Case Report

Spontaneous coronary artery dissection involving all major arteries LAD, LCX and RCA -A case report

Tapan Kumar[1], Aparna Prajapati[1], Mandar M. Shah[1]

[1]Department of Cardiology, TMH Jamshedpur, Bunglow No -6, D Road East, Northern Town, Bistupur, Jamshedpur, Jharkhand, India

Abstract

Spontaneous coronary artery dissection (SCAD) is a rare cause of acute coronary syndrome and sudden cardiac death. Amongst various etiologies thought to be responsible for this condition, atherosclerosis seems to be the most common. There are various case reports on (SCAD) of single coronary artery but the presence of SCAD of all three arteries is not known. We describe a case of a 45-year-old gentleman without any conventional coronary risk factors, who was referred to us at Tata Main hospital, Jamshedpur, for cardiac evaluation prior to his urethral surgery. Although asymptomatic cardiac-wise, his ECG incidentally revealed healed inferior wall myocardial infarction. Echocardiogram confirmed hypokinetic inferior wall with left ventricular ejection fraction of 50%. His coronary angiography showed spontaneous dissection of LAD, LCX and RCA which was managed conservatively.

Keywords: Acute coronary syndrome, coronary artery disease, spontaneous coronary artery dissection, sudden cardiac death

Introduction

Spontaneous coronary artery dissection (SCAD) is a rare cause of acute coronary syndrome leading to sudden cardiac death and occurs mainly in young adults, especially women, who are otherwise healthy.

SCAD is defined as a non-traumatic and non-iatrogenic separation of the coronary arterial walls, creating a false lumen.[1] This separation can occur between the intima and media or between the media and adventitia, with intramural hematoma formation within the arterial wall that may compress the arterial lumen, decreasing antegrade blood flow and resulting in subsequent myocardial ischemia or infarction.[1,2]

Address for correspondence: Dr. Tapan Kumar, Department of Cardiology, TMH Jamshedpur, Bunglow No -6, D Road East, Northern Town, Bistupur, Jamshedpur, Jharkhand - 831 001, India.
E-mail: dr.tapan@tatasteel.com; dr_tapankumar@rediffmail.com

Received: 27-09-2019 **Revised:** 27-09-2019
Accepted: 14-10-2019 **Published:** 15-11-2019

Access this article online

Quick Response Code:

Website: www.jfmpc.com

DOI: 10.4103/jfmpc.jfmpc_834_19

The clinical presentation of this complication depends on the flow limiting severity of the coronary artery dissection and ranges from no symptoms to acute coronary syndrome and ventricular arrhythmia to sudden cardiac death. Diagnosis is mostly made by coronary angiography, and various therapeutic modalities such as medical therapy, interventional and surgical procedures are applied based on the severity and site of the lesion.[3-6]

Case Report

We describe a 45-year-old gentleman, a laborer in a factory, who was referred to us at Tata Main Hospital, Jamshedpur, for preoperative cardiac evaluation prior to his urethral surgery in view of abnormal ECG. Currently, he did not have any cardiac symptoms. On enquiring, he gave history of some non-specific chest discomfort six months back which resolved without any treatment and he never consulted any doctor. He had no history of hypertension, diabetes, dyslipidemia, smoking or familial heart disease.

How to cite this article: Kumar T, Prajapati A, Shah MM. Spontaneous coronary artery dissection involving all major arteries LAD, LCX and RCA -A case report. J Family Med Prim Care 2019;8:3739-41.

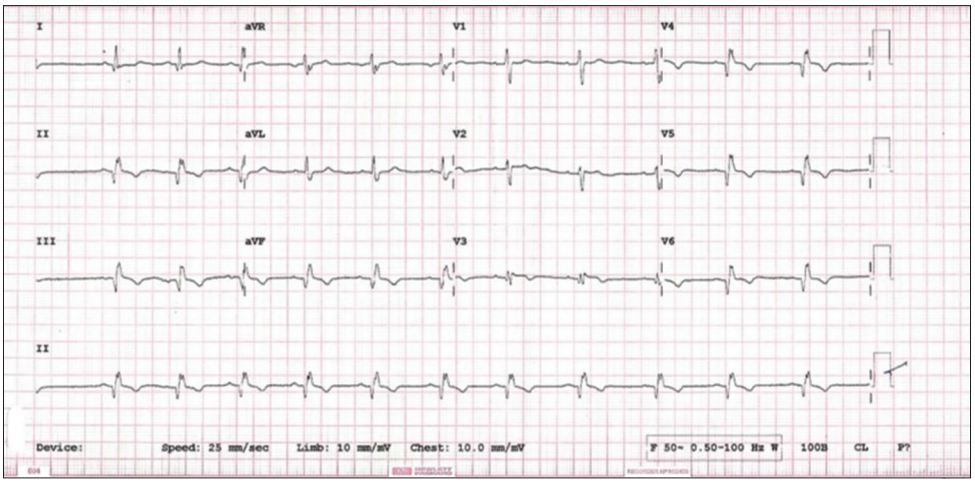

Figure 1: ECG depicting healed inferior wall myocardial infarction

Physical examination was unremarkable. ECG revealed pathological q waves with inverted T waves in inferior leads [Figure 1], suggestive of old inferior wall myocardial infarction. Laboratory tests were normal including cardiac biomarkers. Echocardiography revealed hypokinetic mid and apical inferior wall with left ventricular ejection fraction of 50%.

We proceeded for coronary angiography in view of abnormal ECG and echo findings.

Surprisingly, his coronary angiography showed type 1 spontaneous dissection of all three major coronary arteries including LAD [Figure 2], LCX [Figure 3] and RCA [Figure 4], although there was distal TIMI 3 flow without any holding of contrast.[7]

Discussion

The first case of SCAD was described in 1931 in the autopsy of a 42-year-old woman.[5] The overall incidence of SCAD is estimated to range from 0.28% to 1.1% based on angiographic assessments. Perhaps the actual incidence is higher due to the substantial number of spontaneous dissections that present as sudden death.[3] Young women account for approximately 70% of the patients (female to male ratio being 2:1) and 30% of such cases are associated with the peripartum period.[6,8]

SCAD can lead to sudden death if it isn't diagnosed and treated promptly, making it important for patients with heart attack signs and symptoms even if they aren't at risk for a heart attack. People who have SCAD may also have a higher risk of other heart problems, such as heart failure.

The most frequent site of dissection is the LAD, accounting for 60% of coronary dissections. The right coronary artery is the second most common site (more common in males), followed by the left main artery.[9] SCAD of all three major arteries is not known to our knowledge.

Etiologically, patients with SCAD are categorized into four main groups.[10] Atherosclerosis and peripartum period[8] are the two most common causes of SCAD. Patients with hereditary connective tissue disorders associated with a defective arterial wall (e.g. Marfan's and Ehlers-Danlos Syndrome) constitute another group. The last group is composed of patients with idiopathic SCAD. SCAD is also reported in association with severe exercise, chest trauma and consumption of certain drugs such as Cocaine, Cyclosporine, 5-Flurouracil, oral contraceptives and Fenfluramine.[9]

Our patient did not have any risk factors of coronary artery disease. Only possible reason could be that being a laborer, he could have undergone strenuous exercise precipitating spontaneous dissections.

SCAD has a wide range of clinical manifestations varying from mild symptoms and stable angina to myocardial infarction and even cardiogenic shock and arrhythmias. Acute coronary syndrome is the predominant presentation.[11] In our patient, detection was purely incidental, although he did have "silent" inferior wall myocardial infarction sometime in the past.

Coronary angiography is the main diagnostic tool. Imaging techniques such as intravascular ultrasound and optical coherence tomography demonstrate more details about the morphology and intramural location of the lesions. However, due to non-availability of these devices at our center, we had to restrict ourselves to coronary angiography.

Aside from some reports and collections of data, the existing literature contains no randomized clinical trial on the management of SCAD due to its low prevalence.[8] The therapeutic management of SCAD includes medical treatment, percutaneous coronary intervention, and surgery. Furthermore, administration of fibrinolytic agents is contraindicated.[6]

Conclusion

Spontaneous coronary artery dissection (SCAD) is an infrequent and often missed diagnosis among patients presenting with acute coronary syndrome.

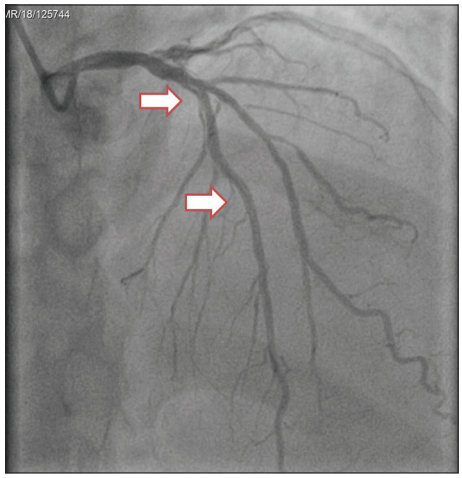

Figure 2: Spontaneous dissection of LAD

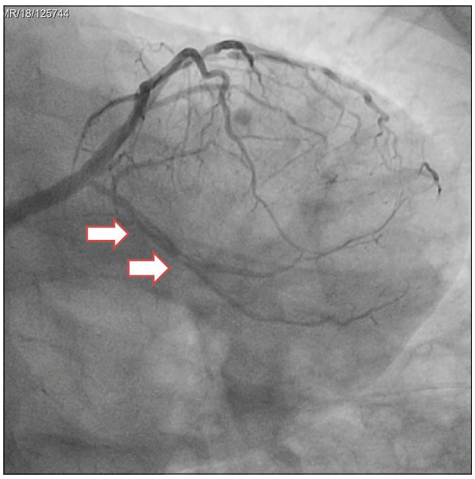

Figure 3: Spontaneous dissection of LCX

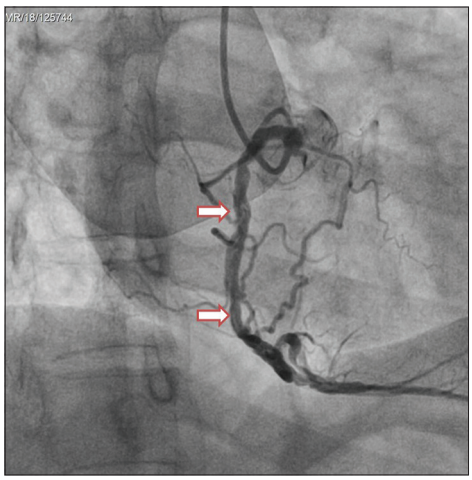

Figure 4: Spontaneous dissection of RCA

Although there are some case reports single vessel SCAD, triple vessel SCAD is not reported till now. The diagnosis of SCAD should be considered in the differential diagnosis of chest pain, especially in younger patients. The early recognition and diagnosis of SCAD is important given the high mortality associated with this condition.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Sharma AV, Zaghol R, Barac A, Ben-Dor I, John A. Spontaneous coronary artery dissection in levo-transposition of the great arteries. J Am Coll Cardiol Case Rep 2019;1:146-50.
2. Adlam D, Alfonso F, Maas A, Vrints C, Al-Hussaini A, Bueno H, *et al.* European Society of Cardiology, acute cardiovascular care association, SCAD study group: A position paper on spontaneous coronary artery dissection. European Heart Journal 2018;39:3353-68.
3. Waterbury TM, Tweet MS, Hayes SN, Eleid MF, Bell MR, Lerman A, *et al.* Early natural history of spontaneous coronary artery dissection. Circ Cardiovasc Interv 2018;11:e006772.
4. Saw J, Mancini GJ, Humphries KH. Contemporary review on spontaneous coronary artery dissection. J Am Coll Cardiol 2016;68:297-312.
5. Yip A, Saw J. Spontaneous coronary artery dissection—A review. Cardiovasc Diagn Ther 2015;5:37-48.
6. Prasad M, Tweet MS, Hayes SN, Leng S, Liang JJ, Eleid MF, *et al.* Prevalence of extracoronary vascular abnormalities and fibromuscular dysplasia in patients with spontaneous coronary artery dissection. Am J Cardiol 2015;115:1672-7.
7. Parekh JD, Porter JL. Coronary Artery Dissection. Treasure Island (FL): StatPearls Publishing; 2019.
8. Schroder C, Stoler RC, Branning GB, Choi JW. Postpartum multivessel spontaneous coronary artery dissection confirmed by coronary CT angiography. InBaylor University Medical Center Proceedings 2006;19:338-41.
9. Zampieri P, Aggio S, Roncon L, Rinuncini M, Canova C, Zanazzi G, *et al.* Follow up after spontaneous coronary artery dissection: A report of five cases. Heart 1996;75:206-9.
10. Sabatine MS, Jaffer FA, Staats PN, Stone JR. Case 28-2010: A 32-year-old woman, 3 weeks post partum, with substernal chest pain. N Engl J Med 2010;363:1164-73.
11. Porto I, Aurigemma C, Pennestrì F, Rebuzzi AG. Intravascular ultrasound-documented healing of spontaneous coronary artery dissection. Circ Cardiovasc Interv 2010;3:519-22.