

Case Report

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Three-vessel spontaneous coronary artery dissection: A case report

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Abstract

The patient was a 42-years-old vegan man, without any risk factor for atherosclerosis, admitted with the diagnosis of non-ST segment elevation myocardial infarction after a common cold. Coronary angiography revealed three-vessel Spontaneous Coronary Artery Dissection (SCAD) in diagonal, obtuse marginal and right coronary artery extending to posterior left ventricular artery.

Keywords: SCAD (Spontaneous Coronary Artery Dissection); NSTEMI (non-ST segment elevation myocardial infarction); Three-vessel SCAD; Vegan.

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Introduction

Spontaneous Coronary Artery Dissection (SCAD) is a rare cause of acute coronary syndrome and sudden cardiac death. It occurs mostly in young women especially in peri-partum period. Various etiologies are thought to be responsible. Depends on hemodynamic stability treatment is medical therapy, Percutaneous Coronary Artery Intervention (PCI) or Coronary Artery Bypass Graft (CABG) [1].

Case presentation

A 42-year-old man presented with typical angina from 3 days ago. He hadn't any risk factors of atherosclerosis (including diabetes, hypertension, dyslipidemia, family history of CAD (coronary artery disease), obesity, smoking & etc). He was on vegetarian diet for about one year and had symptoms of common cold from one week before. A comprehensive review of system was done and he hadn't any other symptoms. Blood pressure

at the time of admission was 120/80, respiratory rate: 11, heart rate: 80 and temperature: 36.8°C, physical examination was unremarkable. Electrocardiogram revealed a sinus rhythm, normal axis and T inversion in lead 3 and aVF (Figure 1).

Echocardiography showed: Normal LV size, LVEF (left ventricular ejection fraction): 55-60%, Without LV regional wall motion abnormality. Normal RV (right ventricle) size and function. No significant valvular heart disease.

Covid PCR was negative at the time of admission. Laboratory tests were normal except for an elevated serum troponin level: 13.5 ng/mL (<0.02), confirming the development of NSTEMI; coronary angiography was performed and it revealed spontaneous dissection of the Right Coronary (RCA) extended to Posterior Left Ventricular Artery (PLV) (Figure 2), Second Obtuse Marginal (OM2) (Figure 3) and Second Small Diagonal Artery (D2) (Figures 4).

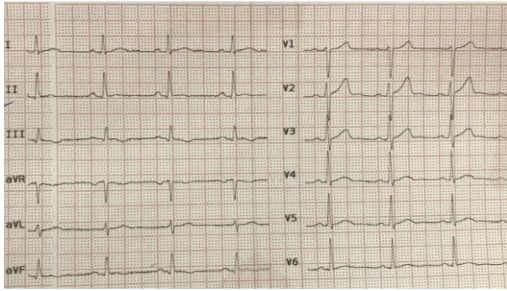


Figure 1: Electrocardiogram shows sinus rhythm, T inversion in lead 3 and aVF.

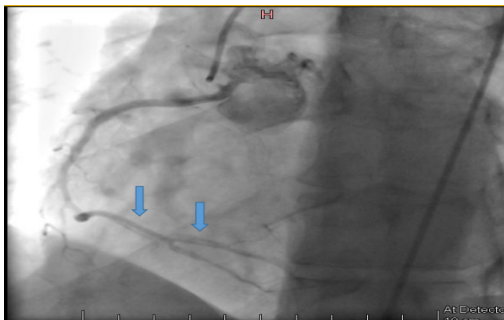


Figure 2: Coronary angiography showed type 1 spontaneous coronary dissection at the distal portion of RCA (right coronary artery) extended to PLV (posterior left ventricular artery).

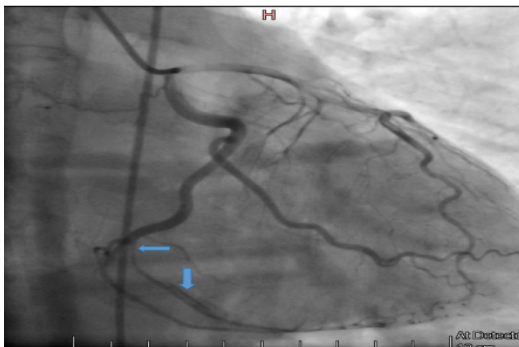


Figure 3: Arrow showing a combination of type 1 & 2 (narrowing of proximal part followed by a double radiolucent lumen separated by an intimal flap) spontaneous coronary dissection at Second Obtuse Marginal Artery (OM2).

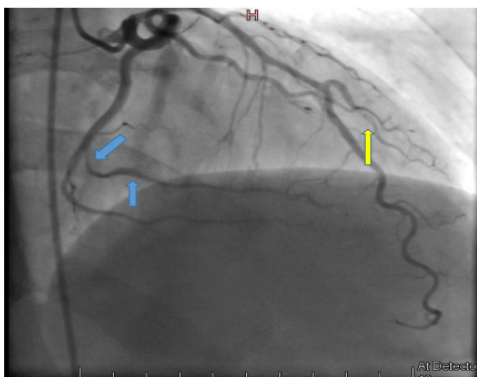


Figure 4: Yellow arrow show type 1 spontaneous coronary dissection at mid portion of Diagonal Artery (D2). During hospitalization the patient was stable and had no chest pain. He was treated with aspirin, clopidogrel, heparin, metoprolol and nitroglycerin. Dual antiplatelet continued for one month and then continued with aspirin. He was stable without chest pain in three month follow-up.

Discussion

Spontaneous coronary artery dissection is a rare disease. The true prevalence is unknown because of under diagnosis, but it has been reported in 0.1% to 4.0% of patients presenting with Acute Coronary Syndrome (ACS) [2]. Multi-vessel SCAD is much more rare and its about 9-23% of this patients and Spontaneous dissection of three coronary arteries at the same time is extremely rare [3,4]. SCAD is common in young female, with less common risk factors of atherosclerotic coronary artery disease [5]. It can associated with: Genetic abnormalities, inherited or acquired vasculopathies, hormonal influences, inflammation, intense exercise, emotional stress, recreational drugs, pregnancy- related factors, mixed connective tissue disorders several inflammatory disorders (systemic lupus erythematosus, sarcoidosis, inflammatory bowel disease and celiac disease) [6]. SCAD in this patient happened after a viral infection. Autoimmune and rheumatologic disease was ruled out. Coronary angiography is the primary and often the only modality necessary to diagnose SCAD and should be performed when possible in the setting of ACS. SCAD has a predilection for the mid-to-distal coronary arteries mostly in one vessel in left anterior descending artery [7]. The typical presentations are ST segment elevation or non-ST segment elevation myocardial infarction presenting with chest pain, ventricular arrhythmias, or sudden death [8]. Treatment is usually conservative in stable patient [9]. Include: 1. Beta-blockers (provide long-term survival benefits) 2. Dual Antiplatelet Therapy (DAPT) (a reasonable approach is to recommend DAPT for at least 2 to 4 weeks after SCAD and then continue low-dose aspirin alone for a total of 3 to 12 months, encompassing the timeframe for SCAD healing) [7], 3. Anticoagulant and thrombolytic therapy is controversial (potential risk of extending the dissection versus potential benefit of resolving overlying thrombus) [2], 4. Lipid-lowering therapy (to treat hyperlipidemia or according to primary prevention guidelines [10]. PCI or CABG is considered if the dissection is more proximal, patient is hemodynamically unstable, dynamic ST segment changes and ventricular arrhythmias [7] after the acute phase, estimated survival is good, at about 70% to 90% [11].

Conclusion

SCAD is a rare cause of acute coronary syndrome. It also can affect men with low cardiovascular risks and should be considered in the differential diagnosis of chest pain in these patients. It can be managed conservatively in stable patients with three-vessel SCAD.

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