Spontaneous Coronary Artery Dissection in a Young Male: A Case Report and Review of the Literature

MD; Bahram Sohrabi, MD; Hadi Hakim, MD; Naser Rezayat Parvizi, MD and Jahanbakhsh Samadikhah, MD Aslanabadi,

Abstract

Spontaneous coronary dissection (SCDis) is a rare entity which has been increasingly reported over the last two decades. About 150 cases were described from 1931 to 2000, of which fewer than 50 cases were in male patients without any evidence of coronary atherosclerosis.
We describe a case of SCDis in a 32-year-old man who presented with low-threshold angina and without evidence of coronary atherosclerosis ***(Iranian Heart Journal 2005; 6 (1,2): 89-92).***

Key words: coronary artery ■ dissection ■myocardial infarction■ atherosclerosis

Spontaneous coronary dissection is a rarely identified entity whose exact incidence, etiology, pathogenesis and optimal treatment have not yet been firmly established. The clinical presentation often involves sudden onset of acute ischemia or infarction, which mimics that seen in traditional coronary atherosclerotic disease. Sudden cardiac death is unfortunately a common presentation of spontaneous coronary dissection, occurring in up to 70% of patients.

Case report

We describe a case of SCDis in a 32-year-old man who presented with low-threshold angina from one month before. He had a history of anteroseptal MI 4 months previously in another center without Past medical receiving thrombolytic therapy. history was negative for chest trauma, intense physical exercise and cocaine abuse. Physical examination was unremarkable except for mild obesity and an audible S4 in the apex. ECG showed poor R progression V4 without significant ST changes -from V1 in other leads.

Echo study showed hypokinetic septum and apex without visible clot and left ventricular about 45%. ejection fraction (LVEF) of Coronary angiography showed a 20-25mm long coronary dissection in the proximal portion of the left anterior descending artery (LAD) extending to mid-portion. An intimal plaque with about 90% obstruction was demonstrated (Fig. 1).

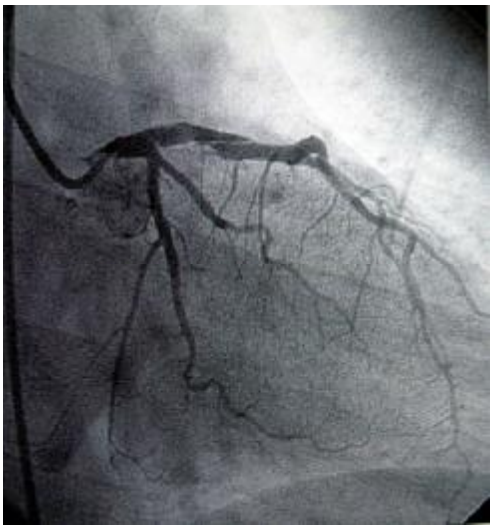
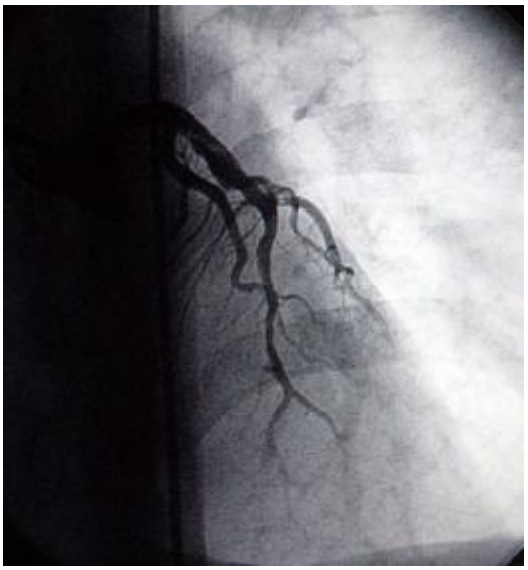


Fig 1. Spontaneous coronary artery dissection in the proximal portion of the LAD in RAO caudal view.

From the Department of Cardiothoracic Surgery, Madani Heart Hospital, Tabriz University of Medical Sciences, Tabriz, Iran.
Address correspondence and reprint request to : Dr. R. Parvizi, Associate Professor in Cardiac Surgery, Department of Cardiothoracic Surgery, Madani Heart Hospital, Tabriz , Iran. Tel. +98 (411) 3361175 Fax. +98 (411) 3344021 E-mail: salmasish@yahoo.com

A well-defined lucency was seen at the origin of the first diagonal branch (extension of LAD intimal flap, Fig. 2).



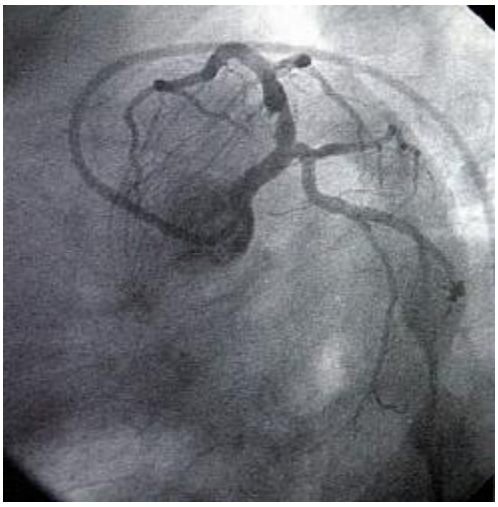


Fig 2. Spontaneous coronary artery dissection in the same patient in multiple views.

There was a relatively long segment of Muscle Bridge with moderate systolic compression at the mid-portion of the LAD. The remainder of the coronary circulation was free of the atherosclerotic disease. Left ventriculography showed antero-apical hypokinesia and EF of about 45%. The patient was treated with beta-blockers, nitrates and ASA. We felt that percutaneous coronary intervention was not an ideal option since the intimal flap started in the proximal part of the LAD and extended to a relatively large diagonal branch. The patient was submitted to surgical revascularization, and the left internal mammary artery was anastomosed to the LAD and a saphenous vein graft to the diagonal branch. His hospital course was uneventful, and he was discharged home in a stable condition. At 6 month's post-op visit, he was asymptomatic.

Discussion

SCDis is a rare cause of myocardial infarction and angina. It was first described
by Pretty in 1931 and is usually diagnosed at autopsy. About 150 cases were described from 1931 to 2000. Two-thirds of these cases were women, many of them pregnant or in the peripartum period. Less than 50 cases were described from 1931 to 2000 in male patients that had no evidence of coronary atherosclerosis. Most of the dissections in the males involve the right coronary artery, while in women the dissection mainly involves the left main and LAD. Both the left and right coronary arteries may be involved.
The etiology of the SCDis remains unclear. Hormonal contraception, vasculitis, connective tissue diseases, chest trauma, cocaine abuse, intense physical exercise, Von Willebrand disease and polycystic kidney disease have been proposed as risk factors. Some, however, have described three different groups:

1) Those with atherosclerotic coronary disease,
2) Those in the postpartum period, and
3) Those without any identifiable causes.

More common histopathologic findings are cystic medial degeneration and eosinophilic periadventitial inflammation. The plane of dissection runs in the media-adventitia junction in the majority of cases without intimal tear, causing true lumen compromise by hematoma. Unlike atherosclerotic intimal dissection, the dissection plane lies within the media or between the media and adventitia. In fatal cases, an intramedial hematoma may expand and lead to complete obstruction of the vessel by intraluminal compression. In the postpartum state, multiple possible etiologies exist. The change in hormonal balance during pregnancy may result in impaired collagen synthesis, leading to weakness and relative friability of the vessel walls. Some authors have postulated that the hemodynamic stress of labor and delivery mechanically injure the coronary vessel walls, either making them susceptible to or directly

causing dissection. For pregnancy-related coronary dissection, the mean age is 33, with mean time span of 20 days postpartum. SCDis should be considered in women who present with a myocardial infarction during pregnancy or during the first 3 postpartum months, without other coronary risk factors. It is advisable to avoid fibrinolytic treatment and to perform urgent coronary angiography.

Optimal management of SCDis has not been established and may vary depending upon the presence of intimal versus extramural compromise. Coronary artery bypass grafting, stenting and medical therapy have been successful and also have failed, owing to the extension of the dissection. Conservative management with complete healing of the dissection without intervention has been well documented. This is an acceptable approach in patients who remain asymptomatic following the initial presentation and in those without left main coronary involvement. For patients who have unstable symptoms or acute myocardial infarction, angioplasty and stenting have been performed successfully with good long-term results. Coronary artery bypass grafting is also an acceptable alternative in patients with left main disease, multi-vessel involvement or for dissection not amenable to percutaneous intervention.

Conclusion

Spontaneous coronary artery dissection should always be suspected when a patient presents with an acute myocardial infarction in the postpartum state. Accordingly, extreme care should be taken during cardiac catheterization and or angioplasty and especially when engaging the arteries with diagnostic or guiding catheters.

References

1. DeMario SJ, Kinsella SH, Silverman ME. Clinical course and long-term prognosis of spontaneous coronary artery dissection. Am J Cardiol 1989; 64: 471-474.

2. Fish RD. A 37-year-old woman with angina pectoris. Circulation 1994; 89: 898-908.

3. Thayer JO, Healy RW, Maggs PR. Spontaneous coronary artery dissection. Ann Thorac Surg 1987; 44:97-102.

4. Gonzalez JI, Hill JA, Conti CR. Spontaneous coronary artery dissection treated with percutaneous transluminal angioplasty. Am J Cardiol 1989; 63: 885-886.

5. Thislethwaite PA, Tarazi RY, Giordano FJ, Jamieson SW. Surgical management of spontaneous coronary artery dissection. Ann Thorac Surg 1998; 66: 258-60.

6. Cheung S, Mithani V, Watson RM. Healing of spontaneous coronary dissection in the context of glycoprotein IIB/IIIA inhibitor therapy: a case report. Catheter Cardiovasc. Interv 2001 Jan; 52 (1): 135-6.

7. Maresta A, Varani E , Balducelli M , Vecchi G. Spontaneous coronary dissection of all three coronary arteries: a case description with medium-term angiographic follow-up. Italian Heart Journal 2002; 3: 747-751.

8. Yolanda CH, Salvatore DiStefano, et al. Spontaneous coronary dissection during postpartum: etiology and controversies in management. Italian Heart J 2004; 5 (7): 563-565.

9. Chen S, Duan B. Treatment of spontaneous coronary dissection: report of two cases. Chin Med J 2000; 113 (12): 1150-1152.

10. Virmani R, Forman MB, Robinowitz M, et al. Coronary artery dissections. Cardiology Clinics. Volume 2: 1984.

11. Basso C, et al. Spontaneous coronary dissection: A neglected cause of acute myocardial ischemia and sudden death. Heart 1996; 75: 451-454.