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# Spontaneous Coronary Artery Dissection: Case Reports

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**Abstract** **Case Report**

Spontaneous coronary artery dissection (SCAD) is an uncommon cause of acute coronary syndrome, which typically affects young women without risk factors for atherosclerosis. The diagnosis is based on coronary angiography as first line. The reference treatment is medical treatment. The prognosis of this pathology remains unknown. We reported the case of a 44-year-old man and woman with spontaneous dissection of the left anterior descending artery.

**Keywords**: Spontaneous coronary artery dissection, acute coronary syndrome, Women.



## INTRODUCTION

Spontaneous coronary artery dissection (SCAD) is by definition a non atherosclerotic and non-traumatic spontaneous disruption of the coronary arterial wall, resulting in intra-mural haemorrhage, with or without intimal rupture and development of a false lumen. It is a frequent cause of acute coronary syndrome among young adults particulary women [1]. The predisposing factors of the coronary dissection are multiple but remain uncertain of causality. Patients usually present with a myocardial infarction.

Through two cases of SCAD we discuss its clinical presentation, the risk factors, and therapeutic management.

## CASE REPORTS

**Case-1**

We present a case of a 44 years old female, with no cardiovascular risk factors, no medical history, presented with angina that started 7 hours before her admission. The electrocardiogram showed: ST segment elevation in anterior territory. The echocardiography showed: moderate left ventricular dysfunction (LVEF is 45%), with abnormal segmental kinetic wall motion in anterior on mid and basal segments.

Coronarography reported: dissection of Mid left anterior descending artery (Mid LAD), extended to Distal left anterior descending artery (Distal LAD); with no abnormalities on the other arteries (Figure-1).

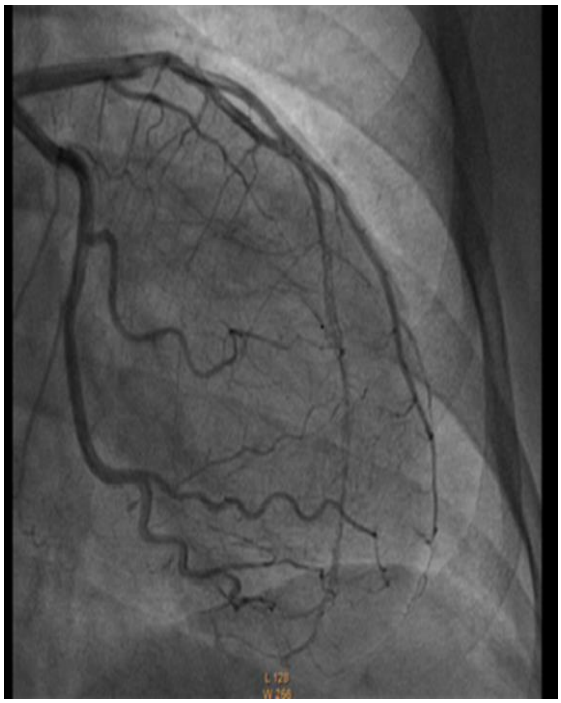

**Fig-1: Angiography of the left anterior descending artery, 30° oblique right anterior view, showing extended dissection of this artery**

The coronarography at 01 month follow up showed no modifications. The patient has received a medical treatment with dual antiplatelet therapy and betablockers, angiotensin-converting enzyme inhibitor and statins. Furthermore, Immunological tests were negative.

**Case-2**

We present a case of a 44 years old man, with no cardiovascular risk factors, with a history of rheumatoid arthritis under medical treatment and an anterior wall myocardial infarction under medical treatment one year before his admission. He presented CCS II-III grading of angina pectoris that started 6 months before. The electrocardiogram showed QS aspect in anterior leads with no modifications in comparison with prior electrocardiograms. The echocardiography showed left ventricular dysfunction (LVEF is 40%), with abnormal segmental kinetic wall motion in anterior territory. Coronarography reported: Dissection of Mid left anterior descending artery (Mid LAD) with a 50% stenosis type C on over 20mm of the artery length. The other arteries were smooth with no stenosis. The patient was under medical treatment an angiographic follow up 1 month after was programmed but the patient did not attend it.

## DISCUSSION

The first report of spontaneous coronary artery dissection in 1939, was of a 42 years old woman on autopsy [2]. The reported prevalence of SCAD is 0,07% to 1,1 % [3]. Among women, SCAD is the etiology of acute coronary syndrome in as many as 35% of cases, and the most common etiology of myocardial infarction associated with pregnancy. It represents 0, 5% of cardiovascular cause of death. Overall, mean age among women has been reported as 42 to 53 years [4].

Classic modifiable risk factors for atherosclerosis are not common among SCAD patients. Pregnant and post partum women with no risk factors have a higher risk of developing a dissection. Moreover, In 2 recent studies counting over 300 patients with SCAD, patients had diabetes mellitus in 0,9%to 4,6% of cases, rate of current smokers was 0,6% to 10% of cases, high blood pressure in 27% to 36% of cases, and the medium of the body mass index was 24 kg / m2 [5, 6].

However, intensive physical activity, anxiety and depression could be considered as trigger factors of SCAD [6]. We recognize other associated conditions related to SCAD, for instance other extracoronary vascular arteriopathies and connective tissue disorders such as periarteritis nodosa and Marfan, Ehlers-Danlos, de Loeys-Dietz syndromes and systemic lupus, other auto immune diseases such as rheumatoid arthritis are related to SCAD [4] as described above in the 2nd case.

SCAD patients present with signs of acute coronary syndrome in the majority of cases [6].

SCAD is usually diagnosed on invasive coronary angiography; intracoronary imaging can be used for confirmation in indeterminate cases, often by visualizing an intramural hematoma [7].

The left anterior descending artery (LAD) was the most frequently involved vessel, as described in our patients. [3]. In 9% to 18% of cases, a multivessel coronary dissection was found, it defines the mutli-vessel SCAD [8, 9].

Based on experts findings, conservative treatment strategy is the cornerstone in the management of SCAD [9]. Other prospective studies, reported in coronarography follow up a spontaneous wall healing in 73 to 97 % of cases. In addition, we observe spontaneous healing in 100% of patients if the coronarography was realised in more than 26 days post-dissection [3].

In other situations, revascularization is necessary, using percutaneous coronary interventions (PCI) or aorto-coronary bypass grafting in patients presenting persistent angina pectoris, hemodynamic instability, ventricular arrhythmia or in dissection of the left main trunk artery [5]. PCI in comparison of aortocoronary bypass grafting remains the optimal treatment if the integrity of coronary vessels is preserved.

Recent studies reported, that PCI in SCAD has a higher failure rate in comparison with PCI in atherosclerotic myocardial infarction [8, 10]. PCI revascularization must be considered in hemodynamic instability or in low coronary output. Aorto-coronary bypass is a second revascularization possible approach.

The medical management of SCAD remains contentious. However, the use of betablockers and angiotensin converting enzyme inhibitor is recommended in reduced left ventricular systolic function. The study by Jacqueline Saw published in 2017 demonstrates that the use of beta blockers in SCAD reduces the risk of SCAD recurrence significantly [6].

Dual platelet therapy is recommended if PCI was performed. Long term anticoagulant therapy is not indicated in SCAD but still recommended in apical left ventricular thrombus. However, the use of statins is not recommended in preventing recurrence in SCAD opposed to atherosclerotic myocardial infarction. As a result, the statins treatment is indicated in SCAD patients in need for primary prevention [4].

The rate of SCAD mortality is low. During the follow up, some studies reported a rate of recurrent myocardial infarction in 1,6% to 18% of cases, and 4,7 to 22% of recurrent spontaneous coronary artery dissection, 2 to 3,9% of heart failure and 0 to 3,1% of deaths[6, 8, 9]. Over half of the SCAD women present recurrent angina without evidence of ischemia or angiographic coronary modifications [6, 11].

SCAD prognosis remains unknown, because of unestablished evidence-based guidelines and the lack of randomized trials in literature.

## CONCLUSION

Spontaneous coronary artery dissection is an under-diagnosed cause of acute coronary syndrome that should be considered in young population particulary women and in the absence of cardiovascular risk factors. The therapeutic management is contentious in the absence of established evidence-based guidelines and the lack of randomized trials. In-hospital mortality remains low, nevertheless the prognosis is unknown.

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