

A case of essential thrombocythemia presenting with aortic thrombosis

Masayuki OKI, Makiko MORIUCHI, Hiroshi KAWADA, Yoshiaki OGAWA, and Kiyoshi ANDO

Department of Medicine, Tokai University School of Medicine

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Essential thrombocythemia (ET) is a chronic myeloproliferative disorder characterized by thrombo-hemorrhagic complications. But aortic thrombus formation is not so common in the patients with ET at the initial diagnosis. We describe a 65-year-old woman with ET found to have a thoraco-abdominal aortic thrombosis and have splenic infarction, which were successfully treated with medical therapy alone. To our knowledge, only two cases were published with presenting large aortic thrombosis at the onset.

Key words: essential thrombocythemia (ET), arterial thrombosis, chronic myeloproliferative disorder, hydroxyurea

INTRODUCTION

Essential thrombocythemia (ET) is a clonal myeloproliferative disorder characterized by an autonomous increase in platelet production. The clinical diagnosis of ET requires ruling out other myeloproliferative disorders and causes of reactive thrombocytosis (RT) and the demonstration of autonomous platelet production¹. Recent reports showed about 23-57 % of patients with ET had JAK2-V617F mutation²⁻⁵. Many patients with ET are asymptomatic, but a large number of them manifest symptoms or signs of bleeding, usually as ecchymoses or mucosal hemorrhage, or microvascular thrombosis, usually as erythromelalgia, digital ischemia, or transient ischemic attack^{6, 7}. The risk of thrombo-hemorrhagic complications remains unpredictable in individuals.

Pharmacologic platelet function inhibition and platelet cyto-reduction therapy appear to prevent complications of thrombosis, especially in micro-, small-, and medium-sized vessels⁸. Thrombosis of large arteries or veins is less common but has been reported^{9, 10}. Previously reported ET-associated thromboses in large vessels such as the aorta, iliac artery, and portal vein have been treated surgically. However, urgent surgery on aortic thrombi has a high mortality. Only one case with the treatment of an ET-associated aortic thrombus with medical therapy alone has been reported.

We describe a 65-year-old Japanese woman with ET found to have a 3.0-cm-long, non-occluding intraluminal thrombus in the thoraco-abdominal aorta.

CASE REPORT

A 65-year-old Japanese woman was referred to our hospital for the evaluation and treatment of lower abdominal pain, vomiting and diarrhea for one day. She denied fever, chills, cough, headache, melena, and tarry stool. She has a past medical history of hypertension, atrial fibrillation and untreated thrombocytosis and

leukocytosis for five years. There is no family history of coagulation disorders without cerebrovascular attack and ischemic heart disease. She does not smoke and drink little alcohol. She is not taking any medications. On physical examination, blood pressure was 140/64. Pulse rate was 76 regular beats per minute. Body temperature was 36.7 °C. Respiratory rate was 16 per minute. Systolic murmur was audible at the apex. Her lungs were normal. The abdomen was soft and tender at the lower abdomen without rebound. There were no palpable liver and spleen. The extremities were not cyanotic, clubbed, and edematous with intact pulses. There were no focal neurological findings.

Complete blood count revealed a white blood cell count of 29000/mm³ with 88% neutrophils, 4% lymphocytes, 5% monocytes and 3% eosinophils, hemoglobin level of 12 g/dl, and a platelet count of 166.5×10⁴/mm³. The lactate dehydrogenase (LDH) was 1204 U/l. The aspartate aminotransferase (AST) level was 23 U/l. The alanine aminotransferase (ALT) level was 13 U/l. The level of iron, creatine kinase (CK), blood urea nitrogen (BUN), creatinine, sodium, potassium, chloride, amylase and total bilirubin were normal. The level of glucose was 243 mg/dl. The coagulation study was normal. The chest X-ray revealed no infiltrates, cardiomegaly and free air. The abdominal X-ray showed no abnormal bowel gas. CT scan of the abdomen revealed splenic infarction and a 3 cm-long, non-occluding intra-luminal thrombus in the thoraco-abdominal aortic lesion (**Figure 1A and 1B**). Abdominal angiography revealed a 5cm-long intra-arterial thrombosis superior to the branch of celiac artery (**Figure 2**).

At first, this patient was treated with intravenous heparin (5000U bolus injection followed by 12U/kg/hr continuous infusion). Bone marrow aspiration and biopsy revealed consistent with essential thrombocythemia (ET), which showed hypercellular marrow and marked megakaryopoiesis. Reactive thrombocytosis was ruled out. There were no findings of marrow fibrosis and

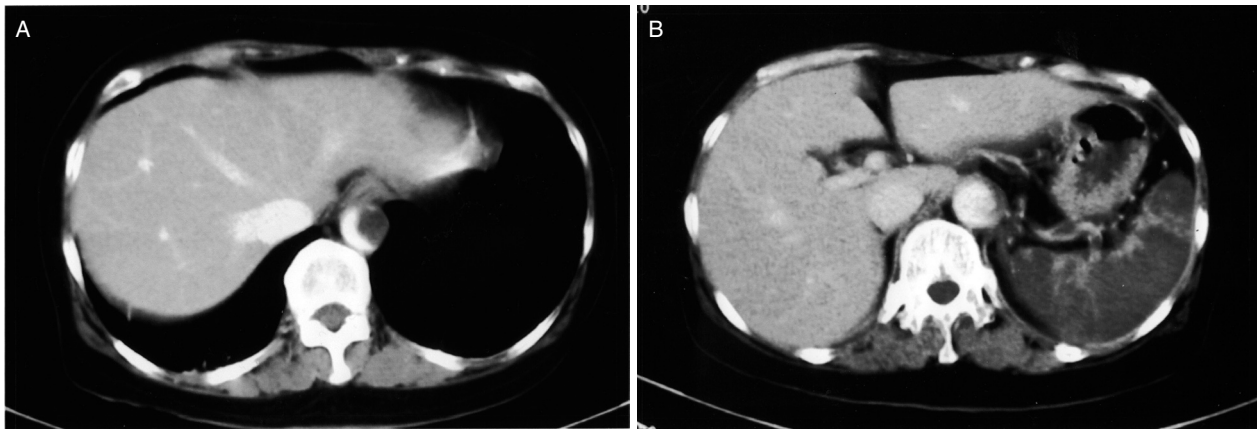


Fig. 1. A: Enhanced helical CT image demonstrates a 3 cm-long, non-occluding intra-luminal thrombus in the thoraco-abdominal aortic lesion. B: Enhanced helical CT scan of the abdomen revealed diffusely decreased splenic perfusion consistent with whole splenic infarction.



Fig. 2. Abdominal angiography revealed a 5cm-long intra-arterial thrombosis superior to the branch of celiac artery.

Philadelphia chromosome. After making a diagnosis of ET, we switched anticoagulation therapy to hydroxyurea (1500mg/day) and aspirin (81mg/day). One month after cytoreductive therapy and anti-platelet therapy, CT scan of the abdomen showed disappearance of arterial thrombosis. One week after cytoreductive therapy she had tarry stool. Gastro endoscopy showed multiple gastric ulcers. Bleeding was treated by injecting ethanol and epinephrine under gastro endoscopy. We stopped administration of aspirin. One month later her platelet counts decreased less than $40.0 \times 10^4 / \text{mm}^3$ and gastric ulcer was improved.

DISCUSSION

This case was admitted to our hospital with a very rare presentation of ET such as thoraco-abdominal aortic thrombosis. Only two cases were published with presenting large aortic thrombosis at the onset. This atypical presentation was probably due to untreated ET for a long period.

There were several risk factors of thrombosis in patients with ET. Several reports showed age, history of thrombosis and duration of thrombocytosis excluding cardiovascular risk factors like hypertension, smoking and hyperlipidemia¹¹. However, most studies disagree about the correlation between the platelet count and the risk of thrombosis.

On the other hand, hemorrhage is associated with the platelet count (more than $150 \times 10^4 / \text{mm}^3$). In this patient there were two risk factors for hemorrhage:

age and long duration of thrombocytosis. Hemorrhage from gastric ulcers was mainly caused by administration of aspirin in combination of hydroxyurea. Colombi *et al*⁶. recommend that chemotherapy and anti-aggregant therapy should be reserved for symptomatic patients or patients with a history of thrombotic events. However, aspirin should have been hold after resolution of arterial thrombosis with heparin and warfarin in this case.

Recently, Harrison *et al*¹². reported that hydroxyurea and low-dose aspirin was superior to anagrelide, which is blocking megakaryocyte differentiation, and aspirin for patients with ET at high risk for vascular events, especially arterial thrombosis. They defined patients with ET as high risk if they met one or more of the following criteria: an age older than 60; platelet counts more than one million; a history of ischemia, thrombosis, or embolism; hemorrhage caused by ET; hypertension requiring therapy; and diabetes mellitus requiring hypoglycemic agents. Furthermore, Carobbio *et al*¹³. recommends the baseline white blood cell count greater than $10^4 / \text{mm}^3$ as a risk factor for thrombotic events in ET patients. This case we presented here had a lot of risk factors for thrombotic events in ET. Before we encountered arterial thrombotic events, this patient had been treated with hydroxyurea and low-dose aspirin. We should also notice ET or polycythemia vera in order to switch anticoagulation therapy to cytoreductive therapy and anti-platelet therapy in case of thrombotic events.

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