A CASE OF ACUTE CORONARY SYNDROME AFTER SPLENECTOMY IN AN IDIOPATHIC THROMBOCYTOPENIC PURPURA PATIENT

İDİOPATİK TROMBOSİTOPENİK PURPURALI HASTADA SPLENEKTOMİDEN SONRA GELİŞEN AKUT KORONER SENDROM: OLGU SUNUMU

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ABSTRACT

Idiopathic thrombocytopenic purpura (ITP) is an autoimmune disease characterised by decreased thrombocyte count due to antithrombocyte IgG production, increased megacaryocte count in bone marrow and decreased thrombocyte life span. Thrombocytes have a key role in pathogenesis of acute coronary syndrome. Size, density or activities of thrombocytes might trigger acute coronary syndrome. In this case report, we hope to attract attention to acute vascular complications that might develop after splenectomy. by reporting acute coronary syndrome developed in the 48 hours following splenectomy in an ITP patient,

Key Words: ITP, acute coronary syndrome, splenectomy

ÖZET

İdiopatik trombositopenik purpura (ITP), antitrombosit IgG üretimi, kemik iliğinde artmış megakaryosit sayımı ve azalmış trombosit ömrüne bağlı trombosit sayısının azalmasıyla karakterize otoimmün bir hastalıktır. Trombositler akut koroner sendromun patogenezinde anahtar rolü bulunmaktadır. Trombositlerin çapı, dansitesi ve aktiviteleri akut koroner sendromu tetikleyebilir. Bu vaka sunumunda, ITP'li hastada splenektomiden 48 saat sonra gelişen akut koroner sendromu sunarak, splenektomi sonrası gelişebilecek akut vasküler komplikasyonlara dikkat çekmek istedik.

Anahtar Kelimeler: ITP, akut koroner sendrom, splenektomi

INTRODUCTION

Idiopathic thrombocytopenic purpura (ITP) in adulthood is a chronic and common autoimmune disease in this patient population with an incidence of 5-10/100000 contrary to childhood [1,2].

In pathogenic aspect, due to increased antigenic properties of thrombocyte membrane proteins, there is an increased production of autoantibodies and proliferation of cytotoxic T cells. First antibody response occurs in the spleen and this response starts a chain reaction of autoimmunity mainly in the bone marrow and other antibody producing tissues. Produced antibodies induce thrombocytopenia primarily by one of the two main pathways; increased thrombocyte lysis by attaching to thrombocyte membranes and inducing phagocytosis or by decreasing thrombocyte production by attaching megacaryoctes. Idiopathic thrombocytopenic purpura in childhood usually presents itself in a selflimiting pattern. However, in adulthood it has a chronic pattern with an incidence of 5-10/100000. Furthermore, 30-40% of adult patients might be asymptomatic. Thrombocyte count is usually lower than $150x10^9$, and a thrombocyte replacement indication arises when it falls below 30×10^9 in adults and 10×10^9 in children or even in higher levels with

mucosal bleedings. Main therapeutic approach is immunesupression with oral or intravenous corticosteroids. Intravenous immunoglobulin (IVIG), anti Rh immunoglobulin, anti-D or combination therapies are second line options in steroid unresponsive cases. As spleen is the main organ that produces antithrombocyte antibodies and the site for thrombolysis, splenectomy is the final choice in medically unresponsive adult cases [1, 2].

There is a 8-52% of morbidity and 1.7% of mortality risk due to any form of hematological disorder in patients who undergo splenectomy[2,3]. Atelectasis, surgical site infections, bleeding, and bowel obstructions are the main complications following splenectomy. Thromboembolism, systemic infections or hemorhagic tendencies are less common but important complications associated with splenectomy. In this case report, we present an acute coronary syndrome of an ITP patient following splenectomy[1-6].

CASE REPORT

Sixty-six years old male patient who has been followed-up for ITP was hospitalized for splenectomy. He also had history of diabetes mellitus, hypertension, and previous coronary artery disease. He had a coronary artery stenting procedure to left anterior descending and right circumflex arteries 4 months ago and was clinically stable in means of cardiac disease. He did not have a previous acute coronary syndrome or myocardial infarction history. He was evaluated by a cardiologist before the surgical procedure. His acetylsalicylic acid therapy was stopped before surgery. He was assigned to low surgical risk group with no signs or symptoms of coronary ischemia.

He had 30 minutes long typical angina pectoris accompanied by dyspnea two days after the splenectomy surgery. Atrial fibrillation and left bundle branch block was identifed in electrocardiographic evaluation. However, there was no significant change in his electrocardiography compared to the presurgical evaluation. Troponin I level increased gradually from 0.014 ng/mL to 0.107 ng/mL (normal range: 0-0.04 ng / ml) and CK-MB level increased up to 17.03 ng/mL (normal range: 0-3 ng / ml). Patient was diagnosed with non-ST elevated myocardial infarction. A comparison of pre- and postsurgical blood counts revealed that there was significant increase in thrombocyte counts ($73x10^3$/mclt to $1300x10^3$/mclt) and mean thrombocyte volume (MPV, 8.4 fl to 10.7 fl). When patient was transferred to the intensive care unit, his vital signs were stable (Blood pressure 140/90 mmHg, heart rate 82/min). A combination of acetylsalicylic acid, enoxaparine, metoprolol, and clopidogrel was started for the treatment of myocardial infarction. In the following three days, patient's symptoms and cardiac enzyme levels regressed and he was discharged by medical treatment.

DISCUSSION

Our patient had more than one classical risk factors for coronary heart disease and also had a cardiovascular intervention history, however he had a stable cardiac performance before the surgery. The surgical procedure was completed without any complications and first 48 hours' follow-up was also stable. There was no ECG changes between his arrival to intensive care unit and 12 hours post admission. His echocardiography was normal (LVEF>60%).There was no sign of heart failure and haemodynamic compromise. For this reason, we did not perform coronary angiography. Antithrombotic therapy was started for the treatment of non ST elevated MI.

Platelet rich thrombus reduces the lumen of the coronary artery and severely restricts the myocardial supply in non ST elevation acut coronary MI. However fibrin-rich red clot occludes the coronary artery in patients with ST-elevated MI and urgent angiographic investigation and intervention is essential with antithrombotic therapy. We assume that splenectomy might be associated with the increased thrombocyte count and MPV in the first 48 hours might have triggered a thrombotic acute coronary syndrome that resolved in 72 hours by medical treatment.

Thrombotic complications like venous thrombosis, arteriothrombosis, pulmonary arterial thrombosis, and pulmonary hypertension are common problems after splenectomy [2-6]. These complications might develop secondary to any or combination of these following conditions; hypercoagulability, increased platelet activation, endothelial damage/activation, and hyperlipidemia. Spleen has two main functional zones; white and red pulp. White pulp is the main zone that is responsible for identifying foreign antigens and producing antibodies while red pulp is the site for blood filtration. Old, damaged and antibody coated erythrocytes and bacteriae are identified and phagocyted by phagocytic cells which are found in sinusoids of the red pulp. Physical abnormalities on outer surface of erythrocytes are also identified and corrected in the red

pulp. This part of the spleen also functions as a reservoir for thrombocytes and granulocytes. This sensitive mechanism is disturbed in splenectomized patients. Damaged erythrocytes and tyhrombocytes which should be eradicated by spleen pass into circulation. This leads to endothelial damage causing disturbed hemeostasis in favor of thrombosis. Every splenectomy is followed by an increase in thrombocyte and hemoglobin count[7]. Hyperlipidemia, leucocytosis, increased C reactive protein levels are also common[7, 8]. All these factors are risk factors for increased thrombosis risk independently and also in combination with the other factors.

Thromboembolic complications after splenectomy most commonly develop in patients with thalasemia intermedia (TI). Thalasemia intermedia is a disease characterized by ineffective erythropoesis and intravascular hemolysis. Thromboembolism prevelance was reported as 4% in a group of 8860 TI patients. Ninety four percent of these complications were reported to develop following splenectomy [9]. However, thromboembolism following splenectomy due to other hematological diseases is not a well studied subject.

In the literature there are many studies that report long term follow-up results after splenectomy. Schwartz et al observed 75 splenectomized patients between 1993-98 and reported that operation related mortality rate was 0% and only 10 patients had minor postsurgical bleeding problems, none experienced life threatening infectious complications, no significant heart or pulmonary hypertension cases were observed [4]. Onder et al analyzed data of 109 splenectomized patients between 2002-2010 and reported 16 cases of minor post surgical complications (most commonly atelectasis) and only 1 pulmonary thromboembolism case that responded to medical treatment[1].

Observing a series of 321 ITP patients, Pamuk et al. reported that 94% of patients responded to corticosteroid therapy and no cases of mortality or life threatening complications have occurred [10]. However, Stasi et al. reported 11 mortality (5 due to severe thrombocytopenia) in a group of 208 chronic ITP cases [11]. Durakbaşa et al reported 3 mortal cases due to systemic bacterial infections in 11 year follow-up data of 119 splenectomized pediatric patients [12].

Recently, thrombosis has been accepted as an important and potential post-splenectomy complication. Thrombotic complications following splenectomy are usually venous thrombotic events (portal venous thrombosis, deep venous thrombosis etc.) while arteriothrombotic events are extremely rare. No documented case reports of MI or arteriothrombotic events are present in hereditary spherocytosis. Ozner et al. reported a group of 13 middle-aged patients in whom chronic thrombocyte activation lead to acute coronary syndrome after splenectomy[13]. Seven of these patients had ITP history as the cause of thrombcyte dysfunction. There was also some physical evidence of chronic thrombocyte activation in these patients like increased thrombocytic microparticle amount, increased plasma procoagulant activation, etc. According to their findings, the authors have concluded that chronic thrombocyte activation might be a causative factor for acute coronary syndrome.

In conclusion, by presenting this acute coronary syndrome case following splenectomy surgery we hope to attract attention to increasing incidence of thrombotic complications of splenectomy especially in patients with previous hematological problems. These patients should be carefully followed-up by clinicians for any sign or symptoms of thrombotic complications that could range from minor complications to life threatening ones like acute coronary syndrome as presented in this case.

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