

Case Report

Idiopathic Superior Mesenteric Venous Thrombosis in a Young Man : A Case Report

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ABSTRACT

Idiopathic thrombosis of the superior mesenteric vein (SMV) is defined as an unexplained thrombotic event without an apparent cause. We herein report a case of idiopathic SMV thrombosis in a young man who was successfully treated without surgery. A 32-year-old man without any previous diseases had epigastric pain and was admitted to The Jikei University, Daisan Hospital, when acute SMV thrombosis was diagnosed through computed tomography with contrast enhancement. Computed tomography also revealed blood flow to the intestine without ascites. Moreover, because physical and laboratory findings had suggested a low probability of peritonitis due to intestinal necrosis, treatment with warfarin was started, following an initial treatment with heparin. Not observed were abnormalities of blood test results or predisposing factors, such as steroid, trauma, liver cirrhosis, inflammatory bowel disease, and abdominal surgery. Therefore, idiopathic SMV thrombosis was diagnosed. The patient was discharged without invasive procedures or complications after being hospitalized for 21 days. Idiopathic SMV thrombosis should be considered in the differential diagnosis of life-threatening conditions presenting with acute abdomen. If a patient with SMV thrombosis does not present with peritonitis, a useful treatment may be prompt anticoagulation therapy.

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Key words : superior mesenteric venous thrombosis

INTRODUCTION

Thrombosis of the superior mesenteric vein (SMV) is an uncommon and potentially life-threatening condition that accounts for 5% to 15% of all reported cases of mesenteric ischemic events¹. The early diagnosis of SMV thrombosis is occasionally delayed by an absence of specific symptoms. However, the early diagnosis of SMV thrombosis has recently been established with radiologic examinations². We herein report on a case of idiopathic SMV thrombosis in a young Japanese man who was successfully treated with an-

ticoagulation therapy without surgical intervention.

CASE REPORT

A 32-year-old man, who had been healthy since birth, visited a local physician with a 14-day history of epigastric pain. Ultrasonography suggested a possible occlusion of the SMV. Therefore, the patient was transferred the same day to our hospital for treatment. The results of physical examination upon the patient's arrival were as follows : blood pressure, 135/72 mm Hg ; heart rate, 90 beats per minute ;

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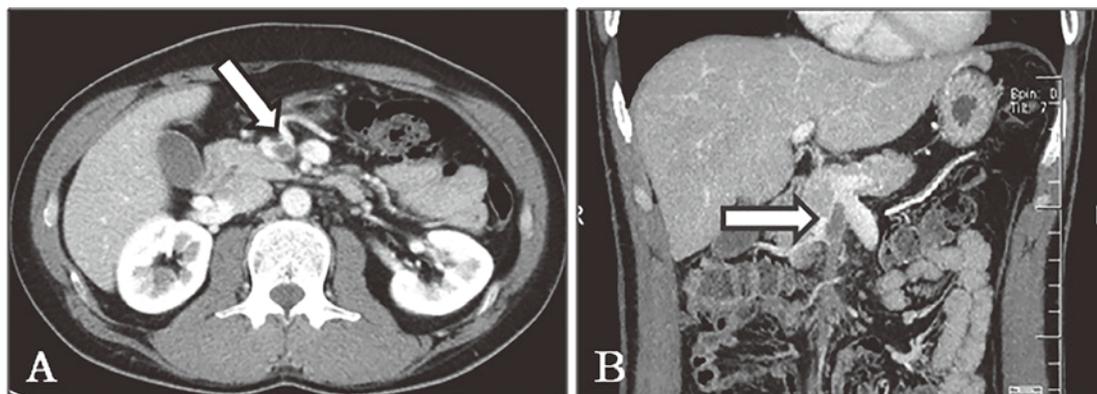


Fig. 1. Computed tomography with contrast enhancement of the abdomen on admission. Computed tomography showed extensive thrombus formation (12 mm in diameter) in the proximal superior mesenteric vein (SMV) without ascites (arrow). Intestinal edema was not present, and intestinal blood flow was maintained.

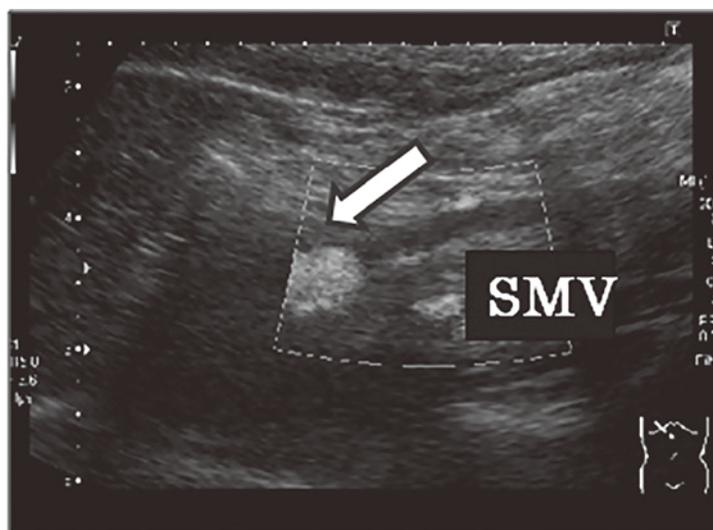


Fig. 2. Ultrasonography revealed extensive thrombosis in the superior mesenteric vein (SMV) (arrow) without edematous change of the small intestine.

body temperature, 36.4°C; body weight, 66.5 kg; and height, 170.7 cm. The examination also revealed slight abdominal tenderness but no rebound tenderness. The patient had no specific family history or medical history of venous thrombosis. Hematologic examination showed not abnormalities.

The patient underwent emergency studies, including computed tomography (CT) with contrast enhancement, which revealed thrombosis 12 mm in diameter in the SMV but no intestinal necrosis or ascites (Fig. 1). The SMV thrombosis was also observed with ultrasonography (Fig. 2). The patient did not have any family history of thrombosis or any specific past medical history. Moreover, the patient had had no trauma, previous abdominal operations, medication

of steroid, or other visceral diseases associated with vascular thrombosis. Blood tests obtained normal levels of coagulating and fibrinolytic factors, prothrombin, partial thromboplastin times, protein C, protein S, plasmin- α 2 plasmin inhibitor complex, thrombin-antithrombin complex, anti-thrombin III, CH50, anticardiolipin antibodies, and lupus anticoagulant (Table 1).

Because of the absence of peritoneal signs upon consultation by cardiologists, the patient was treated with heparin (12,000 to 18,000 unit/day). Seven days later, warfarin (2 mg/day) was co-administrated with heparin, and CT with contrast enhancement on the same day confirmed shrinkage of the thrombus (Fig. 3A). After a further 10 days, heparin was discontinued and warfarin (5 mg/day) was used

Table 1. Summary of laboratory data

White blood cells	5,500/ μ l	TAT	2.7 ng/ml	Creatinine	0.75 mg/dl
Red blood cells	5.26×10^6 / μ l	PIC	0.8 μ g/ml	Uric acid	4.7 mg/dl
Hemoglobin	16.5 g/dl	Aspartate aminotransferase	29 IU/l	Creatine kinase	69 IU/l
Hematocrit	48.8%	Alanine aminotransferase	51 IU/l	Sodium	141 mmol/l
Platelets	215×10^3 /ml	Lactate dehydrogenase	243 IU/l	Potassium	4.4 mmol/l
Prothombin time	90%	Cholinesterase	307 IU/l	Chlorine	97 mmol/l
APTT	28.1 sec	Total bilirubin	0.8 mg/dl	Calcium	9.9 mg/dl
Fibrinogen	272 mg/dl	Direct bilirubin	0.2 mg/dl	C-reactive protein	0.2 mg/dl
D-dimer	1.4 μ g/ml	Alkaline phosphatase	169 IU/l	Component 3	104 mg/dl
Antithrombin III	94%	γ -Glutamyltranspeptidase	98 IU/l	Component 4	26 mg/dl
Protein C activity	90%	Total protein	7.5 g/dl	CH50	45.4 U/ml
Protein C antigen	102%	Albumin	4.7 g/dl	Lupus anticoagulant	1.17
Protein S free antigen	85%	Amylase	41 IU/l		
Protein S antigen	90%	Blood urea nitrogen	11 mg/dl		

APTT, activated partial thromboplastin time ; TAT, thrombin-antithrombin complex ; PIC, plasmin- α 2 plasmin inhibitor complex

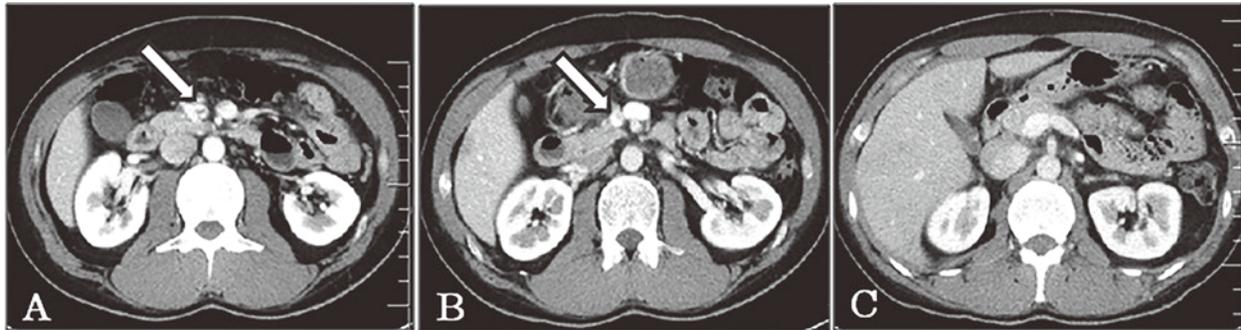


Fig. 3. Follow-up computed tomography with contrast enhancement after treatment
 (A) On the 7th day after admission, the thrombus (6 mm in diameter) had decreased in size because of anticoagulation therapy.
 (B) The size of the SMV thrombus (4 mm in diameter) had decreased after 17 days of treatment.
 (C) The SMV thrombus was not observed 3 months after the start of anticoagulation therapy.

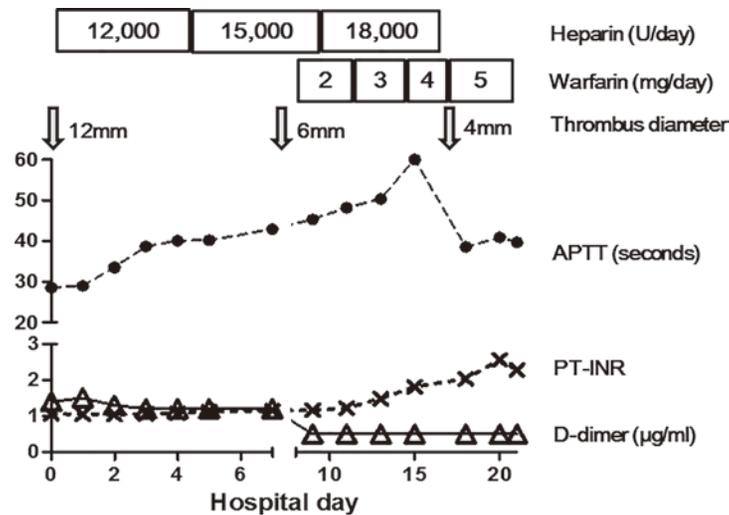


Fig. 4. Hospital course and anticoagulation therapy
 APTT, activated partial thromboplastin time ; PT-INR, prothrombin time international normalized ratio

alone when the prothrombin time international normalized ratio (PT-INR) had reached the therapeutic level (Fig. 4). On hospital day 17, CT with contrast enhancement revealed that the thrombus in the proximal SMV had shrunk to about 4 mm (Fig. 3B). The patient had an uneventful recovery and was discharged 21 days after treatment had been started. The patient continued to undergo therapeutic anticoagulation with warfarin (5 mg/day) (PT-INR range : 2.0-3.0). Three months after the patient was discharged, no thrombus in the SMV was observed with CT with contrast enhancement (Fig. 3C). Warfarin therapy was discontinued, and the patient has remained free of recurrent thrombosis for 18 months.

DISCUSSION

Thrombosis of the SMV, which was first reported in 1895³, is an uncommon but potentially lethal condition that has a mortality rate of 20% to 50%^{4,5}. Therefore, to be promptly diagnosed and treated, SMV thrombosis should be considered in the differential diagnosis of cases of acute abdomen. The onset of SMV thrombosis is at a mean patient age of 43 years but does not differ significantly by sex⁶.

Thrombosis of the SMV is divided into 2 groups, primary (idiopathic) or secondary, according to the presence or absence of predisposing underlying disease. Secondary SMV thrombosis has been suggested to have numerous contributing factors, such as postoperative state, liver cirrhosis, portal hypertension, trauma, steroids, oral contraceptive, and hypercoagulable condition including protein C or S deficiency^{7,8}. Of cases of mesenteric vein thrombosis, 79% to 81% are reported to be secondary⁹. In the present case, idiopathic SMV thrombosis was diagnosed because no predisposing condition had been present.

Early diagnosis of SMV thrombosis is often difficult because most patients present with nonspecific signs and symptoms, such as abdominal pain, nausea, vomiting, and diarrhea^{10,11}. Recently, the diagnosis of SMV thrombosis has been established with noninvasive imaging studies of the abdomen, such as ultrasonography, CT, and magnetic resonance imaging². Among these studies, CT with contrast enhancement has greatly improved the early detection rate of SMV thrombosis before laparotomy, with a sensitivity of greater than 90%^{12,13}. On the other hand, angiography was reported to be invaluable for the direct detection of throm-

bosis in 70% of patients and to allow simultaneous treatment⁴. In the present case, interventional radiology was considered as an initial treatment, but CT and physical findings suggested that anticoagulation therapy, rather than angiography, should be performed. Recent studies suggest that intestinal fatty acid binding protein, D-dimer, and α -defensins are promising biomarkers for the early diagnosis of acute mesenteric ischemia^{14,15}. In the present case, the D-dimer concentration was slightly increased.

The treatments for SMV thrombosis are divided into conservative and surgical procedures. As a conservative treatment, the standard regimen is anticoagulation with heparin followed by warfarin. Another option is thrombolysis with urokinase or tissue plasminogen activator. The current consensus for the management of SMV thrombosis recommends prompt systemic anticoagulation, if patients have no sign of peritonitis². Anticoagulation therapy alone reportedly has an efficacy of 90.5%¹⁶. On the basis of this evidence^{2,16}, as an initial treatment for the present patient we chose heparin alone. Less invasive treatment approaches, such as the transcatheter thrombolysis and thrombectomy, might achieve better clinical outcomes¹⁷⁻¹⁹. A recent study has concluded that as an initial treatment transcatheter thrombolysis is feasible and effective²⁰. On the other hand, despite decreasing indications for it, surgical management is still required on the basis of present conditions, such as peritonitis and bowel necrosis. However, extensive resection of the bowel has the possible complication of short-bowel syndrome, which is strongly associated with a high rate of mortality within 30 days and a low 5-year survival rate²¹. In the present case, we chose conservative treatment with heparin because of the absence of peritonitis.

The prognosis of SMV thrombosis depends on the initial clinical state, the time of diagnosis, and whether the appropriate treatment has been performed. Recent studies have found the mortality rate of SMV thrombosis to be 8% to 19% after conservative therapy and 25% to 65% after surgery alone^{9,12}. In addition, SMV thrombosis reportedly recurs after initial therapy in 22% to 29% of cases and has a mortality rate of 21.6% to 37%^{9,22}. To prevent SMV thrombosis from recurring, anticoagulation therapy is essential. Warfarin has been recommended to be administered for 3 to 12 months in patients with reversible predisposing factors^{1,23}, but no consensus has been reached about the dura-

tion of treatment. The present case has had no recurrence after anticoagulation therapy was stopped. However, to avoid SMV thrombosis from recurring, follow-up is required. Furthermore, attention should be paid to intestinal stenosis, which is a rare complication of SMV thrombosis after anticoagulation therapy²⁴.

CONCLUSION

We have reported a rare case of idiopathic SMV thrombosis in a young man who was successfully treated conservatively with anticoagulant therapy. Thrombosis of the SMV should be considered in the differential diagnosis of cases of acute abdomen, even if the patient has no identified risk factors for thrombosis. With prompt diagnosis and conservative management, surgical treatment was avoided and a good outcome was achieved.

CONSENT

Written informed consent was obtained from the patient for the publication of the case report and any accompanying images.

Authors have no conflict of interest.

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