

Acute type A aortic dissection with diastolic prolapse of intimal flap into the left ventricle

Akut tip A aort diseksiyonunda diyastolde sol ventrikül içine sarkan intimal flep

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A 45-year-old man presented to the emergency department with acute oppressive chest pain. On physical examination, a loud decrescendo diastolic murmur of grade 2-3/6 was audible on the left sternal edge. The electrocardiogram was within normal limits and there were no signs of myocardial ischemia. Transthoracic echocardiography revealed an acute type A aortic dissection with an intimal flap prolapsing into the left ventricular outflow tract through the aortic valve during diastole. Color Doppler examination showed severe aortic regurgitation of grade 3. The aortic valve had three leaflets with normal thickness. Aortic diameter was 50 mm at the sinus of Valsalva and 66 mm after the sinotubular junction. The left and right ventricles were normal in size and function. Dynamic thorax and abdominal computed tomography demonstrated that the dissection flap extended from the ascending aorta to the proximal segments of the common iliac arteries. The patient underwent successful ascending aorta replacement with preservation of the aortic valve.

Key words: Aneurysm, dissecting/complications; aortic aneurysm; aortic valve insufficiency/etiology; echocardiography.

A dissection involving the ascending aorta is classified as type A dissection. Acute type A aortic dissection is a catastrophic disease with a mortality rate of 1% to 2% per hour for the first 24 to 48 hours.^[1] The classical finding on echocardiography is a randomly mobile flap separating the true and false lumens. However, echocardiographic examination may yield perplexing images. We present a case of acute type A aortic dissection in which an intimal flap prolapsed into the left ventricular outflow tract during diastole.

CASE REPORT

A 45-year-old Caucasian man presented to the emergency department of our hospital in the first hour of

Kırk beş yaşında erkek hasta acil servise ani başlayan, şiddetli göğüs ağrısı ile başvurdu. Fizik muayenede, sol sternal kenarda 2-3/6 dereceli, gürültülü, dekrescendo tarzında diyastolik üfürüm duyuldu. Elektrokardiyogramı normal bulunan hastada miyokart iskemisini düşündüren belirti yoktu. Transtorasik eko-kardiyografide akut tip A aort diseksiyonu saptandı; intimal diseksiyon flebinin diyastolde aort kapağı içinden sol ventrikül çıkış yoluna sarktığı izlendi. Renkli Doppler incelemede 3. derece ciddi aort yetersizliği görüldü. Aort kapağı normal kalınlıkta ve üç yaprakçıklıydı. Aort çapı Valsalva sinüsünde 50 mm, sinotübüler bileşke sonrasında 66 mm ölçüldü. Sol ve sağ ventriküllerin boyutları ve fonksiyonu normal bulundu. Dinamik göğüs ve batin bilgisayarlı tomografi incelemelerinde, diseksiyon flebinin çıkan aorttan ana iliyak arterlerin proksimal segmentlerine kadar uzanım gösterdiği görüldü. Hastanın çıkan aortu, aort kapağı korunarak başarılı bir ameliyatla değiştirildi.

Anahtar sözcükler: Anevrizma diseksiyonu/komplikasyon; aort anevrizması; aort kapağı yetersizliği/etyoloji; eko-kardiyografi.

acute oppressive chest pain. Physical examination showed isochoric and reactive pupils. All peripheral pulses were present. Blood pressure in the right arm was 160/60 mmHg, with no significant difference from the left. Heart rate was 89 beats per minute. A loud decrescendo diastolic murmur of grade 2-3/6 was audible on the left sternal edge. He had had hypertension for several years, but had not been on regular medications. He had no marfanoid appearance. The electrocardiogram was within normal limits and there were no signs of myocardial ischemia. Emergency transthoracic echocardiography (TTE) revealed an ascending aortic dissection with an intimal flap prolapsing into the left ventricular outflow tract through

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the aortic valve during diastole (Fig. 1a, b). On color Doppler examination, there was severe aortic regurgitation of grade 3 (Fig. 1c). The aortic valve had three leaflets with normal thickness. Aortic diameter was 50 mm at the sinus of Valsalva and 66 mm after the sinotubular junction. The left and right ventricles were normal in size and function. Dynamic thorax and abdominal computed tomography demonstrated that the dissection flap extended from the ascending aorta to the proximal segments of the common iliac arteries (DeBakey type I dissection). The patient underwent successful ascending aorta replacement. The aortic valve was spared because of its normal structure with three leaflets. Postoperative recovery was uneventful and the patient was discharged on antihypertensive treatment.

DISCUSSION

Acute type A aortic dissection with an intimal flap prolapsing into the left ventricle during diastole is a rare clinical condition associated with a total or near-total circumferential intimal tear in the ascending aorta.^[2,3] In a transesophageal echocardiographic study performed in a reference center, six (15%) out of 40 patients had a prolapsing flap into the left ventricular outflow tract.^[4] This condition may have lethal consequences due to heart failure induced by acute severe aortic regurgitation or coronary ostial obstruction during diastole.^[5-8] In our patient, there were no signs of ischemia, but the prolapsing intimal flap caused acute severe aortic regurgitation. The incidence of aortic regurgitation is 60% in type A dissections.^[9] There are several mechanisms underlying aortic regurgitation associated with acute aortic dissections:^[5,10] (i) progressive aortic root dilatation and eventual leaflet malcoaptation; (ii) leaflet prolapse due to distortion of aortic root geometry; and (iii) detachment of the leaflets by extension of the dissection through the aortic root. A prolapsing flap impedes aortic valve closure and serves as a conduit for regurgitant flow.

In our case, the initial diagnosis was made by TTE and the extent of the dissection was further evaluated by CT. Although transesophageal echocardiography has a higher sensitivity and specificity in the diagnosis of aortic dissections, TTE is also a good noninvasive initial imaging tool, especially for proximal aortic dissections, with a sensitivity of 79% and positive predictive accuracy of 91%.^[11] Transthoracic echocardiography can be performed in emergency service settings, without any premedication. Dissections that

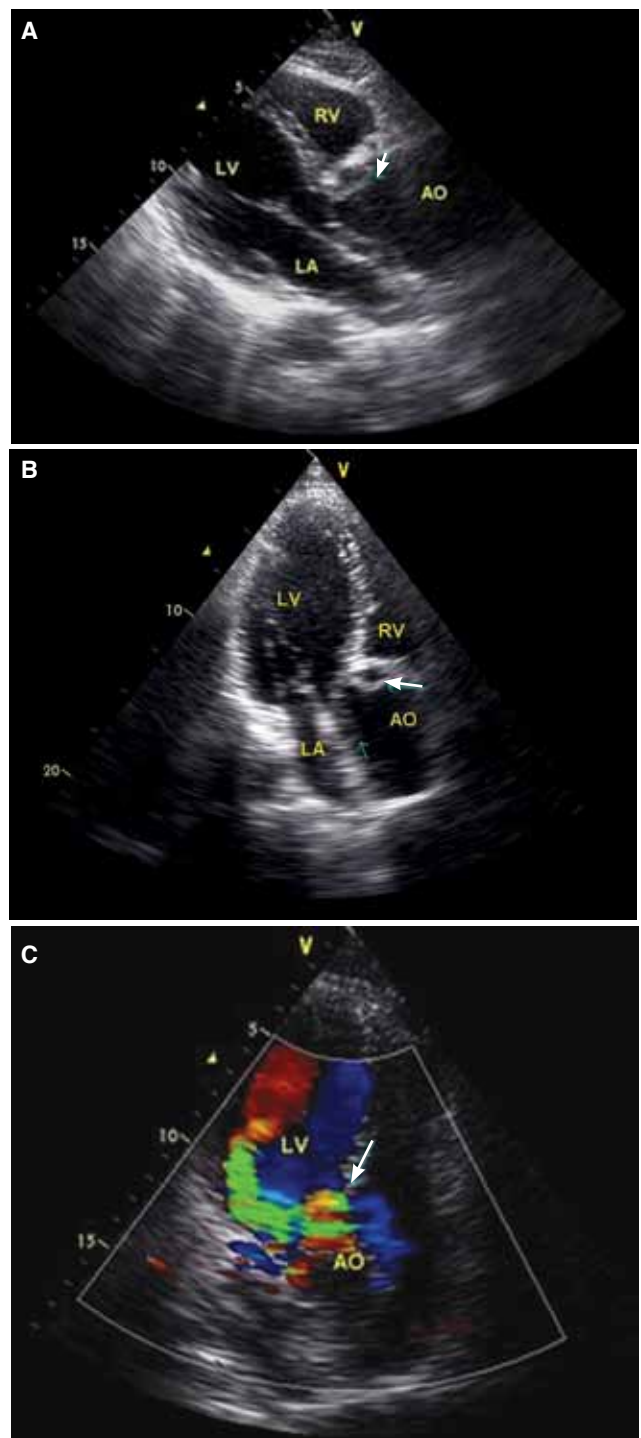


Figure 1. (A, B) Transthoracic echocardiograms showing an intimal flap prolapsing into the left ventricular outflow tract during diastole (arrow). (C) Color Doppler image in the apical five-chamber view shows severe aortic regurgitation (arrow). AO: Aorta; LA: Left atrium; LV: Left ventricle; RV: Right ventricle.

cause severe aortic regurgitation or myocardial ischemia are expected to occur in the proximal segments of the aorta, which can readily be visualized by TTE. We feel that, in a patient with abrupt chest pain and

typical murmur caused by aortic regurgitation (present in up to 50% of proximal dissections), it is convenient to start diagnostic evaluation with TTE.

Urgent surgery is essential in patients with an acute type A dissection and intimal flap prolapse into the left ventricle. Aortic valve preservation may be feasible if the mechanism of acute aortic regurgitation is impairment of aortic valve closure by the prolapsing flap rather than a valvular disease.

In conclusion, aortic dissection with a diastolic intimal flap prolapsing into the left ventricle is a rare clinical condition which can result in severe aortic regurgitation. Urgent surgery is necessary to prevent lethal complications.

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