

Case Report

Rectus Sheath Hematoma Following Intravenous Thrombolysis With Recombinant Tissue Plasminogen Activator for Cerebral Infarction: A Case Report

Tatsuya Ueno, MD, PhD, Takashi Nakamura, MD, Hiroki Hikichi, MD, Akira Arai, MD, PhD, Chieko Suzuki, MD, PhD, and Masahiko Tomiyama, MD, PhD

A 76-year-old Japanese man was admitted to our department because of aphasia and right hemiparesis. Brain magnetic resonance imaging showed cerebral infarction caused by occlusion of the left middle cerebral artery, and alteplase therapy was started. Thrombectomy was subsequently performed, resulting in recanalization. On day 4 after admission, he complained of epigastric pain when coughing. On day 8, contrast-enhanced computed tomography showed a left abdominal rectus sheath hematoma without extravasation. We carefully followed up the patient with conservative therapy, and the rectus sheath hematoma was ameliorated. Rectus sheath hematomas present as acute abdominal pain and are often misdiagnosed. Although several predisposing factors for rectus sheath hematomas have been identified, whether recombinant tissue-type plasminogen activator causes rectus sheath hematomas, remains unclear. This case highlights the need to consider a rectus sheath hematoma as a differential diagnosis of abdominal pain following treatment with recombinant tissue-type plasminogen activator.

Keywords: Tissue-type plasminogen activator—rectus sheath hematoma—cerebral infarction—abdominal pain—hemorrhagic complication

© 2018 National Stroke Association. Published by Elsevier Inc. All rights reserved.

Case Report

A 76-year-old Japanese man was admitted to our department because of aphasia and right hemiparesis. On admission, his National Institutes of Health Stroke Scale score was 18 points. Because brain magnetic resonance imaging showed cerebral infarction caused by occlusion of the left

From the Department of Neurology, Aomori Prefectural Central Hospital, Aomori, Japan.

Received June 22, 2018; revision received July 11, 2018; accepted July 16, 2018.

Grant support: This research did not receive any specific grants from funding agencies in the public, commercial, or not-for-profit sectors.

Address correspondence to Tatsuya Ueno, MD, PhD, Department of Neurology, Aomori Prefectural Central Hospital, 2-1-1 Higashi-Tsukurimichi, Aomori 030-8551, Japan. E-mail:

tatsuya_ueno@med.pref.aomori.jp

1052-3057/\$ - see front matter

© 2018 National Stroke Association. Published by Elsevier Inc. All rights reserved.

<https://doi.org/10.1016/j.jstrokecerebrovasdis.2018.07.029>

middle cerebral artery, alteplase (0.6 mg/kg) was started. Thrombectomy was subsequently performed, resulting in recanalization 209 minutes from onset. Unfractionated heparin (UFH) (15,000 U/day) was administered to prevent ischemic stroke from day 2. The patient developed aspiration-related coughing as well as abdominal pain from day 3. On day 4, he complained of epigastric pain when coughing. His vital signs were stable. Physical examination showed localized tenderness in the epigastric area. There was no palpable mass in the area. Carnet's sign was positive. Laboratory analysis on day 4 showed: hemoglobin, 13.4 g/dL and activated partial thromboplastin time (APTT), 36.4 seconds (baseline APTT, 26.7 seconds; reference range, 26.9–38.1 seconds). Contrast-enhanced computed tomography on day 8 showed a left abdominal rectus sheath hematoma (RSH) without extravasation (Fig 1A). Because there was no active bleeding and his symptoms had improved, apixaban was substituted for UFH and conservative therapy continued. Finally, his National Institutes of Health Stroke Scale score improved to 3 points and the RSH resolved (Fig 1B).

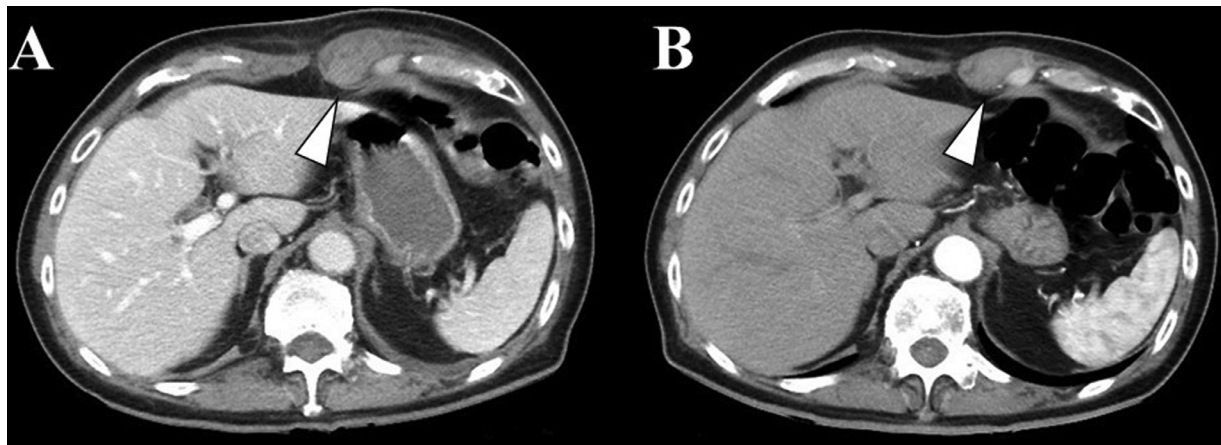


Figure 1. Contrast-enhanced computed tomography on (A) day 8 and (B) day 15. (A) Contrast-enhanced computed tomography shows a left abdominal rectus sheath hematoma (RSH) without extravasation. (B) Follow-up contrast-enhanced computed tomography displays a decrease in the RSH. The arrow indicates the RSH.

Discussion

RSH presents as acute abdominal pain and is often misdiagnosed.¹ RSH is typically a self-limiting disease but can be fatal on rare occasions.¹ Previous studies have identified trauma, iatrogenic complications, coughing, pregnancy, and anticoagulation therapy as predisposing factors for RSH.¹ In particular, anticoagulation therapy is a leading cause of mortality in patients with RSH.¹ UFH, warfarin, low-molecular-weight heparin, apixaban, and rivaroxaban can reportedly cause RSH.²⁻⁷ A frequent major complication of recombinant tissue-type plasminogen activator (rt-PA) is intracerebral hemorrhage, defined as hemorrhage within 36 hours of rt-PA administration.⁸ However, whether rt-PA causes RSH remains unclear. In our case, epigastric abdominal pain when coughing appeared 2 days after rt-PA treatment. Although the patient received UFH, laboratory analysis did not show significant prolongation of APTT. Therefore, we hypothesize that rt-PA treatment and coughing due to aspiration caused the RSH. Additionally, because the RSH developed 2 days after rt-PA (not within 36 hours), it might have been associated with coughing after rt-PA followed by UFH. To the best of our knowledge, this is the first reported case of RSH following rt-PA treatment for cerebral infarction.

In conclusion, we have presented a case of RSH associated with rt-PA. This case highlights the need to consider RSH as a differential diagnosis of abdominal pain following rt-PA treatment. Furthermore, physicians should keep RSH in mind if patients treated with rt-PA develop abdominal pain while coughing.

Informed Consent

The patient provided written informed consent for publication of this report.

Acknowledgment: We thank Lesley McCollum, PhD and Angela Morben, DVM, ELS from Edanz Group (www.edanzediting.com/ac) for editing a draft of this manuscript.

References

- Hatjipetrou A, Anyfantakis D, Kastanakis M. Rectus sheath hematoma: a review of the literature. *Int J Surg* 2015;13:267-271.
- Sullivan LE, Wortham DC, Litton KM. Rectus sheath hematoma with low molecular weight heparin administration: a case series. *BMC Res Notes* 2014;7:586.
- Aktas H, Inci S, Dogan P, Izgu I. Spontaneous rectus sheath hematoma in a patient treated with apixaban. *Intractable Rare Dis Res* 2016;5:47-49.
- Gunasekaran K, Winans ARM, Murthi S, Ahmad MR, Kaatz S. Rectus sheath hematoma associated with apixaban. *Clin Pract* 2017;7:957.
- Kocayigit I, Can Y, Sahinkus S, et al. Spontaneous rectus sheath hematoma during rivaroxaban therapy. *Indian J Pharmacol* 2014;46:339-340.
- Talari G, Talari P, Sweigart J, Ahmed S. Rare case of losartan-induced cough complicated by rectus sheath haematoma: in a patient on rivaroxaban therapy. *BMJ Case Rep* 2016. 2016.
- Sheth HS, Kumar R, DiNella J, Janov C, Kaldas H, Smith RE. Evaluation of Risk Factors for Rectus Sheath Hematoma. *Clin Appl Thromb Hemost* 2016;22:292-296.
- National Institute of Neurological Disorders and Stroke rt-PA Stroke Study Group. Tissue Plasminogen Activator for Acute Ischemic Stroke. *N Engl J Med* 1995;333:1581-1588.