

Magnetic Resonance Imaging of Cancer-Associated Deep Vein Thrombus in a Patient With Gastric Cancer

Toshihiro Gi, MD, PhD; Yasuyoshi Kuroiwa, PhD; Yasushi Kihara, MD;
Sae Miyaushiro, MD; Atsushi Yamashita, MD, PhD

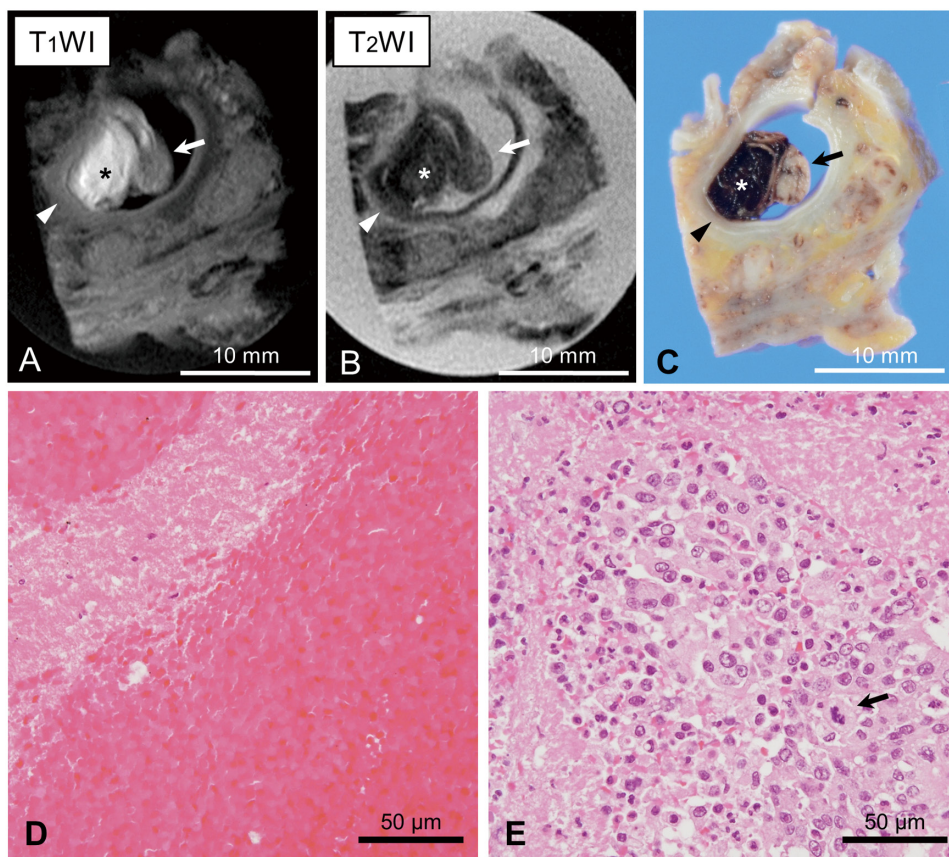


Figure. Magnetic resonance imaging and pathological findings of the cancer-associated inferior vena cava (IVC) thrombus. **(A)** The axial T₁-weighted image (T₁WI) showed distinct areas with hyperintense (asterisk) and isointense (arrow) signals in the IVC (arrowhead). **(B)** The hyper- and isointense areas on the T₁WI were seen as areas with hypo- to isointense (asterisk) and isointense (arrow) signals on the T₂-weighted image (T₂WI) in the IVC (arrowhead). **(C)** Grossly, the hyperintense area on the T₁WI corresponded to the dark red venous thrombus (asterisk) and the isointense area corresponded to the white thrombus (arrow) in the IVC (arrowhead). **(D)** Histopathologically, the dark red thrombus was found to be composed of erythrocytes and fibrin. **(E)** The white tissue was found to be composed of nests of cancer cells with necrosis and a mitotic figure (arrow), as well as fibrin.

Received March 14, 2023; accepted March 15, 2023; J-STAGE Advance Publication released online April 14, 2023 Time for primary review: 1 day

Department of Pathology (T.G., Y. Kuroiwa, A.Y.), Department of Clinical Oncology (S.M.), Faculty of Medicine, University of Miyazaki, Miyazaki; Department of Radiological Technology (Y. Kuroiwa), Department of Radiology (Y. Kihara), Koga General Hospital, Miyazaki, Japan

Mailing address: Atsushi Yamashita, MD, PhD, Department of Pathology, Faculty of Medicine, University of Miyazaki, 5200 Kihara, Kiyotake, Miyazaki 889-1692, Japan. email: atsushi_yamashita@med.miyazaki-u.ac.jp

All rights are reserved to the Japanese Circulation Society. For permissions, please email: cr@j-circ.or.jp

ISSN-2434-0790



A woman in her 30s died of advanced gastric adenocarcinoma treated with chemotherapy and after 4 weeks immobilization (detailed clinical information is provided in the **Supplementary File**). Autopsy revealed thrombus formation in the inferior vena cava (IVC). To evaluate the cancer-associated venous thrombosis, we performed magnetic resonance imaging (MRI) of the IVC thrombus and histological analysis.

The axial T₁-weighted image (T₁WI) on MRI showed areas in the IVC with distinct hyper- and isointense signals (**Figure A**). These areas showed hypo- to isointense signals on the T₂-weighted image (**Figure B**). Macroscopically, the hyper- and isointense areas on the T₁WI corresponded to the dark red thrombus and white thrombus, respectively (**Figure C**). Histopathologically, the former was primarily composed of an erythrocyte-rich thrombus component (**Figure D**), and the latter was primarily composed of cancer cells derived from the gastric adenocarcinoma (**Figure E**).

Cancer-associated deep vein thrombosis (DVT) is a critical complication in cancer patients. MRI can show a tumor thrombus or venous invasion in abdominopelvic tumors.¹ However, there is no pathological evidence of the

MRI findings in cancer-associated DVT. This case showed discrimination of the DVT from the tumor component with conventional MRI.

Disclosures

None.

IRB Information

This study was approved by the Ethics Committee of the University of Miyazaki (O-0645), and was performed in accordance with the Declaration of Helsinki.

Reference

1. LeGout JD, Bailey RE, Bolan CW, Bowman AW, Chen F, Cernigliaro JG, et al. Multimodality imaging of abdominopelvic tumors with venous invasion. *Radiographics* 2020; **40**: 2098–2116.

Supplementary Files

Please find supplementary file(s);
<https://doi.org/10.1253/circrep.CR-23-0028>