

Spontaneous dissection as a rare cause of infarction in young women

Aneta Klotzka, Sylwia Iwańczyk, Mikołaj Barczyński, Aleksander Araszkiwicz, Przemysław Mitkowski, Maciej Lesiak

1st Department of Cardiology, Poznan University of Medical Sciences, Poznań, Poland

Correspondence to:

Aneta Klotzka, MD, PhD,
1st Department of Cardiology,
Poznan University of Medical
Sciences,
Szpital Kliniczny Przemienienia
Pańskiego,
Długa 1/2, 61–848, Poznań,
Poland,
phone: +48 61 854 91 46,
e-mail:
aneta.klotzka@skpp.edu.pl

Copyright by the Author(s), 2021

Kardiologia Pol. 2021;
79 (11): 1274–1275;
DOI: 10.33963/KPa2021.0060

Received:

May 25, 2021

Revision accepted:

July 9, 2021

Published online:

July 9, 2021

A 37 years old woman was admitted to our department with typical chest pain with ST-segment elevation above the anterior wall. The pain lasted for 1 hour. The patient was free of risk factors for coronary artery disease (CAD). To clarify whether there is a spasm of the vessel, initially, 2 boluses of nitroglycerin were administered intracoronally, and finally, dissection was confirmed with optical coherence tomography. Intravascular ultrasound (IVUS) also excluded atherosclerosis and confirmed the dissection of the left anterior descending artery (LAD) and intramural hematoma almost occluding the vessel lumen (Figure 1A–F). The size and length of the stent were selected based on the IVUS imaging. In addition, IVUS confirmed complete stent expansion and no proximal or distal edge dissection after the procedure.

Normalization of changes on electrocardiography was observed. Echocardiography was

without segmental abnormalities of contractility. The maximum increase in troponin I level to 13 pg/ml ($n < 0.012$ pg/ml) was observed. Arteriopathies and connective tissue disorders were excluded. Dual antiplatelet therapy (clopidogrel and acetylsalicylic acid) was recommended for one year, then aspirin alone.

Spontaneous coronary artery dissection (SCAD) is a non-atherosclerotic abnormality/condition and is defined as a separation of the layers of an epicardial coronary-artery wall due to intramural hemorrhage, with or without an intimal tear. Approximately 90% of patients with this condition are women [1]. The cause of SCAD is unknown, although sex hormones may play a role in the pathogenesis. Common environmental risk factors that predispose to coronary heart disease, such as smoking, diabetes, hypertension, and hypercholesterolemia are rarely identified in patients with SCAD. The incidence of SCAD

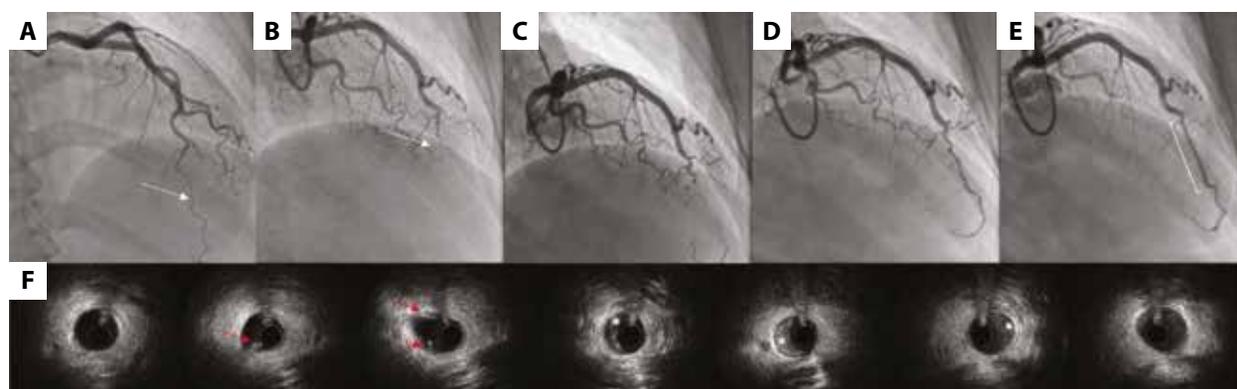


Figure 1. A. An AP cranial angiographic view: SCAD of LAD. B. A RAO views with cranial angulation: LAD closure after intracoronary nitroglycerin injection. C. RAO cranial view: LAD wiring. D. RAO cranial view after LAD pre-dilatation. E. Final RAO cranial view after stent implantation in the distal segment of LAD. F. OCT cross-sections of the distal segment of LAD with intimal dissection (the red arrow) and intramural hematoma (the white star)

Abbreviations: AP, anterior-posterior; LAD, left anterior descending artery; OCT, optical coherence tomography; RAO, right anterior oblique; SCAD, spontaneous coronary artery dissection

as a cause of acute coronary syndrome (ACS) is possibly underestimated. Generally, SCAD is presented as the classic occurrence of multiple radiolucent lumens and contrast staining of the arterial wall. However, most cases differ from this angiographic “pathognomonic” appearance and include diffuse smooth stenosis pattern (type 2), focal or tubular stenosis, that mimics atherosclerosis (type 3), or occlusion of the artery (type 4).

The clinical presentation associated with SCAD spans the spectrum from asymptomatic to the range of ACS [2]. There is no clear evidence in favor of treatment strategy for ACS caused by SCAD. However, because spontaneous healing occurs in most cases, and percutaneous coronary intervention is less effective with a higher risk of complications, the American Heart Association (AHA) statement supports a rather conservative approach in a low-risk patient. Patients with SCAD have high incidence rates of iatrogenic coronary damage compared to expected rates in the general population undergoing cardiac catheterization. This suggests a generalized fragility of the coronary arteries in patients with SCAD and emphasizes the need for meticulous care in techniques such as ensuring the co-axial engagement of coronary ostia, not engaging the coronary arteries too deeply, and injecting the coronary arteries gently, and with as few coronary contrast injections as possible in this condition [3]. Nevertheless, conservative therapy may not be appropriate in high-risk patients with ongoing ischemia, left main artery dissection, or hemodynamic instability [1]. In our patient, we chose an invasive strategy due to recurrent chest pain and hemodynamic instability [4].

The diagnosis of SCAD as the cause of ACS is often difficult and requires additional intracoronary imaging.

Interventional cardiologists should include SCAD in the differential diagnosis of ACS, especially in young patients without typical risk factors for atherosclerosis.

Article information

Conflict of interest: None declared.

Open access: This article is available in open access under Creative Commons Attribution-Non-Commercial-No Derivatives 4.0 International (CC BY-NC-ND 4.0) license, allowing to download articles and share them with others as long as they credit the authors and the publisher, but without permission to change them in any way or use them commercially. For commercial use, please contact the journal office at kardiologiapolska@ptkardio.pl.

How to cite: Klotzka A, Iwańczyk S, Barczyński M, et al. Spontaneous dissection as a rare cause of infarction in young women. *Kardiol Pol.* 2021; 79(11): 1274–1275, doi: 10.33963/KP.a2021.0060.

REFERENCES

1. Hayes SN, Kim ESH, Saw J, et al. American Heart Association Council on Peripheral Vascular Disease; Council on Clinical Cardiology; Council on Cardiovascular and Stroke Nursing; Council on Genomic and Precision Medicine; and Stroke Council. Spontaneous coronary artery dissection: current state of the science: a scientific statement from the American Heart Association. *Circulation.* 2018; 137(19): e523–e557, doi: 10.1161/CIR.0000000000000564, indexed in Pubmed: 29472380.
2. Fahey JK, Chew A, Ihdahid AR, et al. Women with spontaneous coronary artery dissection are at increased risk of iatrogenic coronary artery dissection. *Heart Lung Circ.* 2021; 30(1): e23–e28, doi: 10.1016/j.hlc.2020.06.028, indexed in Pubmed: 32952036.
3. Saw J, Humphries K, Aymong E, et al. Spontaneous coronary artery dissection: clinical outcomes and risk of recurrence. *J Am Coll Cardiol.* 2017; 70(9): 1148–1158, doi: 10.1016/j.jacc.2017.06.053, indexed in Pubmed: 28838364.
4. Theodoropoulos KC, Hussain R, Palmer ND, et al. The use of multimodality imaging in the diagnosis and management of spontaneous coronary artery dissection and intramural hematoma. *Kardiol Pol.* 2020; 78(5): 467–469, doi: 10.33963/KP.15233, indexed in Pubmed: 32186351.