

An Unusual Case of Spontaneous Coronary Artery Dissection

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ABSTRACT

Background: Spontaneous coronary artery dissection (SCAD) is a relatively rare cause of acute coronary syndrome. SCAD usually occurs both in young women or multiparous women either during pregnancy or in early post-partum period. Here we report an unusual case of SCAD in a middle-aged woman with no predisposing factors for SCAD.

Case Summary: A 42-year old female presented with intermittent chest pain, obstetrical history of one child birth seven years back and currently with no other cardiac risk factors. Electrocardiogram showed T-wave inversions in the anterior leads. Stress cardiolute test showed mild partially reversible defect involving anterior/anterio-septal wall. Coronary angiography was performed and SCAD was observed in left anterior descending artery (LAD). She underwent percutaneous coronary angioplasty and stenting, was hemodynamically stable and was later discharged in good condition with the alleviation in symptoms.

Discussion: SCAD usually occurs in young patients during pregnancy or in early post-partum period but it should also be considered in middle aged women unrelated with pregnancy. We suggest that women especially who do not have any cardiac risk factors, should not be treated with thrombolytic.

Keywords

Spontaneous coronary artery dissection, Acute coronary syndrome, Diagnosis, Management, Case report.

Introduction

Spontaneous coronary artery dissection (SCAD) is a non-iatrogenic and non-traumatic separation of the wall in the coronary artery and is a relatively rare cause of acute coronary syndrome and sudden cardiac death. SCAD usually occurs in young women who are otherwise healthy and have no conventional cardiac risk factors [1]. Atherosclerosis, hormonal effects during pregnancy and peripartum state, fibro muscular dystrophy and connective tissue disorders are considered to be the major predisposing factors. Clinical features of SCAD have a wide range of presentation. Depending on the severity of the limitation of the flow, symptoms of SCAD range from mild stable angina to a myocardial infarction.

Diagnosis is made through angiography and further management is planned with either percutaneous coronary intervention or coronary artery bypass graft surgery based on severity and location of the lesion [2]. Like in our case, SCAD occurrence in middle age without any predisposing factors and broad clinical presentation makes it a formidable diagnostic challenge.

Case Report

A 42-year old patient complains of intermittent chest pain and pressure located in the sub-sternal area without any radiation, lasting for a few minutes. She has a history of only hypertension which is well controlled. She has no history of diabetes mellitus, hyperlipidemia or familial cardiac diseases; denies smoking or illicit drug use. Obstetrical history, currently she is non pregnant and had one child birth seven years back. Physical examination was unremarkable. All vital signs were within normal limits.

On further evaluation, electrocardiogram (EKG) showed sinus rhythm with T wave inversions in anterior leads (Figure 1). 2D Echo showed normal ejection fraction (EF) of about 60-65% with mild left ventricular hypertrophy. Stress cardiolute test showed ejection fraction of 62% with mild partially reversible defect involving anterior/anterio-septal wall suggestive of ischemia, encompassing approximately 10% of the left ventricular myocardium.

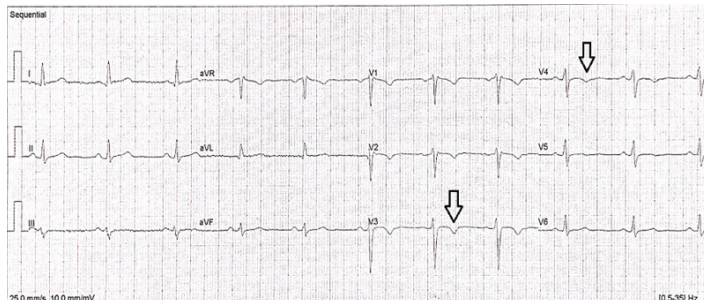


Figure 1: T wave inversions in anterior leads.

As her symptoms were progressively worsening, coronary angiography was performed which showed SCAD in LAD (Figure 2). Angiography also demonstrated no significant atherosclerotic coronary artery disease. Further, management was done by angioplasty and stenting of LAD with 2.5 x 18-millimeter Resolute Onyx (Figure 3). After ten weeks of discharge from the hospital, she had an episode of angina. The patient was evaluated at a major medical center and myocardial infarction was ruled out. A week later after being asymptomatic, a follow up with stress test was done, was reported normal with no signs of reversible ischemia which was noted in the stress test done before angioplasty.

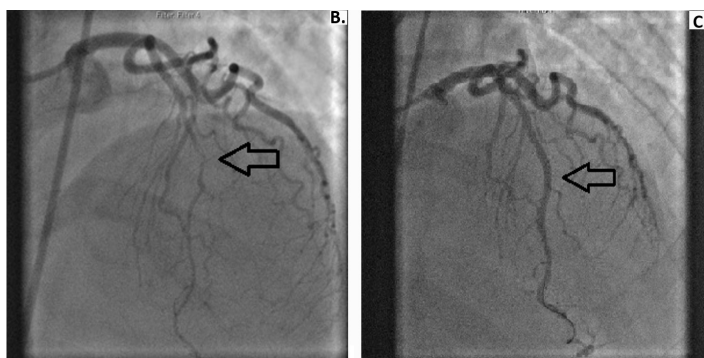


Figure 2: Spontaneous Coronary Artery Dissection in LAD.

Figure 3: Post Angioplasty and Stenting of LAD.

Discussion

SCAD is a rare and under recognized cause of myocardial ischemia. The incidence of SCAD is estimated to be around 0.28% to 1.1% and of that 70% are young females [3]. LAD is the most common site for SCAD which accounts for 60% of all the coronary dissections [3]. In a separate study to find the association of SCAD with coronary artery abnormality, it was reported that coronary artery tortuosity accounts for a 61% higher prevalence for the occurrence of SCAD [4].

The pathogenesis of SCAD still remains controversial. Major

risk factors for SCAD are atherosclerosis, hormonal effects during pregnancy, peripartum state, fibro muscular dystrophy and connective tissue disorders [5,6]. Physical stress in the form of exertion and mental stress due to emotional distress will cause increased amounts of catecholamine release, which also increases the risk for SCAD [7]. Furthermore, some role of genetics in SCAD is also implicated [8]. Based on the risk factors involved, SCAD patients are classified into four groups. Group one includes patients who have connective tissue disorders. Group two includes patients who developed SCAD due to the atherosclerosis. Group three includes peripartum women and group four includes all the other known risk factors and idiopathic causes [9].

Predominately SCAD presents as acute coronary syndrome but it has a wide range of presentation. Depending on the severity of obstruction of the blood flow in the coronary circulation, SCAD can present as a simple chest discomfort or stable angina to life threatening arrhythmias as well as acute myocardial infarction.

Administrations of fibrinolytics are contraindicated in patients with SCAD [9]. Fibrinolytics may lead to increase in the dissection by causing bleeding inside the dissected segment. Therefore, young female patients presenting with an acute coronary syndrome without cardiac risk factors, direct coronary angiography should be considered rather than thrombolytic therapy in order to decide for the optimal therapeutic strategy.

Based on the angiographic features, SCAD is classified into three types. Type one is characterized with multiple lumen in coronary artery with a longitudinal filling defect whereas type two and type three are characterized by vessel stenosis, type two being diffuse while type three being focal stenosis of the vessel [2]. As it is difficult to differentiate between the third type of SCAD and atherosclerosis, intra vascular ultra-sonography (IVUS) should be performed [9]. IVUS also effectively differentiates between true and false lumen.

Beside some case reports, there are no randomized trials or fixed guidelines drafted for the management of SCAD due to its low prevalence. Prognosis after percutaneous intervention with stenting is good but it is technically challenging to advance the guide wire into the true lumen. Due to the fragile nature of the wall in the dissected portion of the coronary vessel, dissection can expand during the advancement of the guide wire. In the patients with peripartum SCAD, the risk for SCAD is high with advancing age and in subsequent pregnancies. No regular angiography is needed in such cases but it is reasonable to follow up such cases with a nuclear stress test on a regular basis.

Conclusion

SCAD usually occurs in younger population, predominantly in females during pregnancy and in the early post-partum period. Though SCAD usually occurs in young patients, it can also present in middle aged women unrelated with pregnancy. It should be considered in all young women presenting with ACS symptoms. The early diagnosis of SCAD is important as it is associated with high mortality. Young women, especially who do not have any

cardiac risk factors, should not be treated with thrombolytic as it can lead to increase in the dissecting segment. Regular follow up with cardiolute stress test is encouraged after management of symptomatic cases with angioplasty.

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