutrophil cytoplasmic autoantibody; c-ANCA, cytoplasmic antineutrophil cytoplasmic autoantibody; GBM, glomerular basement membrane; MPO-ANCA, myeloperoxidase antineutrophil cytoplasmic autoantibody; RT-PCR, reverse-transcriptase polymerase chain reaction.

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