Spontaneous multivessel coronary artery dissection in a wrestler

Bir güreşçide spontan çoklu koroner arter disseksiyonu

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Introduction

Spontaneous coronary artery dissection (SCAD) is an uncommon cause of acute coronary syndromes and still remains as a clinical dilemma for the cardiologists. There are almost 250 cases in the literature and most of them are about female patients. Etiology and optimal treatment have not yet been well defined. Although coronary artery disease, pregnancy induced hormonal changes, cystic medial degeneration, oral contraceptive use and heavy exercise were supposed to be the causative factors, cases without any risk factor defined as idiopathic group were also described.

Case report

A 42-year-old man presented to our outpatient clinic with complaint of sudden onset chest pain, which had occurred 15 days ago during rest. The pain was located in the retrosternal area radiating to the back and left arm and continued for 15 seconds. He was engaged in professional wrestling in past and left wrestling 12 years ago. He had no other risk factors for atherosclerosis except smoking. There was no history of connective tissue disease, drug abuse or recent trauma. In the history he described another attack of similar chest pain, which had occurred 12 years ago while wrestling. That pain was more severe than the latter one and had been continued for approximately 2 hours. But he was not admitted to hospital for this complaint and didn't take any medication. There was no pathologic sign in physical examination. The electrocardiogram revealed inferior and anterior Q waves and lateral T wave inversion. The cardiac enzymes and troponins were with in normal ranges. He received angiotensin converting enzyme inhibitor and beta-blocker as medical treatment but his chest pain continued at hospital course. There was no electrocardiographic or enzymatic changes. The ejection fraction was 36%. Coronary angiography demonstrated type D spiral dissection beginning in the proximal region and extending all through the right coronary artery (RCA) and in left descending coronary artery (LAD) localized dissection was revealed after the first diagonal branch (Fig. 1-5, Video 1-4. See corresponding video/movie images at www.anakarder.com). There was no occlusive atherosclerotic disease in the either coronary artery other than a plaque at the first obtuse marginal branch. Ventriculography revealed akinesia in the anterolateral and apical walls and hypokinesia in posterobasal and inferior walls with a mural thrombus in the apex (Fig. 6, Video 5. See corresponding video/movie images at www.anakarder.com). The thoracic and abdominal CT which was performed to exclude a coincidental aortic aneurysm or dissection was normal. Thallium scintigraphy revealed fixed perfusion defect at the apex and the apical regions of anterior and inferior walls (the ratio to all myocardium was 42%), and fixed hypoperfusion at the middle and basal regions of inferior wall. Furthermore at the anterior wall and the region which extends from anteroseptal wall to the septal wall there were reversible ischemic signs. Since, a region of viable tissue was detected at the thallium-201 imaging, revascularization by a left internal mammarian artery graft to LAD, and a saphenous graft to RCA was performed. After coronary artery bypass surgery (CABG) he was discharged without symptoms.

Discussion

Spontaneous coronary artery dissection usually begins within the 2 cm of the aortic ostium and extends distally. Spontaneous dissection occurs in the outer third of the media (1). Spontaneous coronary artery dissection may cause an obstruction to the blood flow by the formation of an intramural hematoma between the adventitia and the media of the vessel wall. Collagen damage and eosinophilic infiltration in the adventitia of the involved artery was proposed to be the responsible mechanism for the vulnerability of the arterial wall. Usually there are triggering factors of the acute event like physical or psychological stress. Coronary artery dissection can be primary that occurs spontaneously or secondary. The secondary dissections occur as an extension from aortic root dissection or as complications after coronary angiography, coronary intervention, cardiac surgery or chest or cardiac trauma (2).

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The clinical presentation may be different. It commonly resembles an acute coronary syndrome with a sharp chest pain. The diagnosis is usually made in the postmortem period at autopsy; but coronary angiography or IVUS may be useful in the diagnosis (3). The typical angiographic image for SCAD is the separation of two lumens by an intimal flap. In the spontaneous dissections, intimal flap is seen in media or between media and adventitia.

In our case the first and the most severe pain that is very typical for dissection is seemed to occur during wrestling 12 years ago. There was no family history of any kind of aortic disease (i.e. cystic medial necrosis) that may provide a suitable ground for dissection. There was no sign of Marfan or Ehler Danlos syndrome in the physical examination of the patient. We thought that, severe forceful physical activities like straining during wrestling might be the cause of dissection in this case. To the best of our knowledge this is the first case of SCAD reported in a wrestler. His cardiac enzymes and troponins were in normal range, so his chest pain might be due propagation of the old dissection. Stability of the dissection may be considered because he did not apply to the hospital or take any medication for his complaint. Although the acute dissection has occurred years ago the presenting pain helped us to diagnose SCAD incidentally.

Spontaneous coronary artery dissection has been associated with exercise in otherwise healthy persons (4-7). Up to date literature reveals 7 cases of SCAD associated with exercise (4-11). Three of them occurred in long distance runners (4, 9, 11), 2 after weight lifting (5, 10), and 3 after aerobic exercise (6-8). The case that we present here is the only one that occurred during wrestling, and wrestling should also be added to the etiologic list of SCAD. Exercise induced increased shear stress was hypothesized to be the responsible mechanism of SCAD in these patients.

Spontaneous coronary artery dissection predominantly occurs as a single vessel disease with LAD involvement in 80% of cases. Spontaneous coronary artery dissection involving more than one vessel is rare. There are few reports of cases with multivessel dissection (12) and of them majority occurred in the peripartum period (11). Our case is the first case of multivessel SCAD reported in a male after wrestling. Hormonal changes during pregnancy and shear stress elaborated during labor were hypothesized to be the responsible mechanisms in women. It is also suggested that release of lytic enzymes and basic protein from eosinophils leading to weakening of the media may cause SCAD. In the acute period the prognosis of SCAD is poor, but if the patient survived the acute period the prognosis is excellent with the optimum treatment. A variety of treatment options are present for this rare condition including medical therapy alone, percutaneous coronary intervention, coronary bypass graft operation and cardiac transplantation. The clinical situation of the patient in addition to the location and extension of the dissection should guide the physician for the most appropriate treatment choice. Medical therapy may be sufficient for asymptomatic patients whereas percutaneous coronary intervention may be appropriate for single vessel involvement with ongoing ischemia. In case of multivessel involvement CABG would be the choice of treatment.

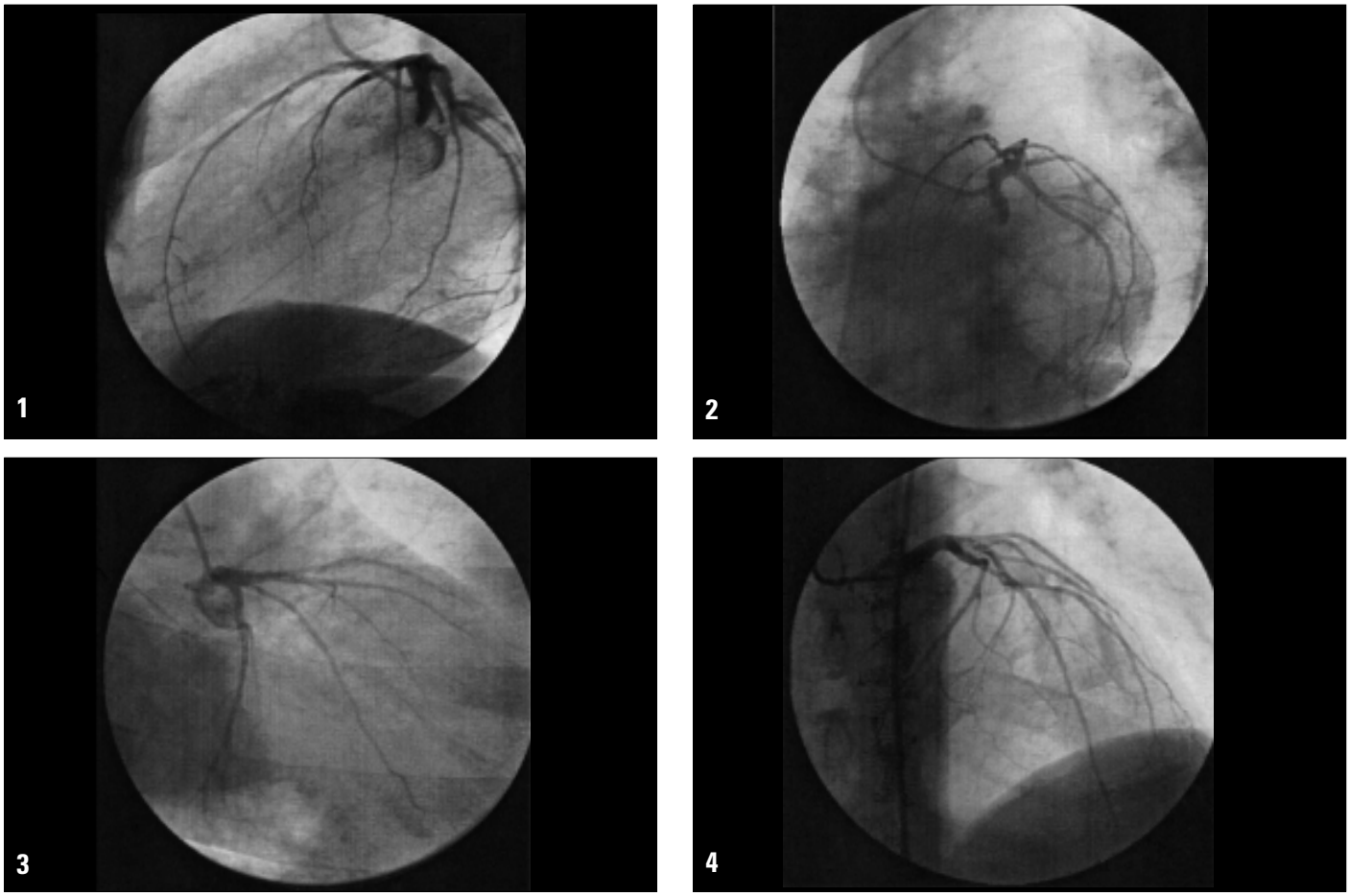

Figure 1-4. Localized dissection in the left anterior descending artery after the first diagonal branch

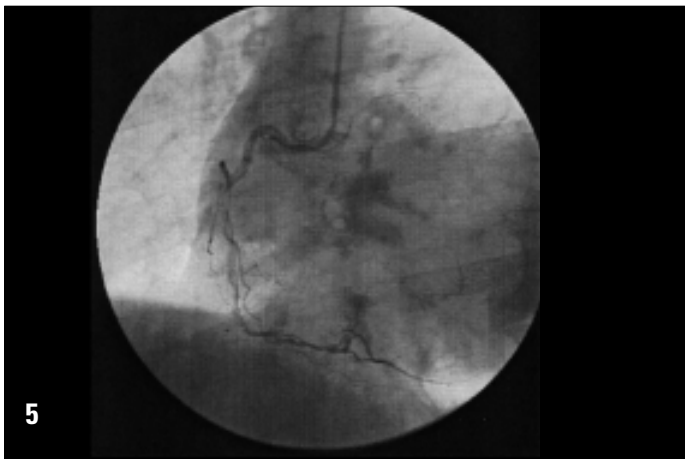

Figure 5. Type D spiral dissection beginning in the proximal region and extending all through the right coronary artery

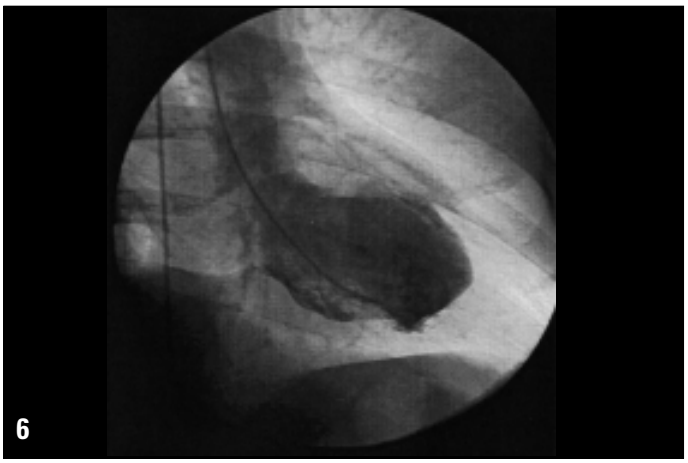

Figure 6. Akinesia in the anterolateral and apical walls and hypokinesia in posterobasal and inferior walls with a mural thrombus in the apex

Percutaneous treatment with coronary angioplasty and stent implantation may be useful in discrete lesions and single vessel disease (7). For the symptomatic patient especially if the involvement is severe and diffuse, CABG should be the optimum treatment to restore blood flow to the true lumen and obliterate the false lumen. Since in our case the dissection was extensive through the both arteries and there were ischaemic signs in myocardial scintigraphy we thought that CABG operation would be optimum treatment.

Although SCAD is a very rare entity, it must be kept in mind in the differential diagnosis of acute, sharp chest pain; especially in young physically active individuals, with no apparent risk factor for coronary artery disease. Because intravenous thrombolysis may worsen the dissection, primary emergency coronary angiography is recommended in these patients. For successful outcomes prompt diagnosis is required.

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