

A case of twin circumflex arteries associated with acute myocardial infarction

Akut miyokart enfarktüsüne yol açan ikiz sirkumfleks arter anomalisi

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A circumflex (Cx) artery originating from the right coronary artery is one of the most common congenital coronary anomalies and is usually thought to be benign. Twin Cx arteries represent a very rare congenital anomaly with only three reported cases. Herein, we present a case of twin Cx arteries originating from the left main and right coronary arteries, respectively. A 50-year old male patient was admitted with chest pain. The electrocardiogram showed ST-segment elevation in leads D2, D3, and AVF, and ST-segment depression in the anterior leads. With the diagnosis of acute inferior myocardial infarction, the patient underwent coronary angiography which showed that the left Cx originating from the left main coronary artery was totally occluded by a thrombus in the mid-portion. There was another Cx arising from the proximal part of the right coronary artery with a significant stenosis in the proximal segment. Balloon angioplasty and stenting were successfully performed for the left Cx lesion, followed by direct stenting of the right Cx lesion one month later. The two Cx arteries were also evaluated by cardiac computed tomography angiography. The right Cx coursed between the pulmonary artery and the aorta and supplied the right part of the lateral wall of the left ventricle. The left Cx was located in the lateral wall and supplied the left part of the lateral wall of the left ventricle.

Key words: Coronary angiography; coronary vessel anomalies/complications; myocardial infarction.

The incidence of coronary artery anomalies (CCA) has been reported to be %1.3.^[1] Most CCAs are clinically silent, and the majority of them are diagnosed incidentally during conventional angiography or autopsy. Twin circumflex (Cx) arteries represent a very rare congenital anomaly with only three reported cases in the literature. Herein, we present a case of twin

Sağ koroner arterden çıkan sirkumfleks (Cx) arter en yaygın görülen doğuştan koroner arter anomalilerinden biridir ve genelde selim bir durum olarak kabul edilir. İkiz Cx arter ise son derece nadir bir anomalidir ve şimdiye kadar sadece üç olguda bildirilmiştir. Bu yazıda, sol ana koroner arter ve sağ koroner arterden köken alan ikiz Cx arter saptanan bir olgu sunuldu. Elli yaşında erkek hasta göğüs ağrısı ile yatırıldı. Elektrokardiyogramda D2, D3 ve AVF derivasyonlarında ST-segment yükselmesi, ön derivasyonlarda ise ST-segment çökmesi görüldü. Akut inferiyor miyokart enfarktüsü tanısıyla hastaya koroner anjiyografi yapıldı ve sol ana koroner arterden çıkan sol Cx arterin orta bölümünün bir trombüsle tamamen tıkalı olduğu görüldü. Sağ koroner arterin proksimal kısmından başka bir Cx arterin çıktığı ve bunun da proksimal segmentinde ciddi darlık bulunduğu izlendi. Sol Cx lezyonu balon anjiyoplasti ve stent ile başarılı bir şekilde tedavi edildi; sağ Cx lezyonuna ise bir ay sonra stent takıldı. İki Cx arteri kardiyak bilgisayarlı tomografi anjiyografi ile değerlendirildi. Sağ Cx'in pulmoner arter ve aort arasından geçtiği ve sol ventrikül lateral duvarının sağ kısmını kanlandığı, sol Cx'in ise lateral duvarda bulunduğu ve sol ventrikül lateral duvarının sol kısmını kanlandığı izlendi.

Anahtar sözcükler: Koroner anjiyografi; koroner damar anomalisi/komplikasyon; miyokart enfarktüsü.

Cx arteries originating from the left main and right coronary arteries, respectively.

CASE REPORT

A 50-year old male patient was admitted to our hospital with chest pain. The electrocardiogram showed ST-segment elevation in leads D2, D3, and AVF, and

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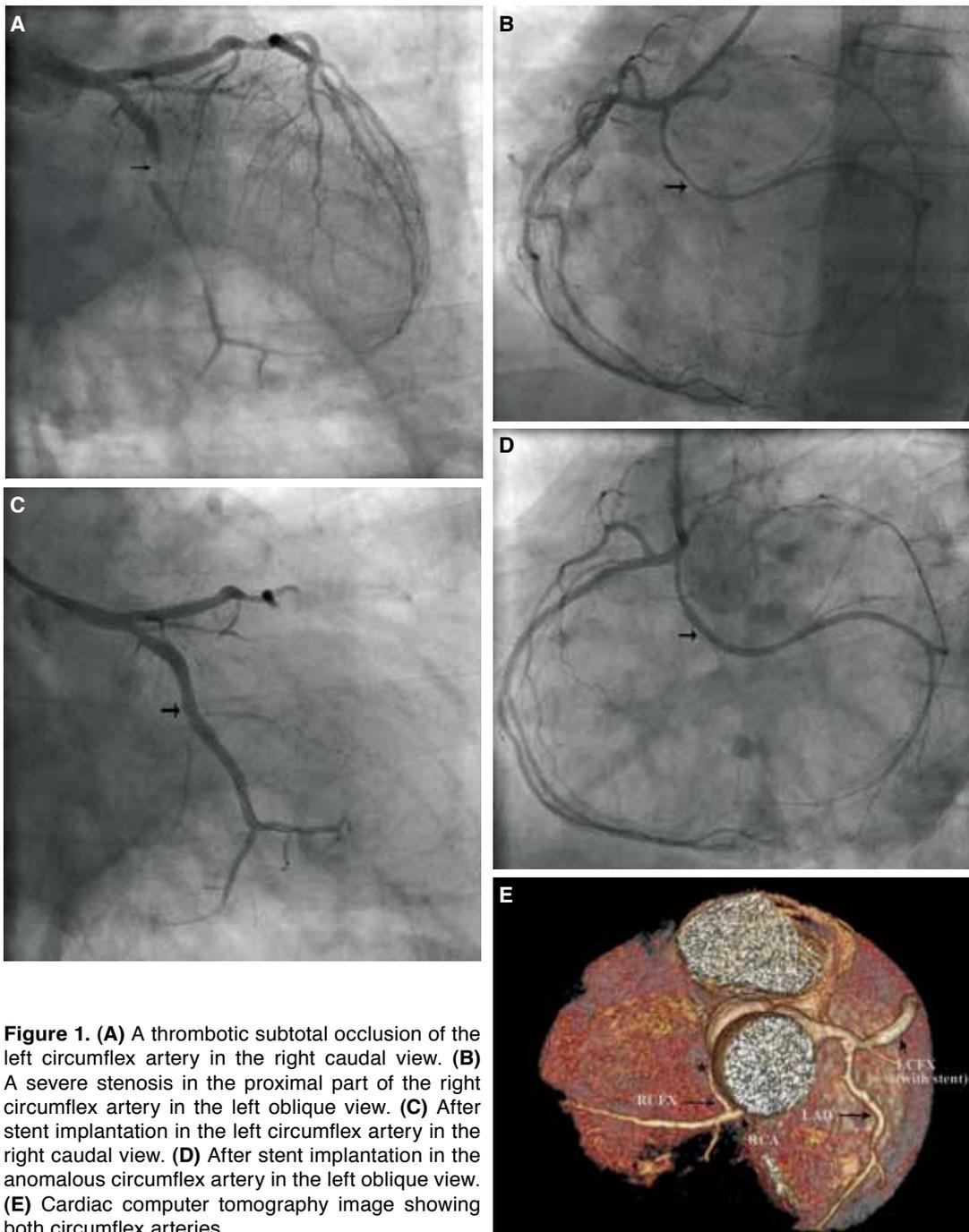


Figure 1. (A) A thrombotic subtotal occlusion of the left circumflex artery in the right caudal view. (B) A severe stenosis in the proximal part of the right circumflex artery in the left oblique view. (C) After stent implantation in the left circumflex artery in the right caudal view. (D) After stent implantation in the anomalous circumflex artery in the left oblique view. (E) Cardiac computer tomography image showing both circumflex arteries.

ST-segment depression in the anterior leads. The patient was hospitalized with the diagnosis of acute inferior myocardial infarction. Findings of physical examination and blood tests were unremarkable except for moderate increases in cardiac enzymes. The patient was transferred to our catheterization laboratory for primary percutaneous coronary intervention. Conventional angiography revealed that the left Cx (LCx) originating from the left main coronary

artery was totally occluded by a thrombus in the mid-portion (Fig. 1a). There was another Cx (RCx) arising from the proximal part of the right coronary artery (RCA) with a significant stenosis in the proximal segment (Fig. 1b). Primary percutaneous coronary intervention including balloon angioplasty and stenting was successfully performed for the LCx lesion (Fig. 1c). One month after the index procedure, the lesion in the RCx was treated with direct stent implantation

(Fig. 1d). Cardiac computed tomography angiography (cardiac CT) was used to determine the origins and courses of the coronary arteries. It showed two Cx arteries arising from the left main and right coronary arteries, respectively (Fig. 1e). The Cx originating from the RCA coursed between the pulmonary artery and the aorta and supplied the right part of the lateral wall of the left ventricle. The Cx arising from the left main coronary artery was located in the lateral wall and supplied the left part of the lateral wall of the left ventricle. The patient was discharged on the fourth postoperative day in good condition.

DISCUSSION

Although most CCAs are clinically insignificant, some may cause chest pain, arrhythmia, heart failure, and sudden death. A left Cx originating from the right coronary sinus has been reported as one of the most common coronary anomalies.^[1] This anomaly is thought to be benign and is usually clinically silent. However, it was observed in the Coronary Artery Surgery Study that the incidence of stenosis was greater in the Cx arteries originating from the right coronary sinus compared to normal Cx arteries originating from the left main coronary artery.^[2] No significant differences were observed between the anomalous vessels with respect to survival or stenosis after seven years of follow-up. The anomalous vessel may be compressed during valvular replacement procedures or damaged during cardiac surgery.^[3] Coronary artery anomalies can be diagnosed by either transthoracic or transesophageal echocardiography. Cardiac CT, cardiac magnetic resonance imaging, and coronary angiography may provide further information about the abnormal origins and courses of twin Cx arteries.

There have been only a few case reports on twin Cx arteries. Tuncer et al.^[4] reported a case of dual Cx arteries both originating from the left coronary system.^[4] Warner et al.^[5] reported double circumflex arteries arising from the left system and aorta, respectively.^[5] Dual Cx arteries originating from the left and right coronary systems, as in our case, have been re-

ported in only two cases.^[6,7] However, cardiac CT was not used in any of these cases. In our case, the patient was suffering from acute inferior myocardial infarction. Balloon angioplasty and stenting were performed for the Cx artery originating from the left main coronary artery. The significant stenosis in the Cx arising from the RCA was successfully treated by stenting one month later.

In the absence of significant stenosis in the normal Cx, an anomalous Cx arising from the RCA, right sinus of Valsalva, or aorta should be suspected in a patient with acute inferior or posterior myocardial infarction. The treatment options include medical therapy, percutaneous and surgical coronary interventions.

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