

## CASE IMAGE

# Severe superior mesenteric vein thrombosis after COVID-19 mRNA vaccination

Takahiro Kubo | Hideto Kawaratani  | Hitoshi Yoshiji

Department of Gastroenterology, Nara Medical University, Kashihara, Japan

**Correspondence**

Hideto Kawaratani, Department of Gastroenterology, Nara Medical University, 840 Shijo-cho, Kashihara 634-8522, Nara, Japan.

Email: [kawara@naramed-u.ac.jp](mailto:kawara@naramed-u.ac.jp)**Key Clinical Message**

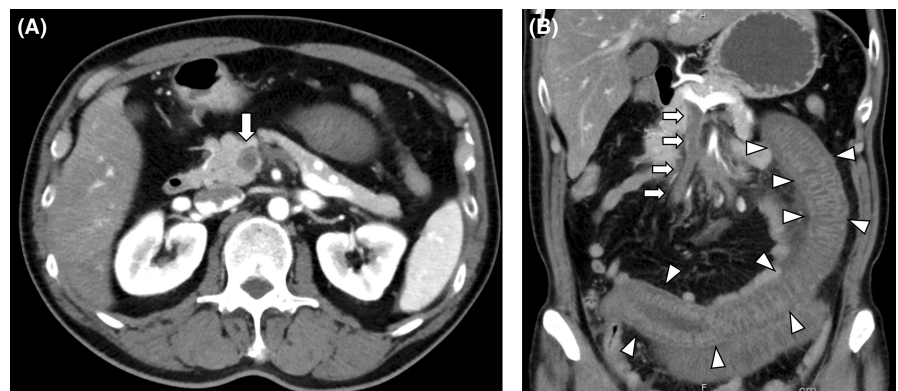
Venous thrombosis is a rare occurrence following the administration of the COVID-19 mRNA vaccine. The occurrence of superior mesenteric vein (SMV) is even more rare. SMV thrombosis should be considered as a differential diagnosis in patients who develop abdominal pain after COVID-19 mRNA vaccination.

**KEYWORDS**

COVID-19 mRNA vaccination, superior mesenteric vein thrombosis

The patient was a human immunodeficiency virus (HIV)-infected male in his 60s who presented to our hospital with upper abdominal pain. He had no family history, and did not drink or smoke. He had been treated for HIV infection from February 2008. Treatment had comprised TRIUMEQ (combination tablet of abacavir, dolutegravir, and lamivudine) from April 2016. The patient complained of upper abdominal pain starting 1 day after coronavirus disease-2019 (COVID-19) mRNA vaccination. The pain worsened after 7 days, resulting in presentation to our hospital. Similarly, he experienced tenderness in the pericardial region. Laboratory examination showed increased C reactive

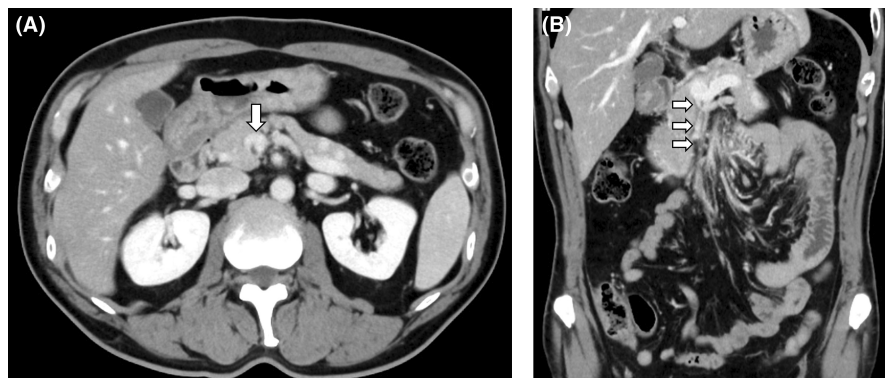
protein and markedly elevated D-dimer levels. However, he had no coagulation abnormalities, including Janus kinase (JAK) 2 mutation and Protein S or C deficiency. Contrast-enhanced computed tomography (CE-CT) revealed thrombosis in the main superior mesenteric vein (SMV) trunk and its branches and thickened intestinal walls (Figure 1A,B). He was treated with continuous unfractionated heparin for 3 weeks. During the treatment, his symptoms gradually improved. 3 weeks later, CE-CT showed thrombosis reduction, blood flow resumption, and wall thickness reduction (Figure 2A,B). Subsequently, his treatment was switched to apixaban, and he is currently



**FIGURE 1** Contrast-enhanced computed tomography showing thrombosis in the superior mesenteric vein trunk and its branches (arrow), with thickened intestinal walls (arrowhead). (A) Axial view. (B) Coronal view.

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**FIGURE 2** Contrast-enhanced computed tomography showing improvements in thrombosis in the superior mesenteric vein (arrow) and thickened intestinal walls. (A) Axial view. (B) Coronal view.

undergoing therapy as an outpatient. The major causes of SMV thrombosis include cirrhosis, malignancy, intra-abdominal infection, and coagulation abnormalities, such as JAK2 mutation and Protein S or C deficiency. However, this patient had none of these risk factors. Anti-retroviral therapy for HIV treatment lasting 6 to 24 months can sometimes increase the risk of venous thrombosis.<sup>1</sup> In contrast, some studies have reported normalization of the risk of venous thrombosis following 12 months of anti-HIV viral treatment.<sup>2</sup> Thrombosis after COVID vaccination has been reported in recent years; however, its frequency is not high. Thrombosis occurs mainly with virus vector vaccination, and there have been very few reports of thrombosis following COVID-19 mRNA vaccination. COVID-19 mRNA vaccination reportedly increases the risk of venous thromboembolism 1.16-fold.<sup>3</sup> The occurrence of venous thrombosis is considered more common among young women. In addition, there have been only two reports of SMV thrombosis by COVID-19 mRNA vaccination.<sup>4,5</sup> In this case, however, it is difficult to completely rule out a possible role of anti-HIV treatment as a possible underlying cause of SMV thrombosis triggered by COVID-19 mRNA vaccination, and hence, this case should be reported. When a patient develops abdominal pain after COVID-19 mRNA vaccination, SMV thrombosis should be considered as one of the differential diagnoses. We present this case because of its novel clinical findings and to increase awareness among gastroenterologists.

#### AUTHOR CONTRIBUTIONS

**Takahiro Kubo:** Writing – original draft. **Hideto Kawaratani:** Writing – review and editing. **Hitoshi Yoshiji:** Supervision.

#### ACKNOWLEDGMENTS

None.

#### FUNDING INFORMATION

None.

#### CONFLICT OF INTEREST STATEMENT

None.

#### DATA AVAILABILITY STATEMENT

The data that support the findings of this study are not openly available due to patient privacy and are available from the corresponding author upon reasonable request.

#### ETHICS STATEMENT

All procedures were performed in accordance with the ethical standards.

#### CONSENT STATEMENT

Written informed consent was obtained from the patient to publish this report, in accordance with the journal's patient consent policy.

#### ORCID

Hideto Kawaratani  <https://orcid.org/0000-0002-4361-0592>

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