

A Rare Adverse Event after CoronaVac® Administration: Neutropenia in a Kidney Transplant Recipient

 Ayşe Serra Artan¹,  Erol Demir²,  Nurana Güller¹,  Aydın Türkmen¹

¹Department of Nephrology, Faculty of Medicine, İstanbul University, İstanbul, Turkey

²Department of Internal Medicine, Faculty of Medicine, İstanbul University, İstanbul, Turkey

To the Editor,

Vaccination against severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) is critical in kidney transplant recipients due to the risk of developing severe form of the disease. Although the effect of vaccines on the transplant population is few in previous publications, widespread vaccination continues to be applied.¹ However, these patients experience adverse events due to vaccination.² Although transient neutropenia is a known side effect of two SARS-CoV-2 vaccines³, neutropenia associated with inactivated whole-virus SARS-CoV-2 vaccine (CoronaVac® by Sinovac®) has not clearly been elucidated. We, therefore, report the case of a kidney transplant recipient who presented with neutropenia after the second dose of the inactivated whole-virus SARS-CoV-2 vaccine.

A 60-year-old female kidney transplant recipient was admitted to the transplant clinic at a routine follow-up visit on the second day after receiving the second dose of CoronaVac®. She underwent deceased donor kidney transplantation four years ago due to autosomal dominant polycystic kidney disease. The posttransplant course was insignificant for four years. The immunosuppressive regimen included tacrolimus, mycophenolate mofetil, and prednisolone. The patient had no complaint, and physical examination was unremarkable. Complete blood count demonstrated white blood cell: 2,700/mm³, neutrophil: 600/mm³, lymphocyte: 1400/mm³, hemoglobin: 15 g/dl, and thrombocyte: 202,000/mm³. Biochemical investigations include serum creatinine: 0.9 mg/dl, lactate dehydrogenase: 150 U/L, C-reactive protein: 2 mg/dl, folate: 13 µg/L, Vitamin B12: 500 pg/ml, ferritin: 100 ng/ml, transferrin saturation: 23%, and tacrolimus level: 6 ng/ml.

Mycophenolate mofetil was halted. Polymerase chain reaction (PCR) tests were negative for Cytomegalovirus, Parvovirus, Epstein-Barr virus, and SARS-CoV-2. PCR tests for SARS-CoV-2 were repeated thrice at 48-h intervals. Peripheral blood smear did not reveal

atypical cells. A bone marrow biopsy revealed a normocellular marrow with the hyperplastic granulocytic cell line. No signs of dysplasia were detected. Neutropenia resolved spontaneously at the end of two months, and mycophenolate mofetil was reinstated in the immunosuppressive regimen. Currently, the patient is followed up in a good clinical condition.

Neutropenia is a common problem in kidney transplant recipients occurring in 10%-30% of such patients. The etiology of neutropenia is often multifactorial and includes drugs, bacterial infections, viral infections, and posttransplant lymphoproliferative diseases.⁴ It usually occurs at the third month following transplantation. Moreover, prolonged neutropenia predisposes to infections and causes allograft rejections.⁴ Transient neutropenia after the administration of several vaccines have been reported.⁵ However, according to a recent report by Sing et al.⁶, CoronaVac vaccine did not increase the risk of neutropenia. Although the sample for this study was large, immunosuppressed patients with organ transplants were excluded. The concomitant use of mycophenolic acid derivatives or azathioprine predisposes to the occurrence of neutropenia in transplanted patients after vaccine administration. In our case, we detected neutropenia in a regular transplant visit. Bacterial and viral infections were excluded through clinical and serological findings. Moreover, the causative drug was stopped. However, neutropenia persisted, and a bone marrow biopsy was performed to rule out a posttransplant lymphoproliferative disorder. After excluding all other etiologies, neutropenia was linked to CoronaVac®.

Transient neutropenia is an adverse event that occurs in the first two weeks after administration of SARS-CoV-2 vaccines. Postvaccination neutropenia is not associated with secondary infections and does not diminish the immunologic response to vaccination. However, neutropenia is a surrogate marker for vaccine response in patients with hematological malignancies.⁷ In



Corresponding author: Ayşe Serra Artan, İstanbul University Faculty of Medicine, Department of Nephrology, İstanbul, Turkey
e-mail: ayseserra@gmail.com

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ORCID iDs of the authors: A.S.A. 0000-0002-6461-3178; E.D. 0000-0003-0128-5645; N.G. 0000-0002-3170-7346; A.T. 0000-0003-3664-8469.

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conclusion, kidney transplant recipients must be vaccinated against SARS-CoV-2, though neutropenia could occur in some patients. Clinicians should follow-up these patients with blood counts after excluding other causes such as infections, drugs, and malignancies.

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REFERENCES

1. Boyarsky BJ, Werbel WA, Avery RK, et al. Immunogenicity of a Single Dose of SARS-CoV-2 Messenger RNA Vaccine in Solid Organ Transplant Recipients. *JAMA*. 2021;325:1784-1786. [\[CrossRef\]](#)
2. Heldman MR, Limaye AP. SARS-CoV-2 Vaccines in Kidney Transplant Recipients: Will They Be Safe and Effective and How Will We Know? *J Am Soc Nephrol*. 2021;32:1021-1024. [\[CrossRef\]](#)
3. Bird S, Panopoulou A, Shea RL, et al. Response to first vaccination against SARS-CoV-2 in patients with multiple myeloma. *Lancet Haematol*. 2021;8:e389-e392. [\[CrossRef\]](#)
4. Zafrani L, Truffaut L, Kreis H, et al. Incidence, risk factors and clinical consequences of neutropenia following kidney transplantation: a retrospective study. *Am J Transplant*. 2009;9:1816-1825. [\[CrossRef\]](#)
5. Muturi-Kioi V, Lewis D, Launay O, et al. Neutropenia as an Adverse Event following Vaccination: Results from Randomized Clinical Trials in Healthy Adults and Systematic Review. *PLoS One*. 2016;11:e0157385. [\[CrossRef\]](#)
6. Sing CW, Tang CTL, Chui CSL, et al. COVID-19 vaccines and risks of hematological abnormalities: Nested case-control and self-controlled case series study. *Am J Hematol*. 2022;97:470-480. [\[CrossRef\]](#)
7. Corti C, Crimini E, Tarantino P, et al. SARS-CoV-2 vaccines for cancer patients: a call to action. *Eur J Cancer*. 2021;148:316-327. [\[CrossRef\]](#)