

Case Report

Spontaneous Dissection of Right Coronary Artery and It's Surgical Management

Timala RB, Sharma J, Rajbhandari R, Limbu Y

Shahid Gangalal National Heart Center, Bansbari, Kathmandu, Nepal.

Correspondence Author: Dr Rabindra B. Timala, Consultant Cardiac Surgeon, Shahid Gangalal National Heart Center, Bansbari, Kathmandu, Nepal.

E-mail: rbtimala@yahoo.com

Abstract

Primary spontaneous coronary artery dissection (SCAD) as a cause of acute myocardial infarction is rare entity with complex pathophysiology. SCAD must be considered every time that a healthy young patient presents with an onset of acute myocardial ischemic syndrome or sudden death. Mostly it appears in young women without traditional risk factors for coronary artery disease and a significant proportion of them are diagnosed during the peripartum or early postpartum period. SCAD is frequently fatal and a great number of known cases have been diagnosed at autopsy. The quick recognition of SCAD as a cause of acute myocardial ischemia in a young patient is important to establish the best medical/surgical treatment between the different therapeutic attitudes.

Introduction

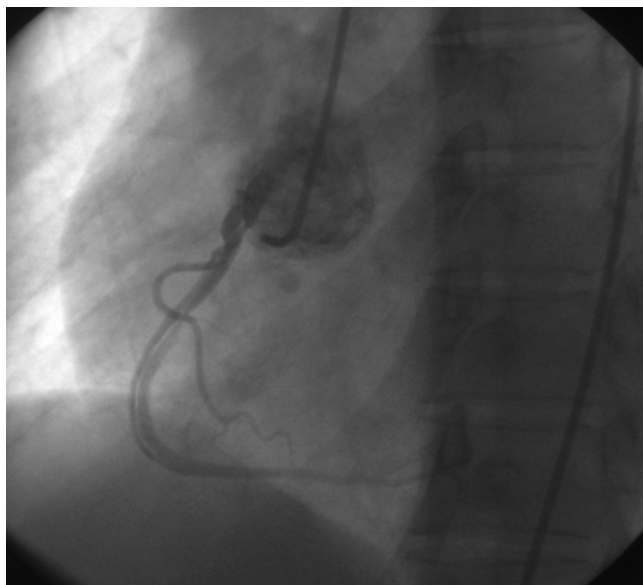
Spontaneous coronary artery dissection (SCAD) is an uncommon cause of acute coronary syndrome and sudden cardiac death. It occurs in relatively young people and particularly in females. Diagnosis of SCAD should be considered in all patients with symptoms of acute myocardial ischemia, particularly if they are young female and free of risk factors for coronary artery disease (CAD)¹. Coronary dissection can be a consequence of coronary angiography, cardiac surgery procedures, thoracic trauma or Marfan syndrome. If those causes are excluded, the diagnosis of SCAD is achieved. The prognosis is generally poor and a great number of cases are diagnosed at necropsy². To achieve the diagnosis and to determine the best therapeutic approach, an urgent coronary angiography is mandatory³. We report the case of a young woman free of traditional cardiac risk factors presented with onset of acute coronary syndrome due to SCAD of right coronary artery.

Case Presentation

45 years old woman presented to ER with acute coronary syndrome. Her ECG showed ST depression in inferior leads. She was managed conservatively and subsequently underwent CAG, which revealed spontaneous dissection of right coronary artery from near the origin to distal part. Risk factors for ischemic heart disease were not present. Her last pregnancy was 22 years back. She did not had marfanoid habitus.

She underwent surgery with full sternotomy and usual cardiopulmonary bypass on June 15, 2010. Distal right coronary arteriotomy was done. False lumen could be seen containing thick blood. We gave retrograde cardioplegia to confirm true lumen of coronary artery. Reversed saphenous vein was grafted from aorta to distal RCA. Post operatively she required IABP support for a couple of days, she was transferred from ICU on 5th post op day and discharged home on 8th post op day.

She continues to remain good on last three years of follow up.



Coronary angiogram of dissected right coronary artery

Discussion

Spontaneous coronary artery dissection is rare and mostly diagnosed at necropsy. Young to middle-age women, especially during peripartum or early postpartum period, are frequently affected^{4,5,6,7}. Secondary causes of coronary artery dissection must be excluded before a coronary artery dissection is deemed spontaneous. These secondary causes include cardiac catheterisation, chest trauma, extension of an aortic dissection, and cardiac surgery. Although in most cases the cause is idiopathic, spontaneous coronary dissections have been associated with trauma, angiitis, sarcoidosis, Marfan's syndrome, and previous renal transplantation⁸.

SCAD presents frequently with sudden cardiac death or acute coronary syndrome. Left ventricular failure and cardiac tamponade are other unusual models of presentation⁹. According to one of the studies, LAD is affected in 75%, right coronary artery 20%, circumflex artery 4%, left main coronary artery 1%¹⁰. The primary site of coronary wall dissection is usually within the outer third of the tunica media or between the outer tunica media and the external elastic lamina¹¹.

Suspicion of SCAD should lead to urgent coronary angiography followed by any sort of myocardial support and revascularization. Medical treatment can be considered in asymptomatic patients¹². Angioplasty with placement of an intracoronary stent can give good results, but is associated with a risk of progression of

dissection or the formation of intramural hematoma¹³. Classical surgical myocardial revascularization under cardiopulmonary bypass has been reported in the literature to achieve good results^{14,15,16} and is recommended as first-line treatment, especially when several coronary vessels are involved¹⁷. This type of surgery can restore blood flow distal to the dissection and may reinforce the false and true channel¹⁴.

Conclusion

SCAD though rare can occur specially in young peripartum woman without traditional risk factor for atherosclerosis. Early coronary angiogram can help establish diagnosis. Patients can present with acute coronary syndrome or sudden death. Most of the patients needs revascularization with stent or bypass grafting.

Conflict of interest: None declared.

References

1. 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.
2. DeMaio Jr SJ, Kinsella SH, Silvermann ME. Clinical course and long term prognosis of spontaneous coronary artery dissection. *Am J Cardiol* 1989; 64:471–4.
3. Yoshida K, Mori S, Tomari S, Murakami F, Matsuura A, Hibi M, Notoya A. Coronary artery bypass grafting for spontaneous coronary artery dissection: a case report and a review of the literature. *Ann Thorac Cardiovasc Surg* 2000; 6(1):57–60.
4. Pretty HC. Dissecting aneurysm of coronary artery in a woman aged 42: rupture. *Br Med J* 1931; 1:667.
5. Almeda F, Barkatullah S, Kavinsky C. Spontaneous coronary artery dissection. *Rev Clin Cardiol* 2004; 27:377–80.
6. Vale P, Baron D. Coronary artery stenting for spontaneous coronary artery dissection: a case report and review of the literature. *Cathet Cardiovasc Diagn* 1998; 45(3):280–6.
7. Celik SK, Sagcan A, Altinting A, Yuksel M, Akin M, Kultursay H. Primary spontaneous coronary artery dissections in atherosclerotic patients. Report of nine cases with review of the pertinent literature. [Review]. *Eur J Cardiothorac Surg* 2001; 20:573–6.
8. Keon WJ, Koshal A, Boyd WD, Laramée L, Farrell E, Walley VM. Survival after spontaneous primary left main coronary artery dissection. *J Cardiovasc Surg* 1989; 30:786–9.

9. Badmanaban B, McCarty D, Mole DJ, McKeown PP, Sarsam MA. Spontaneous coronary artery dissection presenting as cardiac tamponade. *Ann Thorac Surg* 2002; 73:1324–6.
10. Jorgensen MB, Aharonian V, Mansukhani P, Mahrer PR. Spontaneous coronary dissection: a cluster of cases with this rare finding. *Am Heart J* 1994; 127:1382–7.
11. Bateman AC, Gallagher PJ, Vincenti AC. Sudden death from coronary artery dissection. *Ann Pathol* 1995; 48:781–4.
12. Yoshida K, Mori S, Tomari S, Murakami F, Matsuura A, Hibi M, Notoya A. Coronary artery bypass grafting for spontaneous coronary artery dissection: a case report and a review of the literature. *Ann Thorac Cardiovasc Surg* 2000; 6(1):57–60.
13. Maehara A, Mintz GS, Ahmed JM. An intravascular ultrasound classification of angiographic coronary artery aneurysms. *Am J Cardiol* 2001; 88:365–70.
14. Thistlethwaite PA, Tarazi RY, Giordano FJ, Jamieson SW. Surgical management of spontaneous left main coronary artery dissection. *Ann Thorac Surg* 1998; 66:258–60.
15. Shirakawa Y, Matsumiya G, Ohtake S, Sawa Y, Kagisaki K, Matsuda H. Emergency operation for spontaneous coronary artery dissection in young female. *Asian Cardiovasc Thorac Ann* 2002; 10:58–60.
16. Lane JE, Cartledge RG, Johnson JH. Successful surgical treatment of spontaneous coronary artery dissection. *Curr Surg* 2001; 58:316–8.
17. Roth A, Elkayam U. Acute myocardial infarction associated with pregnancy. *Ann Intern Med* 1996; 125:751–62.