Case Report

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Spontaneous Coronary Artery Dissection in The Left Main Coronary Artery: A Case Report

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Abstract

Spontaneous coronary artery dissection (SCAD) can be defined as epicardial coronary artery dissection, which is not associated with trauma, atherosclerosis, or iatrogenesis. It is known that its incidence increases in the presence of some risk factors. In this case report; We wanted to present a case of a young-middle-aged female patient who had no risk factors other than a history of drug use, spontaneous left main coronary artery dissection was detected in coronary angiography and percutaneous coronary intervention was applied in the treatment. With typical chest pain, SCAD should be considered in young women with suspected myocardial infarction. Revascularization strategies may be preferred instead of conservative treatment in the high-risk patient group.

Key Words: spontaneous dissection, coronary artery dissection, left main coronary artery

Introduction

Spontaneous coronary artery dissection (SCAD) can be defined as epicardial coronary artery dissection, which is not associated with trauma, atherosclerosis, or iatrogenesis. It is a rare cause of acute coronary syndrome (ACS). SCAD is considered a rare disease of the coronary arteries and occurs largely as myocardial infarction (MI) in young women. Impaired coronary artery circulation develops due to myocardial injury, intramural hematoma formation, and/or intimal impairment during SCAD[1]. Risk factors that predispose patients to SCAD include fibromuscular dysplasia, systemic inflammatory conditions (systemic lupus erythematosus, rheumatoid arthritis), connective tissue diseases (Marfan, Ehler-Danlos), postpartum condition, and multiparity[2]. Epidemiologically, SCAD accounts for 0.1% to 4% of all ACS cases in the United States[3]. Further analysis indicates that approximately 25% of ACS cases in women under 50 years of age are caused by SCAD[4]. It has also been shown to be increasingly common in older and postmenopausal women even though it is typically thought to affect young women between the ages of 43-52 (± 10)[4, 5]. Overall, it is difficult to measure the actual incidence of SCAD because this disease is often inadequate and/or misdiagnosed.

Patients with SCAD typically present with ACS symptoms and chest pain is observed in 96% of cases. Other symptoms include arm, neck, or jaw pain, nausea/vomiting, and sweating[5]. Most commonly, the left anterior descending (LAD) coronary artery is affected and accounts for 40-70% of cases[6].

We identified a young to middle-aged female patient with no risk factors other than a history of drug use, presenting with spontaneous left main coronary artery dissection, and undergoing percutaneous coronary intervention treatment due to high-risk characteristics in this case report.

Case Report

A 46-year-old female patient had chest pain that started 3 hours before admission to the emergency department. The pain was in the retrosternal region, spreading to the left arm. She described it as eight out of ten. Fever was 36.5 degrees, respiratory rate was 20/min, blood pressure was 90/60 mm/Hg, SpO2 was 98%. Lung respiration sounds were normal and heart sounds were rhythmic and normal on physical examination. ECG taken revealed T wave negativity in sinus rhythm, heart rate 85/min, V1-V6 derivations. There was mild hypokinesis in the anterior and apical wall on the echocardiography image. There was mild insufficiency in the mitral valve. There was a history of oestrogen and progesterone-containing tablet use due to dysmenorrhea. She had been smoking for approximately 20 years. There was no family history, no pregnancy, and no chronic disease history. No significant pathology was detected in biochemical and hemogram parameters. An approximately 25-fold increase in troponin level was observed in the emergency department (1195 ng/L [determined reference range 0-47 ng/L]).

The patient was admitted to the coronary angiography catheter laboratory with the diagnosis of non-ST elevation

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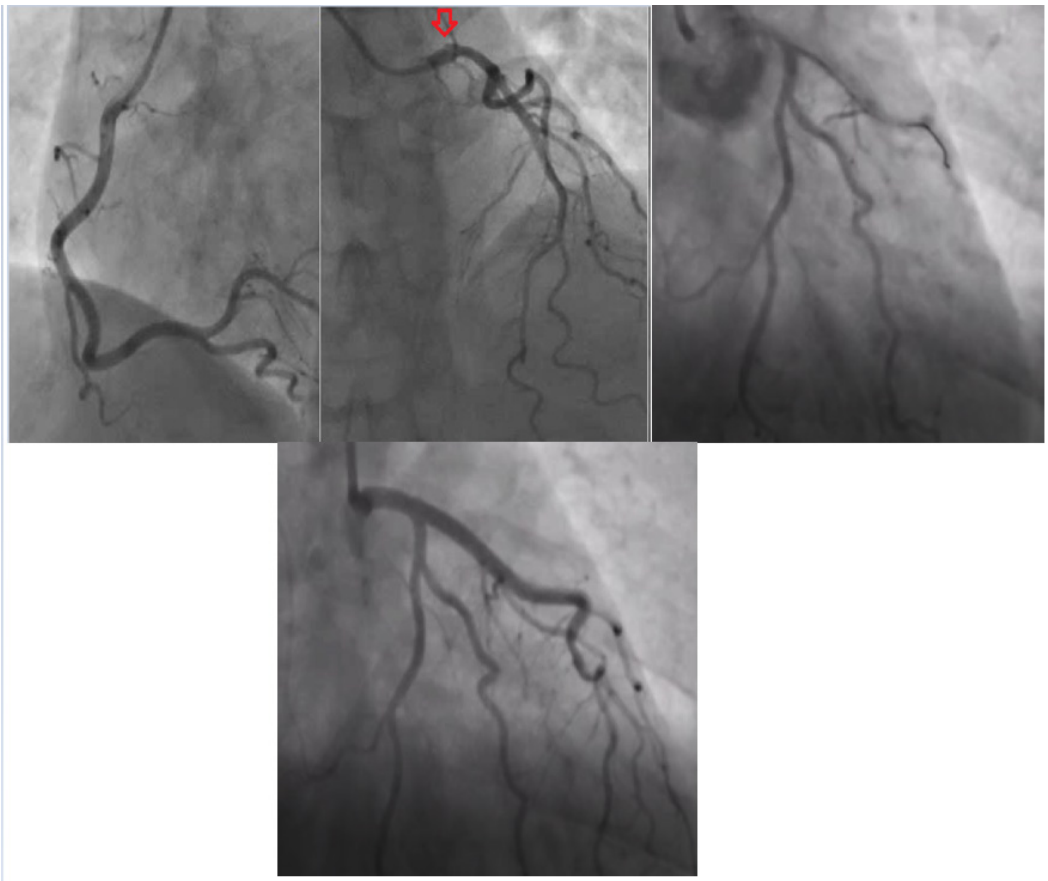

Figure-1: Coronary angiography images of the patient

myocardial infarction. Coronary angiography revealed no pathology in the right coronary artery (RCA). Dissection appearance consistent with type 1 SCAD was observed in the left main coronary artery (LMCA). No pathology was observed in the left circumflex artery. The patient was defibrillated upon the development of VT and VF, and 200 mg amiodarone intravenous push was administered during the imaging process. Sinus rhythm was achieved. Afterward, it was observed that the dissection line advanced to the mid region of the LAD artery. It was lowered to the actual lumen with the help of a guidewire upon seeing TIMI 1 flow in LAD. A wire was sent to the Cx artery for protection. The LAD artery was predilated with 2.0*10 mm and 1.20*15 mm diameter balloons starting from the midsection. LMCA was implanted under 3.0*36 mm DES 16 atm P starting from the ostial to close the dissection line in the LAD artery. 2.75*18 mm and 2.5*24 mm DES were implanted to overlap each other, respectively, upon the continuation of the dissection line in the midsection of the LAD. The hemodynamics of the patient improved after the procedure. Intracoronary abciximab was administered due to thrombus in the Cx ostial region. Afterward, abciximab infusion, acetylsalicylic acid, ticagrelor, heparin was administered and taken to the coronary intensive care unit. The patient, who was stable in follow-up, was discharged from the hospital on the 4th day of hospitalization (Figure-1, Video).

Discussion

SCAD is an important cause of acute coronary syndrome in women[7]. SCAD is usually seen in ≤50 young women, some studies have found the mean age between 43 and 52 years[8-10]. The patient was a middle-aged female in our case. Risk factors other than female gender may include pregnancy and postpartum period. In addition, hormone treatments are also a risk factor, as in the case we reported. The underlying arteriopathies contribute to the risk of SCAD in systemic inflammatory diseases[11]. There was no such risk factor in the case we presented. 3 types of SCAD were identified angiographically. It is called type-1 if there is a visible dissection flap and linear filling defect, type-2a in the presence of a flat stenosis that can be limited to normal segments, type-2b if it extends to the end of the coronary artery, and type-3 if it mimics an atherosclerotic lesion. We evaluated it as type-1 SCAD in the first image we obtained in our case. Tortuous vascular structure is also a potential risk factor for SCAD[12]. Intracoronary additional imaging techniques such as IVUS and OCT can be used in cases where the diagnosis of SCAD is uncertain. Especially OCT is important in terms of providing us with clear images. However, it can lead to the dissection line progression since a serious contrast load is also required during OCT. IVUS is commonly used since it does not require contrast in this respect[7].

A relationship was found between SCAD and tortuous coronary artery. Tortuous coronary arteries are characterized by a curvature of 90-180 degrees in 3 consecutive regions seen at the end of the diastolic in major coronary arteries ≥2 mm in diameter[13]. In our case, there was no tortuous vascular structure. Revascularization strategies should be preferred instead of conservative treatment in patients with high-risk features such as ongoing ischemia, recurrent chest pain, left main coronary artery dissection, ventricular arrhythmias, or hemodynamic instability[14,15]. Coronary artery bypass graft surgery is one of the treatment options and transplantation can be another treatment option in some cases. It was observed that our patient had many of the above-mentioned characteristics that occurred in chest pain that continued approximately three hours before hospitalization and then in coronary angiography. Coronary angiography revealed dissection consistent with TIMI-1 flow starting from the left main coronary artery and extending to LAD. The left main coronary artery is less affected by SCAD, with some reports showing that it accounts for only 2% of affected cases, while it accounts for 13% of cases in a series of STEMI SCAD patients only. LAD is often shown as the most commonly affected vessel and accounts for approximately 40-70% of SCAD cases[16].

We believe that this case is worth reporting due to the fact that this patient is young and middle-aged, that there is no majority of risk factors that increase the susceptibility to SCAD, and that there are catastrophic and serious consequences. SCAD is often misdiagnosed and underdiagnosed. We tried to understand this situation and improve the prognosis with an atypical case with less common associated risk factors, as with this patient.

Conclusion

It should be kept in mind that SCAD may be present in especially young-middle-aged female patients presenting to the emergency department, if they have typical chest pain, myocardial infarction findings, and no risk factors for atherosclerosis. Coronary angiography should be recommended. In addition, keeping the comorbid conditions that cause this condition under control and reducing the risk factors are very important for primary prevention.

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