

Case report

Left Ventricular Pseudoaneurysm: A Four Year Follow-Up With Medical Therapy

Hasan KOCATÜRK ¹, Adem KARAMAN ², Ednan BAYRAM ³, Mehmet Cengiz ÇOLAK ⁴

¹Şifa Hospital Department of Cardiology, ERZURUM

²Şifa Hospital Department of Radiology, ERZURUM

³Education and Research Hospital, Department of Cardiology ERZURUM

⁴İnönü University Faculty of Medicine Department of Cardiovascular Surgery, MALATYA

ÖZET

Sol ventrikül yalancı anevrizması: medikal tedavi ile dört yıllık izlem

Yetmişüç yaşında erkek hasta, 4 yıl önce ilerleyici nefes darlığı nedeni ile başvurmuştu. Transtorasik ekokardiyo-grafide sol ventrikül posterolateral duvarda yalancı anevrizmayı düşündüren kavitasyon tespit edildi.

Kontrast madde verilerek alınan bilgisayarlı göğüs tomografisinde sol ventrikül posterolateral duvarda içerisinde yoğun trombus olan büyük boyutta bir yalancı anevrizma görüldü. Koroner anjiyografide hem sirkümfleks hem de ön inen arterde ciddi stenozlar vardı. Bulgular daha önce geçirilmiş miyokardial infarktüs sonucu gelişen yalancı anevrizma tanısı ile uyumlu olarak gözlemlendi. Hasta cerrahi tedaviyi reddetti ve medikal tedavi altına alındı. Dört yıllık izlemde hasta hala hayatta ve klinik olarak hastanın semptomlarında tama yakın düzelme gözlenmiştir.

Anahtar Kelimeler: Yalancı anevrizma, sol ventrikül, iskemi, medikal tedavi

ABSTRACT

A 73-year-old man presented with a progressive dyspnea four years ago. Transthoracic echocardiography revealed a large posterolateral cavity, suspecting an old pseudoaneurysm. Contrast-enhanced computed tomography of the chest demonstrated a large posterolateral pseudoaneurysm with intracavitary extensive thrombus. Coronary angiography showed severe stenoses in both left circumflex and left anterior descending arteries. These findings were consistent with left ventricular pseudoaneurysm resulting from an old infarction. The surgery was recommended, but the patient refused. Conservative management was initiated with close follow-up appointments. After four years the patient is still alive and had near complete resolution of his symptoms.

Key Words: Pseudoaneurysm, left ventricle, ischemia, medical treatment

INTRODUCTION

Left ventricular (LV) pseudoaneurysm is a rare condition and complicates up to 4% of all acute myocardial infarctions¹ and develops when cardiac rupture is contained by pericardial adhesions^{2,3}.

Left ventricular pseudoaneurysm is most commonly associated with transmural myocardial infarction (MI); however it can also be seen in some conditions such as chest trauma, cardiac surgery, infective endocarditis and inflammation⁴.

In some cases the diagnosis is made many years after the myocardial infarction⁵. When diagnosis is made, irrespective of chronicity, surgery is always recommended because of strong tendency for fatal rupture⁵⁻⁷.

However conservative medical treatment provided that the probability of being free of cardiac rupture is very low during follow-up⁵⁻⁶. We present here a patient who is under medical treatment of four years still survive alive without surgery

CASE

A 73 year old man presented with progressive dyspnea four years earlier. At that time he reported that he could walk up only a flight of stairs before becoming short of breath and had been maintained on therapy of chronic obstructive pulmonary disease because of episodic wheezing and an infrequent nonproductive cough. However, one week before admission he had noted severe dyspnea at rest and was admitted for further evaluation

Initial examination of the patient revealed diffuse expiratory wheezing with no crackles, a grade 3/6 systolic murmur at the apex with a prominent S3 gallop rhythm and pitting edema of both legs to the level of knees. He had also clubbing, cyanosis and elevated jugular venous

Correspondence:

Hasan KOCATÜRK M.D.
Şifa Hospital Department of Cardiology, Erzurum
e-mail: haskturk@hotmail.com
Arrival date : 11.01.2010
Acceptance date : 10.06.2010

pressure. Other findings on the rest examination were unremarkable

Electrocardiogram revealed normal sinus rhythm, right axis deviation, low voltage QRS complex, non-specific ST-T abnormalities and occasional premature complex. Two-dimensional transthoracic echocardiography demonstrated severe left ventricular systolic dysfunction (ejection fraction 30%) and large posterolateral wall cavity (45x35 mm) of the left ventricle. With a high suspicion of pseudoaneurysm, contrast enhanced computed tomography (CT) of the chest was performed for more detailed analysis with intravenous contrast material and showed an enhancing cavity (4.48x4.16 cm) surrounded by low dense area which was in accordance with thrombus and had been communicated through widely neck (2.13 cm) with left ventricle (Fig 1 A-B). Three dimensional CT images also confirmed the presence of pseudoaneurysm with outer surface calcification and established the diagnosis of a large chronic posterolateral left ventricular pseudoaneurysm with extensive intramural organized thrombus (Fig 1 C) scheduled follow-up appointments.

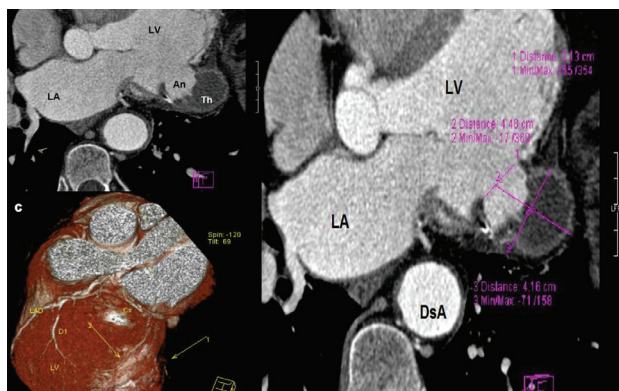


Figure 1 A. Contrast-enhanced axial CT image shows a pseudoaneurysm (white long arrow) surrounded by extensive intramural organized thrombus An: pseudoaneurysm; Th: thrombus; Ao: aorta; LA: Left atrium; LV: Left ventricle **1 B.** the size of pseudoaneurysm is 4.48x4.16 cm and its neck is 2.13 cm in diameter **1 C.** Three dimensional CT images show clearly the pseudaneurysm with outer surface calcification

Results from the patient's pulmonary function tests and thorax CT showed severe airflow obstruction and important emphysematous changes respectively, suggesting severe chronic obstructive pulmonary disease findings (COPD) An etiologic work-up was performed to identify conditions associated with a left ventricular pseudoaneurysm, thus an appropriate next step was considered to be the coronary angiography. The patient underwent coronary angiography which revealed two significant lesions in the

circumflex artery at mid and distal locations and a severe stenosis in mid left anterior descending artery (Fig 2). Given these findings, the patient was diagnosed as having a large posterolateral ventricular pseudoaneurysm, likely the result of an old MI.

After diagnosis of left ventricular pseudoaneurysm and concomitant coronary artery disease, surgery was recommended but the patient refused because of his old age.

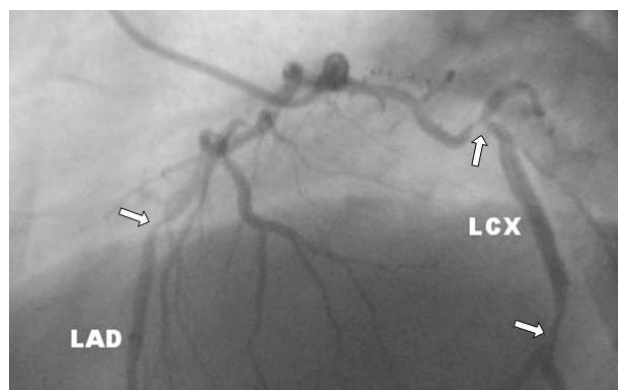


Figure 2. Coronary angiography revealing severe stenoses in LCX and LAD arteries (arrows). (LCX :Left circumflex artery, LAD: Left anterior descending artery)

Appropriate medical treatment was initiated and given aspirin, low-dose beta blocker, diuretics, vasodilators and long acting oral nitrates and close follow-up was made during the four years. Although he was unable to return his baseline state of health, the patient reported improved functional capacity and resumed normally most of his daily activities. Serial echocardiograms have been taken in each appointment for four years and no clear deterioration in his left ventricular functions was identified during these visits (Figure 3). He is currently maintaining on medical therapy.

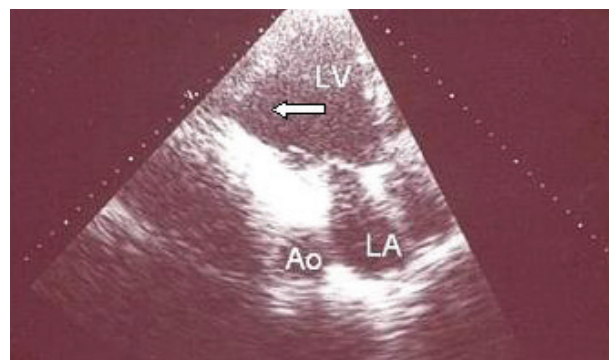


Figure 3. The patient's echocardiogram taken in his last visit. Modified apical chamber view shows a cavity (arrow) at mid-basal lateral left ventricular wall. Left ventricular functions were as same in previous visits.

DISCUSSION

Left ventricular pseudoaneurysm formation may be a very uncommon finding in chronic MI⁸. Congestive heart failure is the most common presentation, followed by angina, ventricular arrhythmias and embolization in chronic conditions⁵. As in our case, 10-20% of pseudoaneurysms are discovered incidentally⁵ and the median time to diagnosis after the myocardial infarction is 3.9 months². The risk of fatal rupture is well known in left ventricular pseudoaneurysm especially in midlateral left ventricular wall complicating inferolateral MI related to an occlusion of the left circumflex artery³. Hence, surgical resection is always advocated, regardless of chronicity as soon as possible when the diagnosis is established⁵. The risk of surgery on chronic lesions is still very high as can be seen in case reports and limited collections of case reports⁵. Postoperative mortality after surgical repair of a left ventricular pseudoaneurysm ranges from 13–35.7%. However, it can be performed with acceptable results in most cases especially who have large and expanding pseudoaneurysm because of the risk of fatal rupture⁵⁻⁶. Associated factors for the relatively high risk of surgery are co-morbid conditions, age and poor left ventricular systolic dysfunction⁵.

The outcome of patients with this condition treated conservatively has been assumed to be poor, with a mortality of around 50% at two years in one series⁵; however other literature review suggests that all deaths seen in these patients at follow-up were extracardiac, independent of the aneurysmal rupture. Although data on the long term prognosis with conservative management are relatively sparse, considerable literature has been published examining the efficacy of the medical treatment. Death from fatal rupture seems to be uncommon and medical treatment of chronic pseudoaneurysm is not associated with an increased risk of cardiac rupture⁶⁻⁷. One report described a 70 year old man with left ventricular

pseudoaneurysm was still alive 12 years after the diagnosis⁹.

Prolonged survival rate in patients who did not undergo surgery might be due to the very narrow connection between the left ventricle and pseudoaneurysm³, small pseudoaneurysms⁵, left ventricular systolic impairment, and the formation of a large thrombus inside the pseudoaneurysm, which attenuated the strength of left ventricular systolic contraction³.

Our experience in this particular patient, although he has a large posterolateral LV pseudoaneurysm, therefore, is in accordance with other studies in which the risk of suffering complete fatal rupture is very low, supporting a medical management in the setting of high surgical risk on account of older age, poor left ventricular ejection fraction, and the presence of co-morbidity⁶. Our patient's clinical picture strongly suggested high risk for surgery in the presence of these features- that is; poor left ventricular systolic function, older age, and severe COPD.

Taking into consideration the relatively high incidence of ischemic stroke (32.5% at four years) suggests that chronic anticoagulation should be considered. On the basis of one study, the first clinical presentation is systemic embolism in 13% of these patients with a left ventricular pseudoaneurysm⁶. Chronic anticoagulant treatment, rest and strict blood pressure control should also be provided in these patients on medical therapy⁷.

In conclusion, as mentioned above, proceeding to surgery is the most appropriate management of left ventricular pseudoaneurysms as soon as detected for relieving to prevent possible future complications. As in our case, if the patient has a poor prognosis and a high risk of perioperative complications because of advanced age and poor functional status, medical therapy with comfort care alone would have been appropriate.

REFERENCES

1. Pollak H, Nobis H, Mlczech J. Frequency of left ventricular free wall rupture complicating acute myocardial infarction since the advent of thrombolysis. *Am J Cardiol* 1994;15: 184-6.
2. Niimura H, Mito T, Matsunaga A, Koga S, Akasu K, Morishige N, et al. Left ventricular pseudoaneurysm following acute myocardial infarction. *Intern Med* 2006;45: 1221-3.
3. Hung MJ, Wang CH, Cherng WJ. Unruptured left ventricular pseudoaneurysm following myocardial infarction. *Heart* 1998;80: 94-7.
4. Gündoğdu F, Aksakal E, Sevimli S, Kantarcı M. A case of left ventricular pseudoaneurysm: evaluation by left ventriculography and multislice computed tomography. *Anatol J Clin Invest* 2008;2: 174-6.
5. Eren E, Bozbuga N, Toker ME, Keles C, Rabus MB, Yildirim O, et al. Surgical treatment of post-infarction left ventricular pseudoaneurysm: a two-decade experience. *Tex Heart Inst J* 2007;34: 47-51.
6. Moreno R, Gordillo E, Zamorano J, Almeria C, Garcia-Rubira JC, Fernandez-Ortiz A, et al. Long term outcome of patients with postinfarction left ventricular pseudoaneurysm. *Heart* 2003;89: 1144-6.
7. Jiang C, Zhao R, Yang X. Six-year follow-up of a left ventricular pseudoaneurysm without surgical repair. *Can J Cardiol* 2007;23: 739-41.
8. Butz T, Faber L, Langer C, Horstkotte D. Giant left ventricular pseudoaneurysm: a rare complication following left ventricular rupture caused by myocardial infarction. *Eur Heart J* 2008;29: 143.
9. Bolognesi R, Cucchini F, Lettieri C, Manca C, Visioli O. Left ventricular false aneurysm: an unusually prolonged natural history. *Cathet Cardiovasc Diagn* 1995;36: 46-52.