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## Case Report

## A super-elderly case of abdominal aortic aneurysm associated with chronic disseminated intravascular coagulation



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## ABSTRACT

Chronic disseminated intravascular coagulation (DIC) is a well-known complication of aortic aneurysm. A 91-year-old Japanese woman was admitted to our hospital because of massive purpura of the lower limbs. The presence of abdominal aortic aneurysm (AAA) had been pointed out from the age of 80 years, and its diameter had gradually increased. The AAA was composed of two portions, that is, a large upper and a small lower portion, and a large mural thrombosis was observed in the lower portion. The laboratory data led to the diagnosis of DIC, and AAA was the only identifiable cause of coagulopathy. The time course of exacerbation of AAA was consistent with the progression of thrombocytopenia and purpura. Therefore, we concluded that AAA was the underlying cause of DIC. Since DIC in aortic aneurysms is associated with excessive fibrinolysis, tranexamic acid was administered as anti-fibrinolytic therapy. After that, coagulopathy was drastically improved. Our patient responded successfully to anti-fibrinolytic therapy for coagulopathy. The present case illustrates the importance of evaluation of the diameter of an aneurysm as well as intraluminal thrombosis, which may play an important role in coagulopathy including DIC. It is necessary to monitor coagulation and fibrinolysis for the follow-up of patients with AAA.

**<Learning objective:** We present a case report of an aged Japanese woman with abdominal aortic aneurysm associated with disseminated intravascular coagulation, and anti-fibrinolytic therapy drastically ameliorated her condition. Our case illustrates the importance of evaluation of the diameter of an aneurysm as well as conducting follow-up monitoring of coagulation and fibrinolysis.>

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## Introduction

Societies are aging at a greater rate worldwide, particularly in Japan, and are creating a burden on healthcare systems to maintain adequate levels of care for aged patients with atherosclerotic cardiovascular diseases, including aortic aneurysm. For example, the number of patients with abdominal aortic aneurysm (AAA) is increasing [1,2]. The surgical or intravascular treatment of AAA is well established; however, the presence of other diseases associated with AAA complicates the therapeutic strategy.

Disseminated intravascular coagulation (DIC) is a characteristic complication of aortic aneurysm that was first reported by Fine et al. in 1967 associated with a case of dissecting aortic aneurysm [3]. Among preoperative patients with aortic aneurysms, 40% have elevated levels of fibrinogen degradation products and 4% experience clinically overt DIC [4]. The clinical picture of DIC in aortic aneurysm includes distinctive features of typical DIC manifested as sepsis, in which fibrinolytic processes are activated and are associated with greater risk of bleeding. Here, we describe the case of an aged Japanese woman with AAA associated with DIC, who was successfully treated with anti-fibrinolytic therapy.

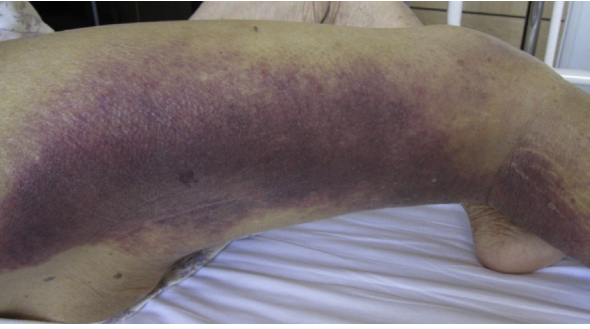
## Case report

A 91-year-old woman was admitted to our hospital because of massive purpura of bilateral lower limbs. The presence of AAA had

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**Fig. 1.** Marked purpura on her lower legs at admission.

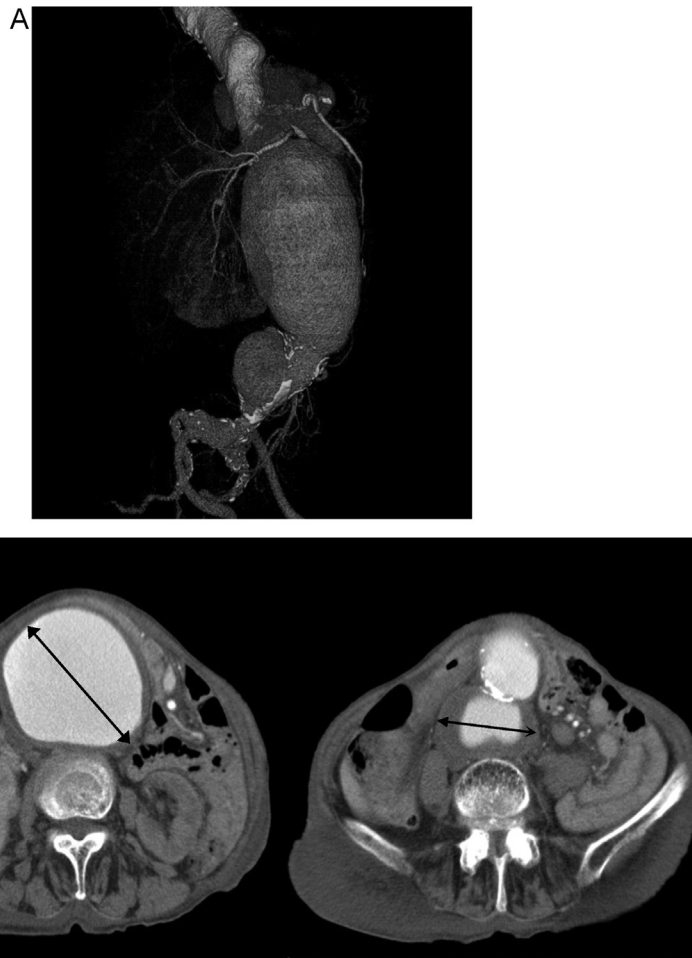
**Table 1** Laboratory data on admission.

Blood cell count	Biochemistry	Coagulation tests
WBC 5600/mm <sup>3</sup>	CRP 1.2 mg/dl	PT 15.6 s (10–14)
RBC 173 × 10 <sup>4</sup> /mm <sup>3</sup>	T-bil 0.47 mg/dl	PT-INR 1.77
Ht 17.1%	D-bil 0.18 mg/dl	APTT 57 s (23–42)
Hb 5.1 g/dl	BUN 47.0 mg/dl	Fibrinogen 82 mg/dl
MCV 99 fl	Cr 1.8 mg/dl	AT-III 87%
MCH 29.5 pg	Na 140 mEq/l	FDP 107.2 μg/ml
MCHC 29.8%	Cl 113 mEq/l	D-Dimer 65.7 μg/ml
Plt 4.4 × 10 <sup>4</sup> /mm <sup>3</sup>	Fe 33 μg/dl	
Reti 50%	Ferritin 192.5 ng/ml	

AAA, abdominal aortic aneurysm; DIC, disseminated intravascular coagulation; FDP, fibrin/fibrinogen degradation products; AT-III, antithrombin-III; EVAR, endovascular aneurysm repair; TAT, thrombin-antithrombin complex; PIC, plasmin-α2 plasmin inhibitor complex; t-PA, tissue plasminogen activator; CRP, C-reactive protein; T-bil, total bilirubin; D-bil, direct bilirubin; PT-INR, international normalized ratio of prothrombin time.

been pointed out from the age of 80 years, and its diameter had gradually increased. Therefore, surgical therapy was recommended to her several times; however, she refused obstinately for the operation. Her medical history included a partial gastrectomy for gastric cancer. Six months before the admission, she noticed mild subcutaneous bleeding at a bruise on a lower limb that was spreading widely to both limbs. On admission, the blood pressure was 114/70 mmHg and pulse rate was 60 beats per minute, and skin oxygen saturation was 98%. The jugular vein was not dilated, and

ejection systolic murmur at the 2nd right sternal border was audible. A large pulsating mass (7 cm × 11 cm) was palpable on the abdomen, and marked purpura was observed on her lower legs (Fig. 1). Laboratory data indicated anemia, thrombocytopenia (hemoglobin 5.1 g/dl, platelet count, 4.4 × 10<sup>4</sup>/μL), and abnormal levels of serum coagulation factors [fibrinogen, 82 mg/dl; fibrin/fibrinogen degradation products (FDP), 107.2 μg/ml; D-dimer, 65.7 μg/ml; antithrombin-III (AT-III), 87%] (Table 1). According to



**Fig. 2.** (A) Three-dimensional imaging of enhanced computed tomography showing the presence of a saccular aneurysm of the abdominal aorta. The abdominal aortic aneurysm was composed of two portions, that is, a large upper and a small lower portion. (B) The cross-section imaging of abdominal aortic aneurysm showing large mural thrombosis. The dimensions of the upper and lower portions at the scanned plain were 92 mm and 47 mm, respectively.

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