

Spontaneous right coronary artery dissection possibly associated with clonidine transdermal patch

Transdermal klonidin yamasına bağlı gelişen spontan sağ koroner arter diseksiyonu

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Summary – We report on a 44-year-old female who developed spontaneous right coronary artery dissection associated with the use of a clonidine transdermal patch. The lesion was successfully treated with percutaneous coronary intervention with placement of three bare metal stents. The patient had an uneventful recovery. To our knowledge, this is the first reported case of spontaneous coronary artery dissection associated with clonidine effect.

Özet – Bu yazıda, 44 yaşında kadın hastada transdermal klonidin yama tedavisine bağlı gelişen, spontan sağ koroner arter diseksiyonu sunuldu. Hastadaki koroner arter diseksiyonu perkütan koroner girişimle, ilgili damara üç adet çıplak stent konarak başarıyla tedavi edildi. Hasta herhangi bir komplikasyon olmadan iyileşti. Bilgilerimize göre olgumuz, klonidin etkisiyle spontan koroner arter diseksiyonu geliştiği bildirilen ilk olgudur.

Spontaneous coronary artery dissection is a rare cause of acute myocardial ischemia.^[1] It is defined as hemorrhagic separation of the media of the coronary artery with creation of a false lumen, in the absence of chest trauma, aortic dissection extension, or iatrogenic trauma from cardiac catheterization or surgery. Expansion of the false lumen through blood or clot accumulation causes compression of the true lumen and myocardial ischemia.^[2]

CASE REPORT

We present a 44-year-old premenopausal female with a past medical history notable for stage III hypertension for five years, hyperlipidemia (fasting LDL 104 mg/dl), and anemia (hemoglobin 10.2 mg/dl). Prior to her admission, she presented to a community hospital after a one-night history of recurrent vomiting, fatigue, light-headedness, with substernal chest pressure that began in the morning of presentation after a long hot shower. She was given hydrochlorothiazide, clonidine transdermal 0.3 mg patch once weekly, and simvastatin. She experienced intermittent chest pressure for

two months prior to admission, which began after initiation of metoprolol for blood pressure.

Abbreviations:

RCA Right coronary artery
SCAD Spontaneous coronary artery dissection

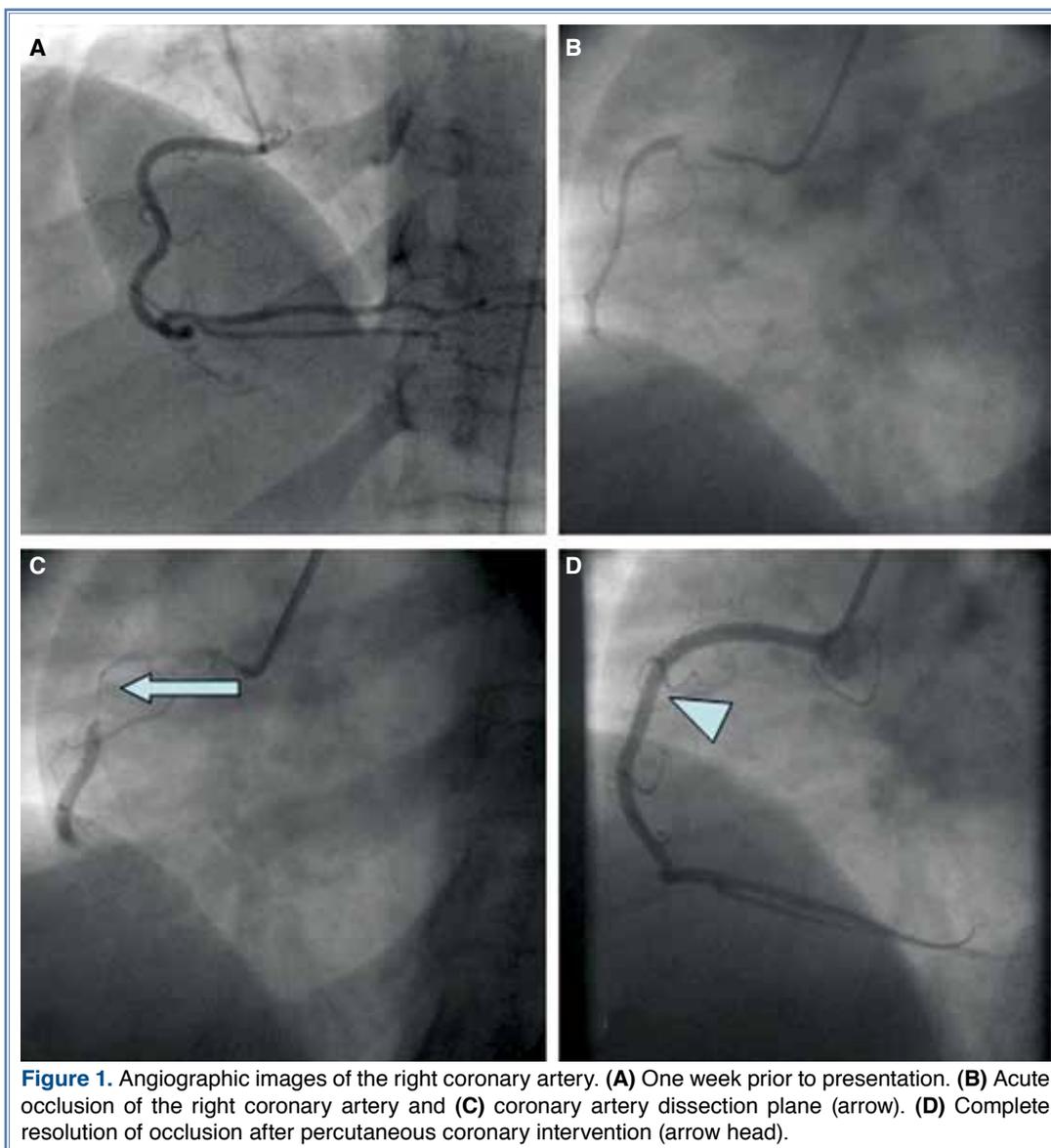
One month prior to admission, she was switched to clonidine transdermal 0.3 mg patch once weekly and responded well to the therapy. A nuclear sestamibi stress test showed normal myocardial perfusion with a normal left ventricular systolic function. Despite the normal stress test, she continued to have intermittent chest pressure and subsequently underwent diagnostic cardiac catheterization one week prior to admission. Coronary angiogram showed no significant focal lesions, but a 20-30% ostial stenosis in both the right and left main coronary arteries (Fig. 1a).

One week after cardiac catheterization, she presented with substernal chest pain of two hours. Her blood pressure was 99/66 mmHg and her pulse was 93 beats per minute in the emergency department. Serial electrocardiograms showed nonspecific changes in the inferior leads, and cardiac biomarkers were found to be elevated (creatinine kinase 600 U/l, CK-

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MB 71 U/l, and troponin I 2.94 ng/ml). She was given aspirin, started on an intravenous heparin drip, and transferred to the cardiac catheterization laboratory, where her right coronary artery was found to have a proximal 80% stenosis and, distal to this, a 100% occlusion with angiographic appearance of a dissection plane (Fig. 1b, c). The right coronary artery was subsequently engaged with a 6 F Judkins guider (Cordis Corporation, Miami Lakes, FL, USA). A 300-cm ASAHI Prowater wire (Abbott Vascular Devices, Abbott Park, IL, USA) was used to cross the 80% lesion, and repeatedly advanced into what appeared to be a dissection plane. The wire was left in place and a second ASAHI Prowater wire was used to navigate the 80% lesion as well as the occlusion. Intravascular

ultrasound assessment of the mid RCA demonstrated a coronary dissection plane with an intramural hematoma, with no other significant plaque burden in the rest of the vessel (Fig. 2). The lesion was initially predilated (Fig. 1c). Afterwards, three bare metal stents were successfully placed in the RCA and TIMI 3 flow was obtained with a door-to-balloon time of 67 minutes (Fig. 1d). A calcium channel blocker and ACE inhibitor were initiated for hypertension. Twelve months later, she was well without any complications.

DISCUSSION

We present a case of SCAD in a patient with minimal risk factors for coronary artery disease and nor-

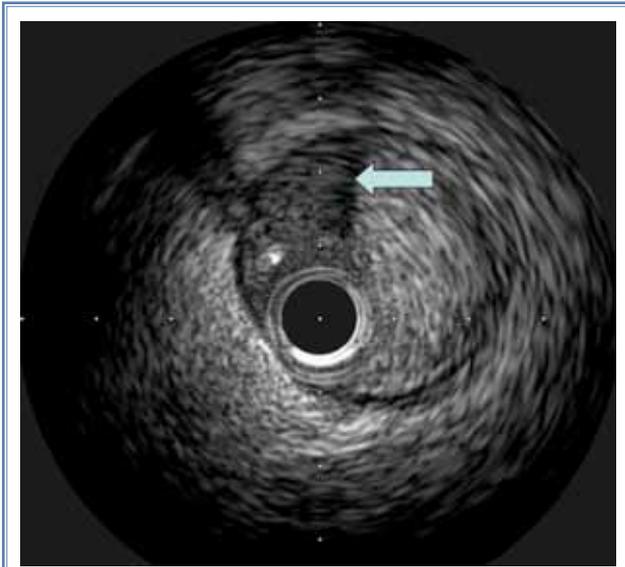


Figure 2. Intravascular ultrasound in the right coronary artery lumen demonstrating a dissection plane (arrow).

mal coronary arteries on coronary angiography one week prior to presentation. Spontaneous coronary artery dissection has been most commonly described in middle-aged, otherwise healthy women with no significant coronary atherosclerosis and no apparent risk factors for atherosclerosis or coronary artery disease. It has been associated with pregnancy, puerperium, use of oral contraceptives, cocaine, cisplatin, 5FU, fenfluramines, systolic hypertension, and intense physical activity.^[1]

Our patient developed SCAD which was most likely related to clonidine use in the form of a transdermal 0.3 mg patch. She had signs and symptoms of clonidine overdose. Increased clonidine absorption has been shown to be associated with increased cutaneous temperature,^[3] which this patient experienced prior to the onset of her symptoms. Clonidine, an imidazoline, is an alpha-2 selective agonist that was initially tested as a topical nasal decongestant due to its ability to produce local vasoconstriction secondary to stimulation of vascular smooth muscle.^[4] Its capacity to lower blood pressure results from activation of alpha-2 receptors in the central nervous system, which subsequently suppresses the outflow of sympathetic nervous system activity from the brain.^[4] There are multiple case reports of hypertension associated with clonidine overdose.^[5,6] Clonidine has also been shown to cause vasoconstriction of peripheral arteries when injected intravenously.^[7]

We postulate that our patient had a propensity for coronary vasospasm as suggested by her complaints

of chest pressure after use of a beta-blocker, which in some case reports has been reported to cause reflex coronary artery vasoconstriction secondary to unopposed alpha-receptor-mediated action.^[8-10] Vasospasm has been shown to be associated with SCAD.^[11] This patient was a premenopausal female, representing a higher risk for SCAD.

With new indications for clonidine as an adjunct to anesthesia and for menopausal symptoms, more high-risk individuals may be exposed to this serious side effect. This serious and hitherto unknown complication of clonidine is extremely rare, but may need to be considered when deciding on a treatment regimen for patients with hypertension or females in the peripartum state. Specific patient factors and dose of clonidine used might have had a substantial contribution to this unexpected outcome.

Conflict-of-interest issues regarding the authorship or article: None declared

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Key words: Aneurysm, dissecting; angioplasty, balloon, coronary; clonidine/adverse effects; coronary angiography; coronary vasospasm; myocardial Ischemia; ultrasonography, interventional.

Anahtar sözcükler: Anevrizma, diseke; anjiyoplasti, balon, koroner; klonidin/yan etki; koroner anjiyografi; koroner vazospazm; miyokart iskemisi; ultrasonografi, girişimsel.