Left ventricular inferoapical diverticulum associated with normal coronary arteries

Normal koroner arterler ile birlikte sol ventrikülün inferoapikal divertikülü

Hüseyin Göksülük, M.D., Özgür Ulaş Özcan, M.D., Çağlar Uzun, M.D.,[#] Sibel Turhan, M.D., Eralp Tutar, M.D.

Department of Cardiology, Ankara University Faculty of Medicine, Ankara;
[#]Department of Radiology, Ankara University Faculty of Medicine, Ankara

Summary– Isolated congenital left ventricular (LV) diverticulum, which is characterized by the local failure of the ventricular muscle, is a rare cardiac abnormality with a reported prevalence of 0.4%. Clinically, it has been reported to follow an asymptomatic course in the majority of cases; however, it may cause heart failure, thrombus formation, arrhythmia, rupture or chest pain in some patients. Due to its asymptomatic course, it is difficult to diagnose an isolated LV diverticulum. Our patient was admitted to hospital with the complaint of typical chest pain and no any electrocardiogram ischemic changes. Transthoracic echocardiogram showed a diverticulum in the inferoapical wall. Coronary computed tomography angiography was performed, which revealed LV diverticulum at inferoapical region and normal coronary anatomy.

Özet– Ventrikül kasının bölgesel yetersizliği ile karakterize olan konjenital izole sol ventrikül divertikülü nadir bir kalp anomalisidir ve prevalansı %0.4'dür. Klinik olarak olguların çoğunda semptomsuz bir seyir vardır. Nadiren kalp yetersizliği, trombüs oluşumu, aritmi ve rüptür görülebilir. Semptomsuz olduğu için izole sol ventrikül divertikülü tanısını koymak zordur. Bizim olgumuz tipik göğüs ağrısı ile hastaneye başvurmuş ve EKG'de herhangi bir iskemik değişiklik tespit edilmemiştir. Transtorasik ekokardiyografide inferoapikal bölgede divertikül tespit edildi. Koronerlerin bilgisayarlı tomografik anjiyografisinde normal koroner arter anatomisi ile birlikte, inferoapikal bölgede sol ventrikül divertikülü tespit edildi.

Isolated congenital left ventricular (LV) diverticulum, which is characterized by local failure of the ventricular muscle, is a rare cardiac abnormality, with a reported prevalence of 0.4%.[1,2] Clinically, it has been reported to follow an asymptomatic course in the majority of cases; however, it may cause heart failure, thrombus formation, arrhythmia, rupture, or chest pain in some patients. Due to its asymptomatic course, it is difficult to diagnose an isolated LV diverticulum.

CASE REPORT

A 55-year-old male was admitted to our hospital with the complaint of typical chest pain. He had a history of hypertension. There was no family history of any heart disease. His blood pressure was 120/84 mmHg and heart rate was 75 bpm. The physical examination was normal, and the routine blood and biochemical tests results were within the normal range. The 12-lead ECG showed sinus rhythm without any ischemic changes. Transthoracic echocardiogram revealed a diverticulum in the inferoapical wall (Figure 1) with synchronous wall motion with other myocardial segments. We planned to perform coronary angiography but the patient refused. Thus, coronary computed tomography angiography was performed, which revealed LV diverticulum in the inferoapical region (Figure 2a), with no obstructive coronary artery disease (Figure 2b).

Abbreviation:
LV Left ventricular

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Correspondence: Dr. Hüseyin Göksülük. Ankara Üniversitesi İbni Sina Hastanesi, Sıhhiye, Ankara.
Tel: +90 312 - 508 25 27 e-mail: asklepion2009@yahoo.com
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DISCUSSION

Left ventricular diverticulum is defined as an outpouching structure that contains the endocardium, myocardium and pericardium. It is commonly detected among children along with midline thoracoabdominal defects. LV diverticula have been divided into muscular and fibrous types histologically. The fibrous congenital diverticulum is usually located in the base of the heart and frequently causes aortic or mitral regurgitation.[3] The muscular congenital diverticulum includes all three cardiac layers and is usually located in the apex. The main differential diagnoses are ventricular pseudoaneurysms and aneurysms. LV aneurysms and pseudoaneurysms usually occur as a late complication of myocardial infarction or as a consequence of cardiac trauma. A narrow neck and synchronous contractility along with all three ventricular layers indicate a diverticulum.[4] In contrast, aneurysm (congenital or acquired) or pseudoaneurysm shows akinesia or paradoxical contractility. The wall of an aneurysm is characterized by a thinned myocardium, while the wall of a pseudoaneurysm contains only a pericardial layer. All noninvasive and minimally invasive techniques are useful in the diagnosis of LV diverticulum. Diagnosis can be made by echocardiography, computed tomography angiography, magnetic resonance imaging, and cineangiography.

Left ventricular diverticula are often clinically silent, but may be associated with systemic embolism,

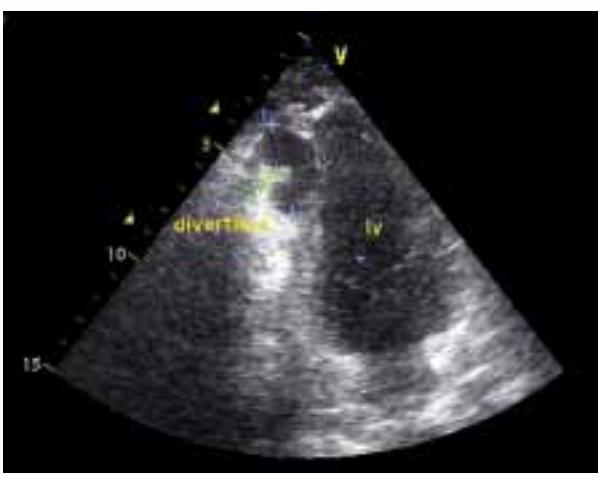

Figure 1. Transthoracic echocardiography shows a left ventricular diverticulum, in the inferoapical wall of the left ventricle. LV: Left ventricule.

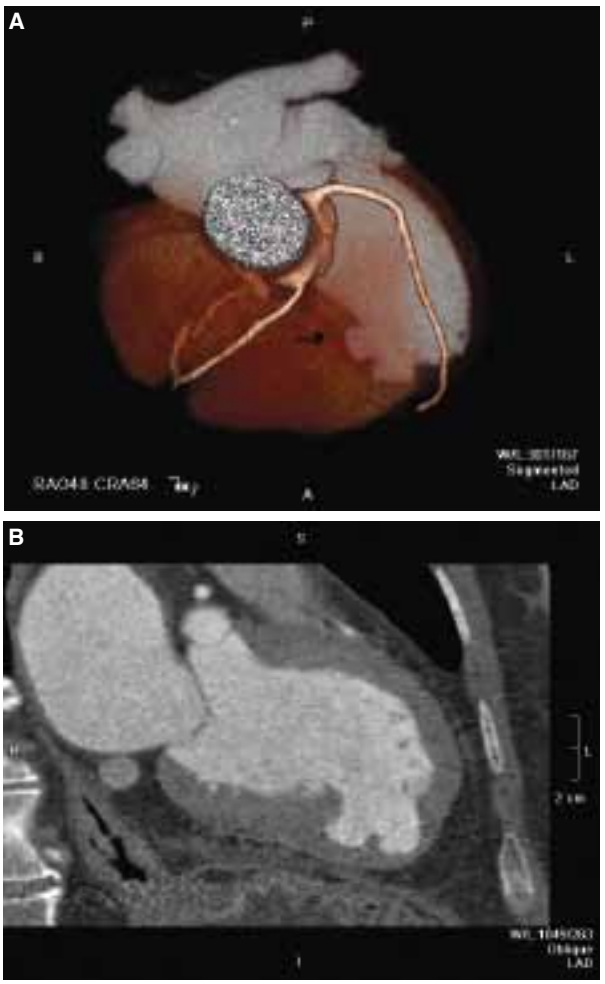

Figure 2. The coronary computed tomography angiography of patient showing normal coronary arteries and diverticulum (arrow) **(A)** and a left ventricular inferoapical diverticulum **(B)**.

arrhythmias, heart failure, and cardiac rupture. The prognosis of such cases is not clearly defined. A series of 108 patients with LV diverticulum with a mean follow-up period of 50 months was reported.[5] The incidence of adverse events in symptomatic patients with isolated LV diverticulum is increased during long-term follow-up. None of the presented patients, however, experienced cardiac death. In view of the inadequate data for universal guidance, most authors advocate surgery only for patients who are symptomatic and for those who have a large diverticulum or are believed to be at high risk for rupture. Interestingly, Jain et al.[6] recently reported the first transcatheter closure of an isolated congenital LV diverticulum in a 12-year-old symptomatic girl. This case demonstrated that transcatheter device closure of LV diverticulum is

a safe and acceptable option in suitable cases. However, prospective evidence is needed to investigate the safety of this procedure in the management of this condition.

Though the reported incidence of congenital LV diverticulum is very low, we suggest that it be kept in mind in the differential diagnosis in patients with typical anginal symptoms.

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Key words: Angina pectoris; diverticulum/congenital; coronary vessels; heart defects, congenital/diagnosis.

Anahtar sözcükler: Anjina pektoris; divertikül/doğuştan; koroner damarlar; kalp defekti, doğuştan/tanı.