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Case Report

Successful thrombolytic therapy for ST-elevation acute myocardial infarction in a patient with immune thrombocytopenic purpura

Abstract

Immune thrombocytopenic purpura (ITP) is a clinical syndrome characterized by a decrease in the number of thrombocytes in circulation and frequent mucocutaneous bleedings. Ideal treatment of ST-elevation myocardial infarction in patients with ITP is still unknown. A 44-year-old male patient, who was being followed up with ITP and was in remission, has been diagnosed with ST-elevation myocardial infarction in the nonprimary percutaneous coronary intervention–capable center. The patient was given tissue plasminogen activator infusion 3 hours after onset of chest pain. The patient's chest pain disappeared after tissue plasminogen activator, and he underwent coronary angiography at another center 12 hours after onset of chest pain. Coronary angiography did not show any lesion other than a plaque causing 30% stenosis in the left anterior descending coronary artery. The patient has been followed up with double-agent antiaggregant therapy for the first month and single-agent antiaggregant therapy thereafter. He did not experience any bleeding complication during the follow-up period. His thrombocyte count was 46 000 μL during admission and varied between 42 000 and 58 000 μL during follow-up.

Immune thrombocytopenic purpura (ITP) is an autoimmune disorder presenting with thrombocytopenia, and it is characterized by the destruction of thrombocytes coated with antibodies against glycoprotein IIb/IIIa in the reticuloendothelial system. Immune thrombocytopenic purpura affects women more often than men, and its prevalence is 10 per 100 000 per year. Patients with ITP present with frequent episodes of mucocutaneous bleedings such as gingival bleedings, petechia, and purpura [1].

Compared with the general population, atherosclerotic diseases such as myocardial infarction are less frequent among patients with ITP [2]. Antiaggregant, anticoagulant, and thrombolytic therapies are the essential components of the treatment of ST-elevation myocardial infarction (STEMI). Thrombolytic therapy is contraindicated in patients with bleeding diathesis [2]. We hereby report a case of a 44-year-old ITP patient who referred with STEMI and was successfully treated with thrombolytic therapy.

A 44-year-old male patient admitted to nonprimary percutaneous coronary intervention–capable center, 2 hours after onset of pressure type chest pain localized to the retrosternal region. The patient had no coronary risk factor other than smoking. Electrocardiography (ECG) showed ST-segment elevation in leads V1 to V3 (Fig. 1), and the patient was diagnosed with STEMI. Distance between the center patient had referred to, and the nearest primary percutaneous coronary intervention–capable center would take more than 120 minutes. Thrombolytic therapy (100 mg/1.5 hours in tissue plasminogen activator ([tPA]) was given intravenously to the patient who had permanent chest pain and ST-segment elevation on surface ECG despite intravenous (IV) morphine

and IV nitroglycerin. He was administered 300-mg acetylsalicylic acid (ASA) and 300-mg clopidogrel orally before tPA infusion. Concomitant with tPA, 0.3 mL IV and 0.8 mL subcutaneous enoxaparin were administered. The patient's chest pain had disappeared by the time he was admitted to our center. ST-segment was isoelectric line on surface ECG (Fig. 2). His blood pressure and pulse were 140/90 mm Hg and 62 per minute, respectively. Laboratory results were as follows: hemoglobin level, 13.4 g/dL; thrombocyte count, 46 000 μL ; and troponin I, 25 ng/mL (normal value <0.06 ng/mL). Results of standard coagulation tests were in normal limits. Protein C or protein S deficiency was not identified. Antiphospholipid antibodies and homocysteinemia were not detected. Echocardiography did not show any pathologic finding except for mild hypokinesis of the anterior wall. The patient had been diagnosed with ITP before, and he was not receiving any medical therapy for ITP, as he was in remission.

The patient was evaluated together with hematology unit. Coronary angiography of the patient was performed 12 hours after onset of chest pain and through femoral access via 6F catheter sheath. Coronary angiography showed a plaque causing 30% stenosis in the left descending coronary artery; whereas the circumflex artery and right coronary arteries were normal (Fig. 3). Femoral sheath was removed immediately after coronary angiography, and manual compression was applied to the site of access for 30 minutes. No bleeding was observed on the femoral sheath access site during follow-up. The patient was not administered anticoagulant therapy. Thrombocyte count was monitored daily, and the patient was discharged after 5 days of hospitalization. His thrombocyte count before discharge was 42 000 μL . At discharge, he was prescribed 100-mg/d ASA, 75-mg/d clopidogrel, and 20-mg atorvastatin therapy. Clopidogrel was discontinued 1 month after he was discharged, and treatment was continued with 100-mg ASA. The patient is currently in the eighth month after being discharged from hospital, and he has no cardiac complaints. His thrombocyte count varied between 42 000 to 58 000 μL during follow-up, and he did not experience any bleeding complication.

Immune thrombocytopenic purpura is an autoimmune disorder that develops as a result of the phagocytosis of antibody-coated thrombocytes in reticuloendothelial system and progresses with thrombocytopenia and mucocutaneous bleedings. Together with the failure of bone marrow megakaryocytes to produce thrombocytes, shortening of the thrombocytes' lifespan in circulation results in a decrease in the total number of thrombocytes as the disease progresses. The exact mechanism of thrombosis in ITP patients is still unknown. It has been reported that autoantibodies can be produced against the antigens on both the endothelial cells and thrombocytes because these 2 cell types have certain antigenic similarities [3]. Antiphospholipid antibodies in patients with ITP may lead to hypercoagulable conditions [4].

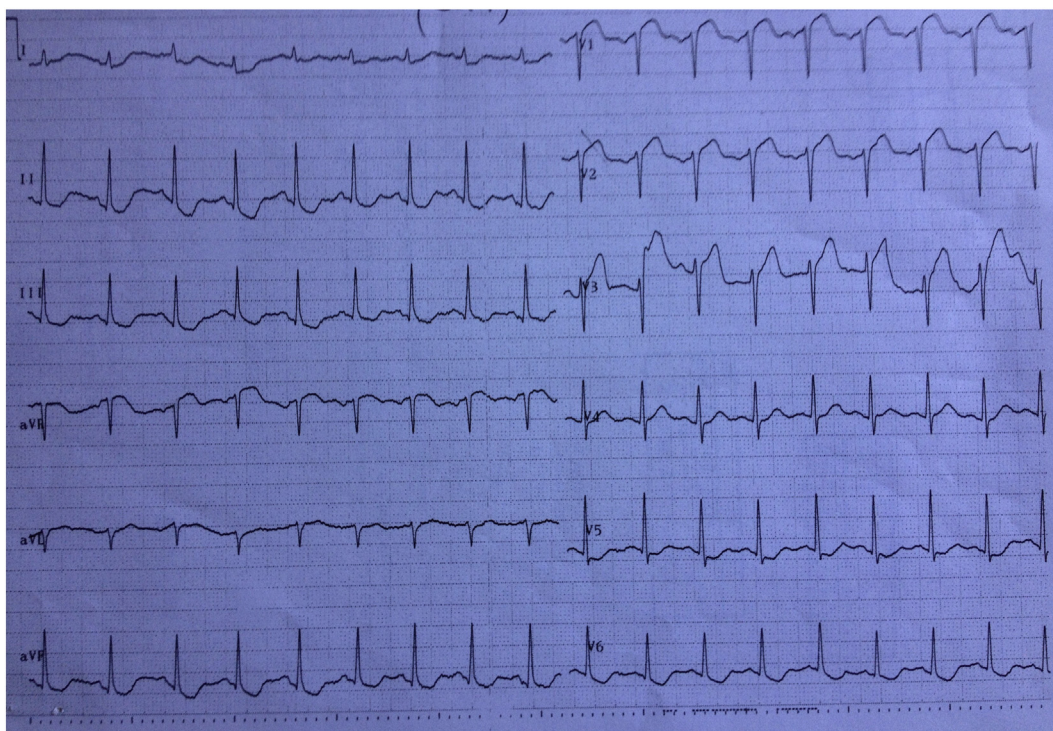


Fig. 1. V1 to V3 ST-segment elevation can be noted on the ECG recorded before tPA.

There is no established treatment protocol for ITP patients who refer with STEMI. Primary percutaneous coronary intervention is preferred for coronary revascularization in this patient group [5]. Management of bleeding/thrombosis balance in ITP patients representing with a myocardial infarction can be very challenging. In the case presented here, double-agent antiaggregant therapy was continued for 1 month.

Thrombolytic therapy can be given to STEMI patients who have no contraindications and who cannot undergo primary percutaneous intervention in 120 minutes. Bleeding diathesis is an absolute contraindication for thrombolytic therapy. Cases of ITP patients who were given thrombolytic therapy for pulmonary embolism have been previously reported in the literature [6]. Based on our literature review, the case

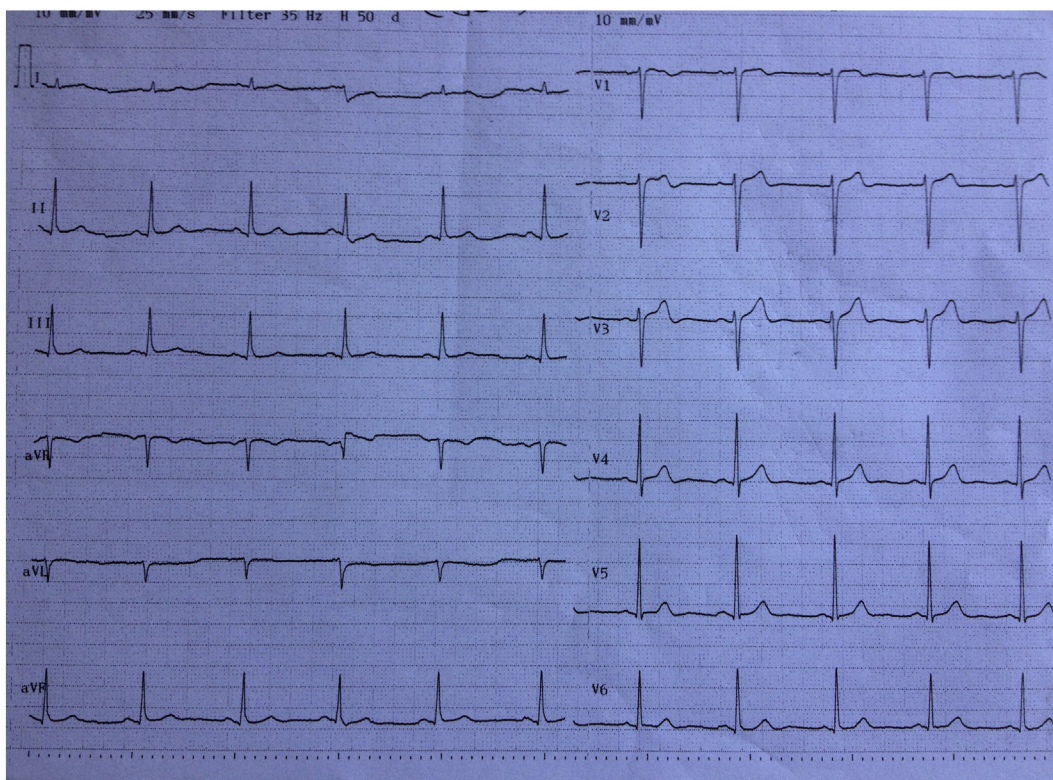


Fig. 2. ST-segment resolution to the isoelectric line can be noted on the ECG recorded after tPA.

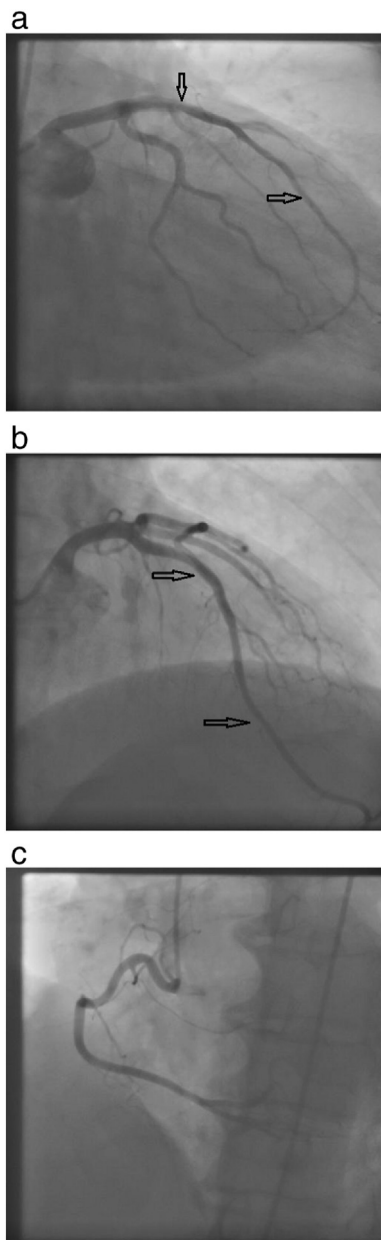


Fig. 3. A to C, Coronary angiography images after tPA. A, Left anterior descending artery and circumflex images (right caudal). B, Left anterior descending artery and circumflex images (right anterior cranial); arrows shows plaques in left anterior descending artery. C, Right coronary artery image.

presented in this report represents the first ITP patient who was administered thrombolytic therapy for STEMI.

Seventy percent of the major bleeding events that are observed after coronary angiography occur at the site of access or in the retroperitoneal

area. Radial arterial access is recommended to minimize bleeding complications in patients with bleeding diathesis [7]. Whereas in the literature, femoral access was preferred in most reported coronary artery interventions performed in patients with bleeding diathesis, and no significant bleeding complications had been encountered. Use of femoral closure devices is recommended in this patient group to avoid the bleeding complications at femoral access site [8]. The bleeding risk in patients with bleeding diathesis is closely associated with disease status, that is, whether the disease is in remission. In the case presented here, the fact that the patient's ITP was in remission might have prevented possible bleeding complications.

Primary percutaneous coronary intervention should be the first choice of treatment in ITP patients representing with STEMI. However, thrombolytic therapy as demonstrated in the present case may also be given when primary percutaneous coronary intervention is not feasible.

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