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CASE REPORT / OLGU SUNUMU

Apical Ventricular Septal Rupture After Subacute Anterior Myocardial Infarction

Subakut Anterior Miyokard Enfarktüsü Sonrası Apikal Ventriküler Septal Rüptür

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ABSTRACT

Ventricular septal rupture (VSR) is a rare but serious mechanical complication of acute myocardial infarction (MI). Seen with anterior or inferior MI, it carries a poor prognosis. Anterior MI is associated with rupture of the apical septum, in inferior MI, it often occurs at the base of the heart. Spontaneous closure is very rare. VSR is fatal in almost all cases without early surgical intervention. We present a 67-year-old female patient with sub-acute anterior MI, which was complicated by a rupture of the apical ventricular septum. Our case illustrates the typical risk factors of VSR: an extensive acute MI, hypertension, non-smoking woman, with no history of angina.

Key words: Ventricular septal rupture; myocardial infarction; echocardiography; prognosis.

ÖZET

Ventriküler septal rüptür (VSR), akut miyokardiyal infarkt (MI) sonrası nadir görülen fakat ciddi bir mekanik kompikasyondur. Anterior veya inferior MI'la birlikte görülebilir, kötü prognoz oluşturur. Anterior MI'da apikal septumda, inferior MI'da ise sıklıkla kalbin bazalinde rüptür gerçekleşir. Spontan kapanması çok nadirdir. VSR'de erken cerrahi girişim yapılmazsa hemen hemen tüm vakalarda ölümcül seyreder. Biz subakut anterior MI'la başvuran ve apikal ventriküler septum rüptürü gelişen 67 yaşında bayan hasta sunduk. Bizim vakamız VSR için tipik risk faktörlerine sahipti: yaygın akut MI, hipertansiyon, sigara içmeyen kadın ve anjina öyküsünün olmaması.

Anahtar kelimeler: Ventriküler septum rüptürü; miyokardiyal infarkt; ekokardiyografi; prognoz.

INTRODUCTION

Complications of acute myocardial infarction (MI) with mechanical defects are associated with poor prognosis. Ventricular septal rupture (VSR) is fatal in almost all cases without early surgical intervention (1). We present a 67-year-old female patient with sub-acute anterior MI, which was complicated by a rupture of the apical ventricular septum.

CASE REPORT

A 67-year-old patient with a history of diabetes, arterial hypertension was admitted through the emergency department for chest pain and dyspnea that had started three days previously. Physical examination revealed a regular pulse of 106 beats/min. The blood pressure was 110/60 mmHg. Bilateral basal rales were found on physical examination. The 12-lead electrocardiogram showed sinus rhythm, q waves and a 2 mm ST elevation in the anterior leads (Figure 1). Serum troponin I level at admission was >10 ng/ml. Transthoracic echocardiography revealed anterior wall akinesia and impaired systolic function. The physical examination was unremarkable on day 2 and 3. On hospital day 4, the patient had an episode of hypotension and bradycardia, which was treated with infusion of normal saline and IV atropine. The patient's condition worsened progressively. Physical examination revealed a irregular pulse of 44 beats/min. The blood pressure was 80/50 mmHg and the only remarkable finding on chest examination was a grade 3-4/6 parasternal holosystolic murmur best heard at the apex, radiating to the axilla. An urgent echocardiogram was performed and revealed a small rupture of the apical ventricular septum causing a VSR (Figure 2) with left-to-right shunt (with a maximal pressure gradient of approximately 50 mmHg). During follow-up cardiac arrest occurred and a successful cardiopulmonary resuscitation was performed. Patient was transferred to the tertiary center for cardiac surgery. Unfortunately patient died before surgery.

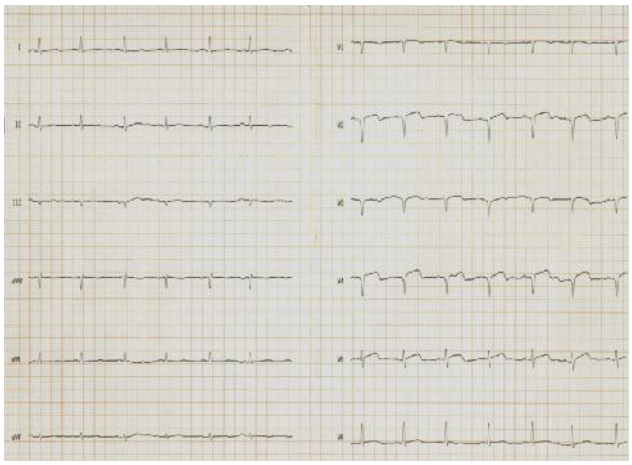

Figure 1: Electrocardiogram showed sinus rhythm, q waves and a 2 mm ST elevation in the anterior leads.

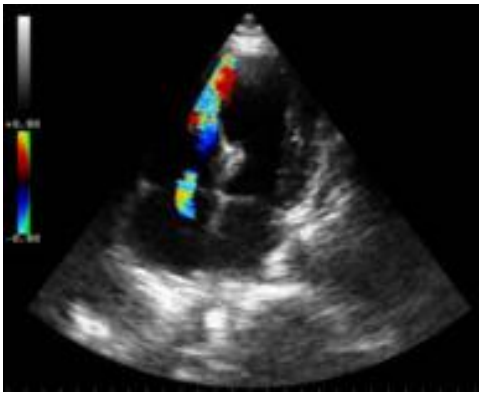

Figure 2: Rupture of the apical ventricular septum with left-to-right shunt.

DISCUSSION

It has reported that VSD complicates 1–2% of all acute MIs and approximately 0.2 % of fibrinolysed acute MIs. In the later case it is seen earlier in the post infarct period (within the first 24 hours) in contrast with the non-fibrinolysed acute MIs, where it is commonly seen after two to five days (1). The typical risk factors of VSR include an extensive acute MI, hypertension, non-smoking woman and with no history of angina. VSR has equal frequency in anterior and non-anterior infarctions. Apical septum rupture is often associated with anterior MI, in inferior MI, it often occurs at the base of the heart. Spontaneous closure is very rare. VSR is fatal in almost all cases without early surgical intervention (2,3). Transcatheter closure has also a role in selected patients with small defects that are <15 mm, in the sub-acute or chronic (>3.5 weeks postacute MI) setting where a closure device may provide sufficient treatment (4).

Two-dimensional echocardiography, being an accessible and non-invasive method for determination of the size of the defect and the magnitude of the left-to-right shunt. Magnetic resonance imaging is also a useful tool for the confirmation of diagnosis (1). Three types of VSR have been reported: in type I there is an abrupt tear in the wall without thinning; in type II, the infarcted myocardium erodes before rupture and is covered by a thrombus; and type III represents the perforation of a previously formed aneurysm (5).

Our case illustrates an interesting clinical setting of sub-acute anterior MI. Our patient had typical risk factors of VSR include an extensive acute MI, hypertension, non-smoking woman. Transthoracic echocardiography was the key screening tool in the diagnosis of our patient. The type of VSR was type I. Intra-aortic balloon counterpulsation (IABCP) offers a important means of temporary hemodynamic support. But, we didn't have IABCP in our clinic, so we used inotropic agents as a bridge to surgery. It should be kept in mind that apical septum rupture carries a poor prognosis and surgery should be performed soon after diagnosis.

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