

CLINICAL IMAGE

Idiopathic ventricular tachycardia detected after coronavirus disease 2019

Koichiro Yamamoto MD, PhD¹  | Koji Nakagawa MD, PhD² | Fumio Otsuka MD, PhD¹ ¹Department of General Medicine, Okayama University Graduate School of Medicine, Dentistry and Pharmaceutical Sciences, Okayama, Japan²Department of Cardiovascular Medicine, Okayama University Hospital, Okayama, Japan**Correspondence**

Koichiro Yamamoto, Department of General Medicine, Okayama University Graduate School of Medicine, Dentistry and Pharmaceutical Sciences, 2-5-1 Shikata-cho, Kita-ku, Okayama 700-8558, Japan.

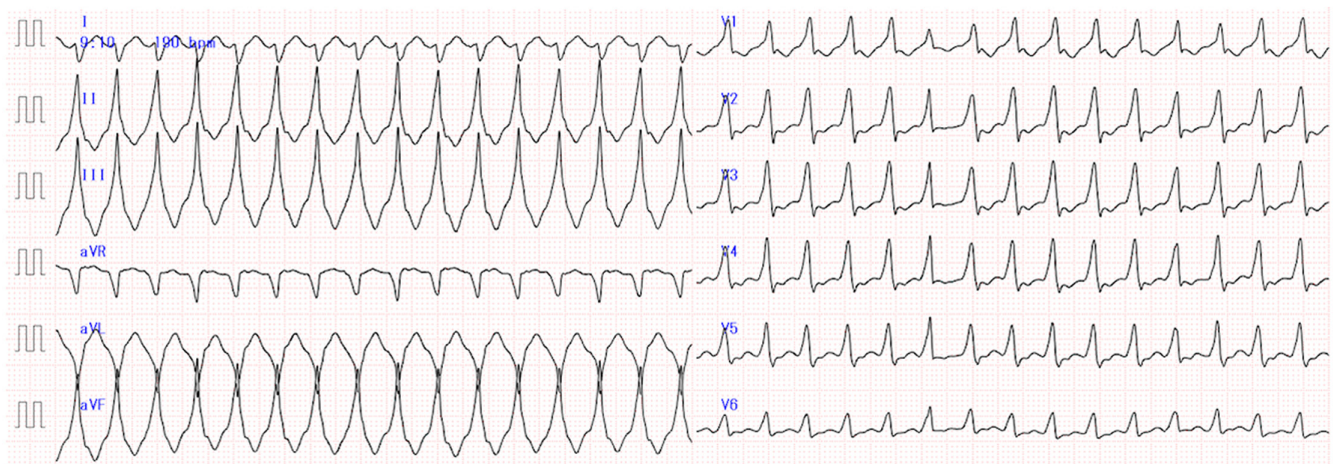
Email: pi291nd8@s.okayama-u.ac.jp

Keywords: radiofrequency ablation, brain natriuretic peptide, idiopathic ventricular tachycardia

A 23-year-old woman was referred for brain fog that had persisted for 4 months after she had a mild case of coronavirus disease 2019 (COVID-19). She had a medical history of depression with accompanying dizziness, headache, and palpitation for 1 year. Results of physical assessment were unremarkable. Twelve-lead electrocardiography (ECG) showed normal sinus rhythm with a normal corrected QT interval. Laboratory tests showed an elevated level of plasma brain natriuretic peptide (BNP; 44.5 pg/mL, reference range < 18.4), while complete blood count and liver, renal, and thyroid function tests were normal. The patient was referred to the Department of Cardiovascular Medicine for further investigation of cardiovascular disease. Echocardiography showed no structural heart diseases; however, a cardiopulmonary exercise test induced

palpitation and ECG revealed sustained monomorphic ventricular tachycardia (VT) (Figure 1). Cardiac computed tomography, cardiac magnetic resonance imaging, and Gallium-67 scintigraphy suggested no organic abnormalities. A biopsy of the myocardium showed no histopathological changes. A diagnosis of idiopathic VT was made. Radiofrequency catheter ablation was successfully conducted, and her symptoms disappeared.

VT detected in a structurally normal heart is called idiopathic VT.¹ Differential diagnoses include previous myocardial infarction, cardiomyopathy, and cardiac sarcoidosis. The overall age- and sex-adjusted incidence of idiopathic VT was reported to be 15.8 per 100,000, whose average age was 59.2 ± 17.6 years.² Idiopathic VT can often be effectively treated with medications or catheter ablation; however, it

**FIGURE 1** Twelve-lead electrocardiography in a cardiopulmonary exercise test showed sustained monomorphic ventricular tachycardia.

This is an open access article under the terms of the [Creative Commons Attribution-NonCommercial-NoDerivs](https://creativecommons.org/licenses/by-nc-nd/4.0/) License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

© 2024 The Authors. *Journal of General and Family Medicine* published by John Wiley & Sons Australia, Ltd on behalf of Japan Primary Care Association.

may be related to morbidity and mortality.¹ Idiopathic VT may cause symptoms including palpitation and presyncope,¹ but in cases with mild symptoms or cases complicated with psychological disorders, as in our case, the diagnosis can be challenging. Plasma BNP concentration has been reported to be elevated in patients with symptomatic idiopathic VT and premature ventricular contraction (mean: 42.6 pg/mL).³ This case implied that increased plasma BNP level could be a clue for detecting idiopathic VT. Patients with COVID-19 have been described as having a variety of arrhythmias, with atrial fibrillation being the most common type.⁴ The incidence of ventricular arrhythmias, including VT, in COVID-19 patients has ranged from 1.6 to 5.9%, in which acute myocardial injury was associated with an increased risk of ventricular arrhythmias.⁴ Other viruses, including Zika virus, Epstein-Barr virus, and human parvovirus B19, have arrhythmogenic effects and may be associated with VT as well.⁵ Although the relationship between idiopathic VT and long COVID remains unknown, this is the first report of idiopathic VT detected in a patient with long COVID.

AUTHOR CONTRIBUTIONS

KY wrote the first draft and managed the submission process. KN contributed to the clinical management of the patient and checked the manuscript. FO organized the manuscript.

ACKNOWLEDGMENTS

None.

FUNDING INFORMATION

None.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

PATIENT CONSENT

Written informed consent was obtained from the patient to publish this case report.

ORCID

Koichiro Yamamoto  <https://orcid.org/0000-0001-9571-1646>

Fumio Otsuka  <https://orcid.org/0000-0001-7014-9095>

REFERENCES

1. Ward RC, van Zyl M, DeSimone CV. Idiopathic ventricular tachycardia. *J Clin Med*. 2023;12(3):930.
2. Sirichand S, Killu AM, Padmanabhan D, Hodge DO, Chamberlain AM, Brady PA, et al. Incidence of idiopathic ventricular arrhythmias: a population-based study. *Circ Arrhythm Electrophysiol*. 2017;10(2):e004662.
3. Tada H, Ito S, Shinbo G, et al. Significance and utility of plasma brain natriuretic peptide concentrations in patients with idiopathic ventricular arrhythmias. *Pacing Clin Electrophysiol*. 2006;29(12):1395-403.
4. Saha SA, Russo AM, Chung MK, Deering TF, Lakkireddy D, Gopinathannair R. COVID-19 and cardiac arrhythmias: a contemporary review. *Curr Treat Options Cardiovasc Med*. 2022;24(6):87-107.
5. Lee PY, Garan H, Wan EY, Scully BE, Biviano A, Yarmohammadi H. Cardiac arrhythmias in viral infections. *J Interv Card Electrophysiol*. 2023;66(8):1939-53.

How to cite this article: Yamamoto K, Nakagawa K, Otsuka F. Idiopathic ventricular tachycardia detected after coronavirus disease 2019. *J Gen Fam Med*. 2024;25:164-165. <https://doi.org/10.1002/jgf2.687>