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Case Report

A case of spontaneous coronary artery dissection in early pregnancy managed by PCI

Vilas Magarkar *, Pravir Lathi

Department of Cardiology, Seth Nandalal Dhoot Hospital, Aurangabad, India

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ABSTRACT

Spontaneous coronary artery dissection is a rare cause of acute coronary syndrome in pregnant and peripartum women. This report presents a rare case of spontaneous coronary artery dissection in early pregnancy managed by coronary angioplasty and, combined obstetric and cardiac care, resulting in the delivery of a normal infant through cesarean section.

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1. Introduction

Spontaneous coronary artery dissection (SCAD) is a rare condition, mainly affecting young and otherwise healthy women. Late pregnancy and peripartum or postpartum periods account for 26–38% of cases of SCAD.[1] The condition is noted to have a 10-year major adverse cardiac events rate of 47.4%.[2] The clinical presentation of SCAD involving single or multiple coronary arteries, varies from chest pain symptoms alone to ST-segment elevation myocardial infarction (STEMI), ventricular fibrillation, and sudden death.[2] High degree of suspicion, a coronary angiography and intravascular ultrasound (IVUS) can help in the timely diagnosis of SCAD.[1] Affected patients benefit from medical management, coronary artery stenting or from bypass grafting, depending on the location and the extent of the lesion/s.[2,3] Here we describe a rare case of SCAD in a 6-week pregnant woman managed by coronary angioplasty with stenting.

2. Case report

A 21-year-old pregnant woman with 6 weeks of antenatal care presented with a history of chest pain and back pain since two days. A similar episode of chest pain and back pain one year ago was not evaluated in this patient. She was told she had mild hypertension, advised non-pharmacological measures of BP reduction and monthly BP check-ups.

On evaluation, her electrocardiography showed changes suggestive of anterior wall myocardial infarction (MI); echocardiography showed significant hypokinesia of left anterior descending (LAD) territory with moderate left ventricular (LV) systolic function and left ventricular ejection fraction (LVEF) 35%. Troponin-I was significantly high. An angiography revealed spontaneous dissection of the proximal long segment of LAD with true lumen. Other coronary arteries were normal (Fig. 1).

After stabilization of her condition and in consultation with the obstetrician, coronary angioplasty with LAD stenting was done. After cannulating left main coronary artery with 6F EBU 3.5 guiding catheter, true lumen was crossed with 0.014 × 190 cm Whisper MS guide wire and subsequent serial balloon dilatations done by 1.5 × 12 mm sprinter and then 2 × 15 mm mozec balloon. LAD was stented with 3 × 23 mm Xience Pro stent (Abbott Vascular Pvt. Ltd) (Fig. 2).

All precautions were taken to prevent/reduce radiation exposure to the growing fetus by shielding, and minimizing fluoroscopic and contrast exposures.

Post-angioplasty, she was managed with aspirin and clopidogrel. Clopidogrel was stopped in 8th month and aspirin, one week before planned delivery. Clopidogrel was restarted from 3rd day of delivery and the antiplatelet therapy was monitored with periodic CBC examination. Atorvastatin was not administered due to

* Corresponding author at: Department of Cardiology, Seth Nandalal Dhoot Hospital, A-1, MIDC, Airport Road, Chikalthana, Aurangabad, Maharashtra 431210, India. Tel.: +91 0240 2489001.
E-mail address: bq.hanu@yahoo.com (V. Magarkar).

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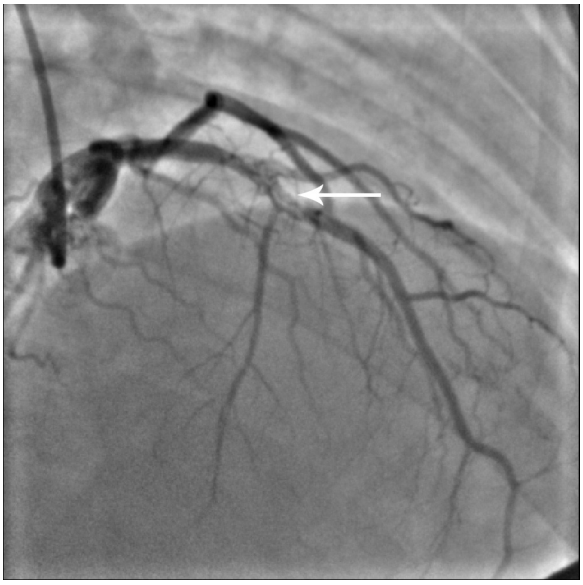

Fig. 1. Coronary angiogram showing dissection of proximal LAD artery.

possible teratogenic effects. The patient was followed up by both, the obstetrician and the cardiologist; she never required antihypertensive drugs throughout pregnancy. Patient underwent successful elective lower segment cesarean section in the 8th month of her pregnancy. The infant did not have any congenital malformation and the mother recovered with an uneventful postpartum period.

3. Discussion

SCAD is an under-recognized cause of acute coronary syndrome and sudden cardiac death.[3] SCAD occurs in association with heritable connective tissue disorders such as Marfan's and Ehlers–Danlos syndrome, autoimmune connective tissue disorders and vasculitides, pregnancy and as idiopathic cases.[4] Reduced collagen synthesis, smooth muscle proliferation and abnormalities in the proteoglycan matrix in the vessel walls under the influence of pregnancy related hormones have been implicated in the etiology of SCAD.[3] Situations of increased sheer stress such as after exercise or sneezing, cocaine use, inflammatory or pregnancy related weakening of vessel wall integrity also play a role in the pathogenesis.[4]

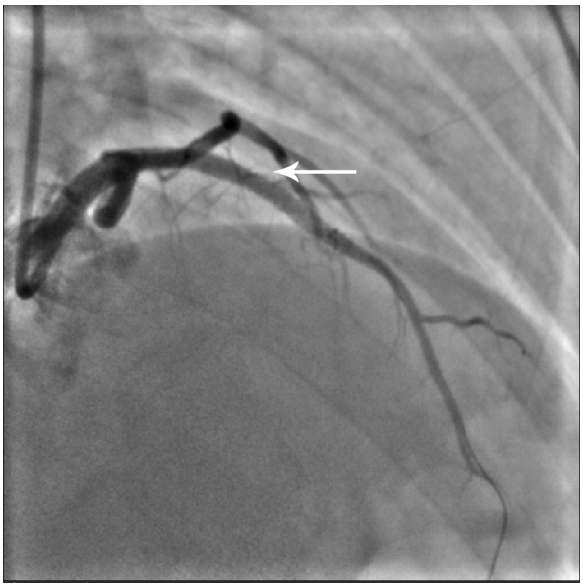

Fig. 2. Coronary angiogram showing LAD coronary artery post-angioplasty.

SCAD occurs most commonly in the LAD coronary artery.[4] Currently, there are no guidelines for the optimal management of SCAD.[1] The factors that help decide the choice of therapy are hemodynamic stability of the patient, site of dissection, number of vessels involved and the availability of therapeutic facilities. It was noted in the Western Denmark Heart Registry Study that the lesions involving left main stem (LMS) were treated with coronary artery bypass graft (CABG); proximal lesions of LAD, left circumflex (LCx) and right coronary artery (RCA) were treated with percutaneous coronary intervention (PCI) and distal lesions were managed conservatively.[1] This strategy was also reflected in a recent review of 3 cases of SCAD.[5] In this patient there were chances of SCAD recurrence because of female gender and involvement of the large coronary artery – LAD. Further, the vessel was recoiling even after dilatation with 2 mm balloon. Hence plain balloon dilatation was not considered as a good strategy and a stent was placed.

The challenges for PCI in SCAD are the possibility of extension of coronary dissection or extravasation of the contrast injection or entry of guidewire into a false lumen.[4] The conservative management of SCAD include heparin, beta blockers, calcium channel blockers, nitrates, diuretics, antiplatelet therapy including aspirin, clopidogrel, and glycoprotein IIb/IIIa inhibitors.[1]

The present case appears to be an exception in clinical manifestation of SCAD, as it occurred early in pregnancy compared to the common peripartum period. However, literatures also mention that SCAD affects mainly young and otherwise healthy women and hence this occurrence may be considered as a possible variant.[1] In the present case, a history of two episodes of chest pain and a diagnosis of acute myocardial infarction (AMI) in pregnancy led to a suspicion of SCAD which was confirmed by history and clinical findings including coronary angiogram. Intracoronary imaging modalities like IVUS and OCT including non-invasive tests like coronary computed tomography were not used for diagnosis, due to their lack of availability in our facility. Alternately, the passage of guidewire in to the vessel lumen was monitored by performing intermittent angiograms in different views. Further, the European Society of Cardiology guidelines on stable coronary artery disease, 2013 recommends direct referral for ICA (invasive coronary angiography) in such cases, justifying intervention based on clinical and ECHO findings.[6]

However, the management of SCAD in early pregnancy had a number of challenges. Pregnancy per se is a clear risk for recurrence of SCAD.[1] However the patient wanted to continue the pregnancy despite her cardiac condition as it had been preceded by a couple of miscarriages. Pregnancy precluded medical management with drugs, particularly angiotensin converting enzyme inhibitors/angiotensin receptor blockers (ACEIs/ARBs). PCI was a favorable option in this case as it was a single vessel disease.

In conclusion, high clinical suspicion helps in the timely diagnosis of SCAD in susceptible patient populations. In the absence of any standard guidelines, case-based selection of available treatment options can result in optimum outcomes. A systematic research of all published case reports of SCAD and also registry studies done at major cardiac centers can help in establishing standard guidelines for its management.

Conflicts of interest

The authors have none to declare.

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