

Spontaneous Coronary Artery Dissection Treated Conservatively in a Non-pregnant Patient: A Case Report

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Abstract Spontaneous coronary artery dissection (SCAD) is a rare cause of acute myocardial infarction (MI) and it is greatly misdiagnosed. If not recognized, SCAD carries a high in-hospital mortality rate. It is most commonly seen in females during the peripartum period, individuals with atherosclerotic disease and/or connective tissue disorders. In this report we present a case of 55 years old non-pregnant female without history coronary artery disease (CAD), who presented with squeezing chest pain, ST segment elevation on electrocardiogram (ECG) and negative cardiac markers. Subsequently coronary angiogram (CAG) revealed dissection of the left anterior descending artery (LAD) with 100% stenosis. Due to high risk of perforation it was decided to treat the patient conservatively and subsequently she was discharged home with no complications. In this report, we demonstrated that early recognition of SCAD and conservative management, in a non-pregnant patient, can lead to decreases in-hospital complications and favorable outcomes.

Keywords: *spontaneous coronary dissection, acute coronary syndrome, non-pregnant female*

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1. Introduction

SCAD is defined as non-traumatic and non-iatrogenic separation of the coronary arterial wall [1]. It is predominantly seen in younger women without any risk factors for coronary heart disease. It is largely under-reported and a fatal cause of Acute Coronary Syndrome (ACS) [2]. Although the prevalence and incidence of this condition remains unclear, it is estimated to contribute to 1.7-4% of ACS [3,4]. Additionally, SCAD may be the cause of 0.5% of sudden cardiac deaths [5]. The first SCAD case documented was in 1931, where a 42-year old woman, otherwise healthy, suddenly died after a violent retching attack [6]. This condition is increasingly being considered as a pertinent etiology of myocardial infarction among young women.

We understand SCAD MI to be defined as a lack of myocardial blood flow due to partial or complete occlusion of the coronary artery from a vessel-wall tear and/or hematoma [7]. Spontaneous coronary artery dissection make up 24-36% of MIs in women <50 years and is a common cause of MI during pregnancy [8].

2. Case Presentation

A 55-year-old female with a past medical history of chronic hepatitis C, opiate abuse disorder, anxiety and recurrent chest pain status post multiple coronary angiograms presented to the ED with a sudden onset of substernal, squeezing-like, non-radiating chest pain associated with diaphoresis and shortness of breath. She reported to have had similar chest pains in the past and denied a family history of sudden cardiac death and cardiovascular disease. She admitted crack-cocaine abuse in the past, but denied any cigarette use. On presentation, the patient's vitals were stable and her physical examination was unremarkable. Her initial ECG was significant for ST-segment elevations in V1-V3 and ST depressions in III and aVF (Figure 1). Initial troponins were negative and the remaining labs were unremarkable. As a result, in the ED she received aspirin 162mg, Plavix 600mg and Heparin drip.

An emergent CAG was performed that revealed 100% stenosis of the left anterior descending artery (LAD) in the middle third of the vessel caused by a spontaneous dissection (Figure 2a/2b). There was also 90% stenosis in

the proximal third of the 1st septal (S1) likely due to a spontaneous dissection. The left circumflex and right coronary artery were patent and free of disease. It was decided to treat the dissection with conservative management as the risks of perforation and further dissection outweighed the benefits. Left ventriculogram revealed an ejection fraction of 62% with anterior hypokinesis and apical akinesis. A year ago, the patient presented to another hospital center with chest pain and subsequently underwent a CAG which showed normal

S1 and LAD.

The patient was observed under Coronary Care Unit (CCU), with no further chest pain episodes, telemetry events or rising in cardiac markers. Transthoracic echocardiogram a day after the procedure showed anterior, anteroseptal, apical and distal inferior hypokinesis with left ventricular ejection fraction of 40%. The patient was treated with dual antiplatelet therapy (aspirin and clopidogrel), metoprolol and sacubitril/valsartan. She was discharged home in stable condition.

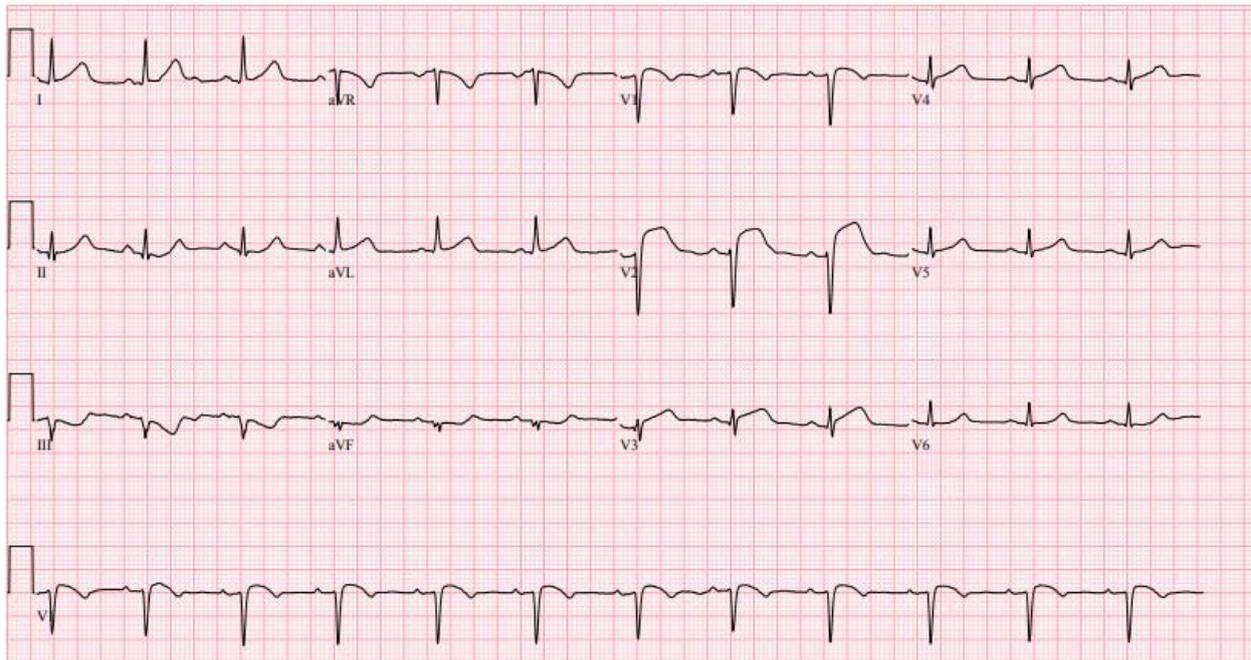


Figure 1. EKG on presentation, showing ST elevation over the anteroseptal leads (V1-V4) and ST depressions over the inferior leads (III-aVF)

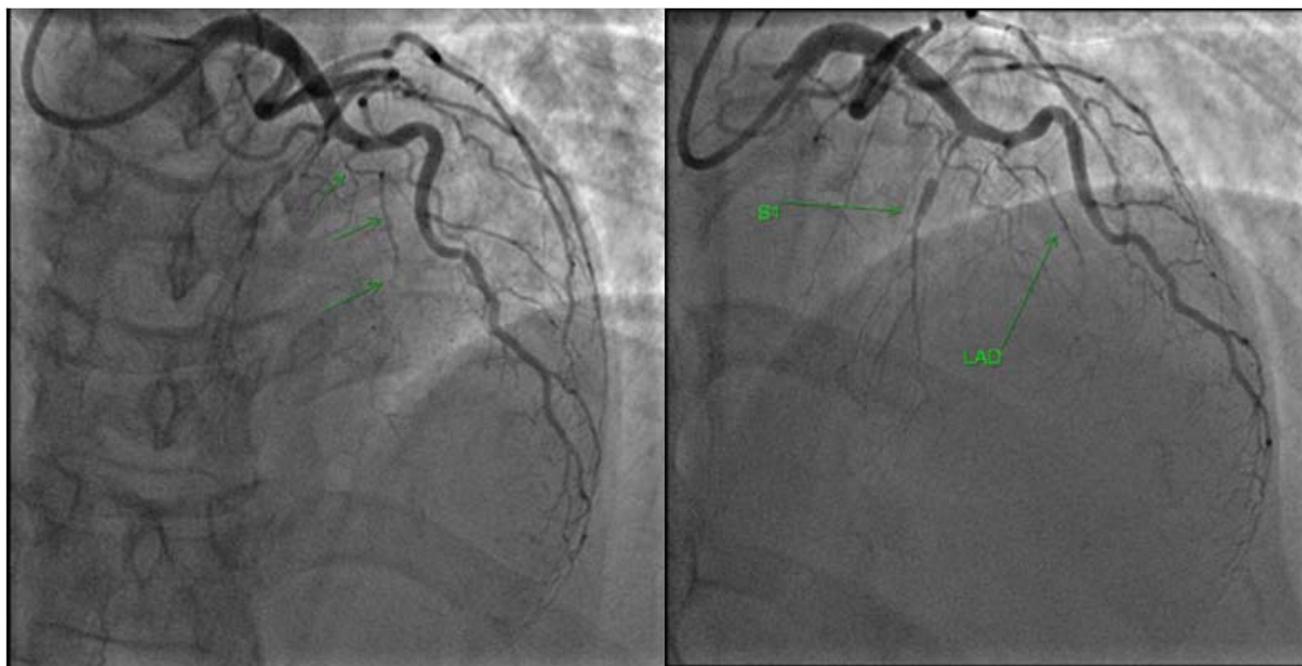


Figure 2. **a (left)** Left Coronary Artery (LCA) in Right Anterior Oblique (RAO) Cranial - the arrows locate the remnant of the LAD. **b (right)** LCA, showing the probably dissected S1 and the Left Anterior Descending (LAD) remnant

3. Discussion

The pathophysiology of SCAD is unknown, one hypothesis points to direct damage to the vasa vasorum leading to intermedial hemorrhage [9]. It is most commonly seen in females during the peripartum period, individuals with atherosclerotic disease and/or connective tissue disorders. It is a rare cause of ACS, but one that every health professional should be aware of. The diagnosis is made by CAG, but if this is inconclusive one can use intravascular ultrasound (IVUS) and more recently optical coherence tomography (OCT) to confirm the diagnosis [10]. There is no standard approach for the management of SCAD. Although Percutaneous coronary intervention (PCI) is a common practice in many of these cases, it remains a challenging decision due to the fragility of the vessel wall during the dissection. Thrombolytic therapy should be avoided as it can cause extension of the ongoing dissection [11]. For this reason, if the patient is hemodynamically stable and there is no sign of ongoing ischemia, the first line therapy is conservative management [12]. In our case it was decided to proceed with the latter, given that our patient was stable with no active chest pain during the CAG. This case proves that once again conservative management may lead to better outcomes when compared to aggressive measures like PCI or Coronary Artery Bypass Graft (CABG). In conclusion, more data and further studies are needed to standardize treatment of SCAD in non-pregnant patients, but early identification of SCAD as a cause of MI is imperative to reduce mortality and maximize better outcomes.

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