

CASE REPORT

When life-threatening conditions appear clinically silent: an atypical presentation of spontaneous coronary artery dissection in a 60-year-old female

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Spontaneous coronary artery dissection is a poorly understood phenomenon that usually affects women during pregnancy or the immediate post-partum period. We present the case of a 60-year-old female with chronic obstructive pulmonary disease who presented with vague complaints of shortness of breath, dizziness, and weakness with a mildly elevated troponin. She denied any anginal symptoms. As part of her initial workup, a nuclear stress test revealed inferior wall reversible changes. Coronary angiography revealed spontaneous right coronary artery dissection which was treated with a drug-eluting stent.

Keywords: *dissection; coronary; angiography*

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Spontaneous coronary artery dissection (SCAD) causes acute coronary syndrome (ACS) in only 0.1–0.4% of reported cases (1, 2). Based on previously published data, the most commonly affected groups were pregnant females or those in the immediate post-partum period. SCAD is becoming increasingly recognized in older females presenting with ACS. Patients typically present with ACS with ST elevation myocardial infarction in 25–50% of the cases and the remainder usually present with non-ST elevation myocardial infarction (3). Subacute presentations such as that of our patient are rare. We believe highlighting these cases will play an essential role in increasing physician awareness and lower the suspicion thresholds for SCAD for more effective and timely management.

Case presentation

We present the case of a 60-year-old female with a history of polycythemia, chronic obstructive pulmonary disease (COPD) on home oxygen, and obesity who presented to the emergency room complaining of mild dyspnea on exertion that had been experienced for 3 days. She also reported a generalized sensation of fatigue with episodes of lightheadedness. She denied any medical history, including autoimmune disease, connective tissue disorders, or

vasculitis. As part of her general workup in the emergency department, she was found to have elevated troponin levels at 0.182 ng/ml (0.0–0.045 ng/ml). ECG revealed sinus tachycardia; there were no ST segment changes suggestive of ischemia (Fig. 1). The patient was admitted to the floor and managed as a possible case of COPD exacerbation.

A nuclear stress test was performed that revealed a large inferior wall reversible defect with associated inferior wall hypokinesis. The patient was taken to the cardiac catheterization suite in a stable state. Coronary angiography of the right coronary showed a spontaneous dissection throughout the mid-right coronary artery (Fig. 2). The left coronary arterial system was grossly unremarkable. Due to poor distal thrombolysis in myocardial infarction (TIMI) 1 flow, it was decided to stent the lesion. A Prowater wire was steered toward the mid-right coronary artery which initially went into the false lumen; we then pulled the wire back and redirected it to the true lumen which was confirmed by the ability to advance the wire into the distal vessel. A drug-eluting stent was then deployed. Follow-up angiography showed excellent results with complete tacking of the dissection plane and excellent TIMI 3 flow at the end of the procedure (Fig. 3).

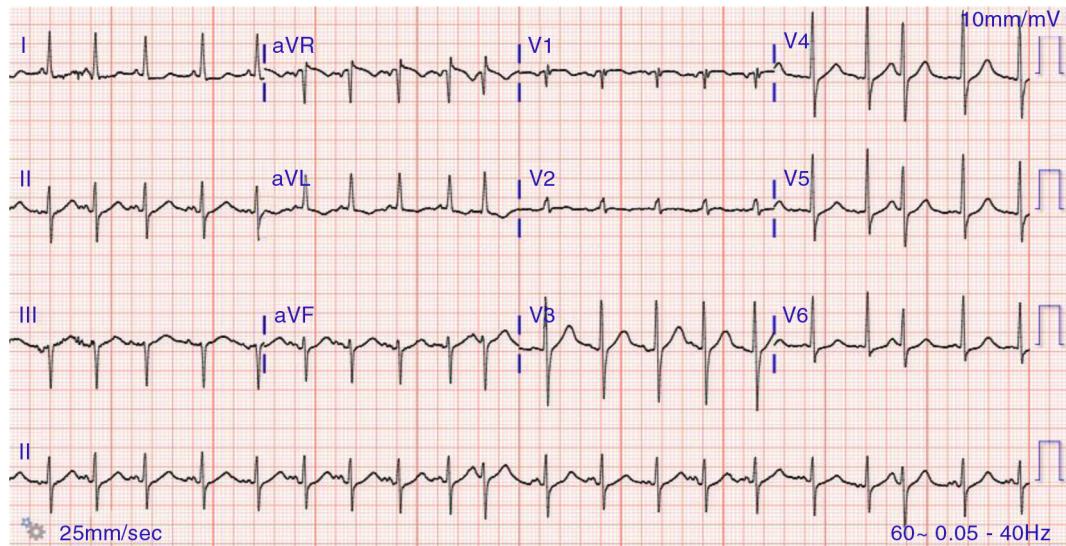


Fig. 1. Twelve-lead EKG at the time of emergency department presentation with sinus tachycardia and no acute ST segment changes.

Discussion

SCAD is a rare condition and the underlying mechanism is not fully understood. While a few of the reported cases have been called idiopathic, a predisposed arterial disease or underlying cause has been identified in most of the cases (3). Intimal tear or bleeding of *vasa vasorum* with intramedial hemorrhage has been proposed (4). Younger females in the pregnancy and peri-partum periods are

thought to be at a higher risk than the general population which is believed to be secondary to increased hemodynamics during labor and delivery, and possibly hormonal effect on the arterial walls affecting the tunica media (5, 6). Eosinophilic inflammatory infiltrates in adventitia of coronaries with dissection has been described. It is unclear whether this inflammatory reaction is reactive or causative of dissection by weakening the coronary architecture (5). Other etiologies for SCAD include fibromuscular dysplasia which is commonly seen (7). Connective tissue



Fig. 2. Coronary angiography showing a dissection plane throughout the mid-right coronary artery.



Fig. 3. Follow-up angiography showing complete tacking of the dissection plane and TIMI 3 flow.

disorders such as Ehler–Danlos type IV and Marfans have also been implicated in SCAD (8, 9). Our patient did not have any clinical features usually associated with such connective tissue diseases.

This case is unique because our patient had an atypical presentation of SCAD. She is an elderly female presenting with symptoms initially thought to be suggestive of a COPD exacerbation with a troponin elevation secondary to a supply–demand mismatch. This presentation serves as a reminder to include SCAD in the differential diagnosis even among elderly patients with comorbidities presenting with unexplained troponin elevation.

Management of SCAD is conservative when clinically possible (5). Other management strategies have been proposed in the literature ranging from percutaneous coronary interventions to heart transplantation. Revascularization in SCAD is challenging and should be considered in patients with ongoing ischemia (10). Intravenous ultrasound (IVUS) may be helpful in confirming the diagnosis. In our patient, IVUS was not used due to her narrow lumen coronaries with a concern of possible worsening of the dissection with the bulky IVUS catheter.

Disclosure

None of the authors have any financial or personal bias that would inappropriately compromise the publication of this work.

Conflict of interest and funding

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References

1. Mortensen KH, Thuesen L, Kristensen IB, Christiansen EH. Spontaneous coronary artery dissection: A Western Denmark Heart Registry study. *Catheter Cardiovasc Interv* 2009; 74(5): 710–17.
2. Nishiguchi T, Tanaka A, Ozaki Y, Taruya A, Fukuda S, Taguchi H, et al. Prevalence of spontaneous coronary artery dissection in patients with acute coronary syndrome. *Eur Heart J Acute Cardiovasc Care* 2016; 5(3): 263–70.
3. Saw J, Aymong E, Sedlak T, Buller CE, Starovoytov A, Ricci D, et al. Spontaneous coronary artery dissection: Association with predisposing arteriopathies and precipitating stressors and cardiovascular outcomes. *Circ Cardiovasc Interv* 2014; 7(5): 645–55.
4. Alfonso F. Spontaneous coronary artery dissection: New insights from the tip of the iceberg? *Circulation* 2012; 126(6): 667–70.
5. Basso C, Morgagni GL, Thiene G. Spontaneous coronary artery dissection: A neglected cause of acute myocardial ischaemia and sudden death. *Heart* 1996; 75(5): 451–4.
6. Vijayaraghavan R, Verma S, Gupta N, Saw J. Pregnancy-related spontaneous coronary artery dissection. *Circulation* 2014; 130(21): 1915–20.
7. Saw J, Poulter R, Fung A, Wood D, Hamburger J, Buller CE. Spontaneous coronary artery dissection in patients with fibromuscular dysplasia: A case series. *Circ Cardiovasc Interv* 2012; 5(1): 134–7.
8. Ades L, Waltham R, Chiodo A, Bateman J. Myocardial infarction resulting from coronary artery dissection in an adolescent with Ehlers-Danlos syndrome type IV due to a type III collagen mutation. *Br Heart J* 1995; 74(2): 112–16.
9. Judge DP, Dietz H. Marfan's syndrome. *Lancet* 2005; 366(9501): 1965–76.
10. Tweet MS, Eleid MF, Best PJM, Lennon RJ, Lerman A, Rihal CS, et al. Spontaneous coronary artery dissection: Revascularization versus conservative therapy. *Circ Cardiovasc Interv* 2014; 7(6): 777–86.