

Recurrent Giant Left Ventricular Aneurysm of Tuberculous Etiology in a Child: Case Report

V.P. Campagnucci, MD, PhD, A.M.R. Pinto e Silva, MD, PhD, L.H. Catani, MD, PhD, L.A. Rivetti, Md, PhD

Santa Casa de São Paulo – Faculty of Medical Sciences, São Paulo, Brazil



Dr. Campagnucci

ABSTRACT

We report a case of myocardial tuberculosis in a 10-year-old girl, diagnosed after recurrence of left ventricular aneurysm, treated surgically.

INTRODUCTION

Left ventricular aneurysms occur in adults, usually as a complication of myocardial infarction. In children they are rarely found, and may be congenital [Cikirikcioglu 2007; McMahon 2007] or acquired, secondary to vasculitis, myocarditis, and tuberculosis [Rose 1987; Long 2003]. Chest trauma and previous cardiac interventions are predisposing factors [Elbehery 2006; Pusca 2006]. Surgery is the treatment of choice.

Myocardial involvement is rare in patients with tuberculosis, accounting for approximately 0.14% of all cases [Rose 1987]. It may present as tuberculomas, miliary lesions, or myocarditis, the latter being associated with aneurysm formation. The presence of acid and alcohol-fast (AAFB) bacilli in the myocardium is extremely rare.

CASE REPORT

A 10-year-old girl was admitted with a 6-month history of multiple joint pain and a decline in overall health status. The diagnosis of pericardial effusion was established by Doppler echocardiography, and pericardiocentesis was performed using the subxiphoid approach, which failed to yield pericardial fluid. An echocardiogram 20 days later was suggestive of anteroapical aneurysm, and the girl was transferred to the Emergency Department of Santa Casa de São Paulo.

Left ventriculography confirmed the presence of a dyskinetic saccular formation in the anteroapical region. Coronary angiography revealed dynamic compression of 80% in

the mid-third of the left anterior descending coronary artery, resembling myocardial bridging. Based on these findings, surgical intervention was recommended.

At surgery, diffuse pericarditis was found, with multiple fibrous bands forming tight adhesions. An aneurysmectomy was performed using normothermic cardiopulmonary bypass (CPB) on a beating heart without aortic cross-clamping.

A large thrombus was removed from the narrow-necked aneurysmal sac. Ventricular reconstruction was performed by concentric reduction of the neck, and no graft was required. The patient's intra- and postoperative courses were uneventful, and she was discharged 18 days after surgery. The postoperative echocardiogram showed mild apical hypokinesis, with an ejection fraction of 77%. Pathological examination revealed chronic myocardial inflammation in the reparative phase. Laboratory tests performed to shed light on the polyserositis condition were inconclusive for tuberculosis, vasculitis, and rheumatic diseases. The etiology of the aneurysm was not clearly elucidated.

Eight months after surgery, the girl was brought back with dyspnea. A chest radiograph revealed a large right-sided pleural effusion, which was drained by thoracentesis. Cytologic examination of pleural fluid revealed lymphocyte predominance. The Mantoux test was strongly positive, with induration of 20 mm (a reaction greater than 10 mm is considered positive). Based on these findings, the diagnosis of tuberculosis was made, and the patient was started on antituberculous therapy.

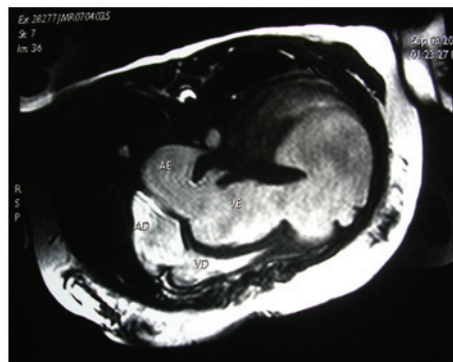


Figure 1. Magnetic resonance imaging.

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Correspondence: Valquíria Pelisser Campagnucci, MD, PhD, Rua Jacarandá, 105 – Cond. Melville – Alphaville – CEP 06543-275, São Paulo, Brasil; (55+11) 41534513/ 99798098 (e-mail: valpelisser@terra.com.br).

Fourteen months after surgery, the girl was readmitted with pneumonia and atelectasis of the lower third of the left upper lobe. Bronchoscopic examination showed a 50% narrowing of the left main bronchus due to extrinsic compression. Repeat echocardiogram was obtained and showed a giant saccular formation in the left ventricle. The patient was referred for cardiac catheterization, and the left ventriculography disclosed 2 large aneurysms, 1 situated inferiorly and the other laterally. These findings were confirmed by magnetic resonance imaging (Figure 1). Because either recurrent left ventricular aneurysm or pseudoaneurysm was a possibility, reoperation was indicated.

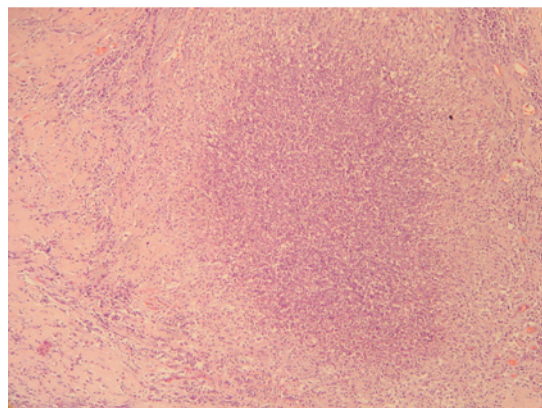


Figure 2. Pathological specimen.

At surgery, mediastinal adhesions were released, and the aneurysmal formation was dissected. This was found to be a trilobulated aneurysm with 1 apical portion, 1 inferior involving the diaphragmatic wall, and another anterolateral involving the entire anterior wall and extending freely up to the left rib cage. Using normothermic CPB and brief aortic cross-clamping, we opened the aneurysm to identify its neck. Once this was accomplished, we declamped the aorta and the heart started beating spontaneously. Multiple thrombi were found and were completely resected. The aneurysm neck was reduced concentrically using purse-string sutures of 3-0 polypropylene as an endoventricular circular plasty repair without patch (unnecessary to occlude the neck). The suture was ended with 3 separate stitches of 0 polyethylene reinforced with Teflon pledgets, and adequate hemostasis was achieved. After an uneventful recovery, the patient was discharged home 20 days after surgery. Echocardiogram showed mild apical hypokinesis and an ejection fraction of 63%. Pathological examination revealed cardiomyocyte hypertrophy and replacement myocardial fibrosis, confirming the diagnosis of true left ventricular aneurysm. Given the overall clinical picture, tuberculosis was considered as the likely cause of myocardial involvement. A review of the pathological specimens from the first surgery showed an inflammatory process with microabscesses and granulomas with

central caseous necrosis surrounded by epithelioid cells in a palisade arrangement and multinucleated giant cells (Figure 2), corroborating our clinical reasoning.

DISCUSSION

Involvement of the myocardium by tuberculosis is rare. It occurs most frequently in children and young adults, coexisting with tuberculosis elsewhere in the body. The mechanisms of myocardial involvement are lymphatic spread from mediastinal nodes, extension from a pericardial focus, or hematogenous spread.

At the time of the first surgery, as a definitive diagnosis of polyserositis had not been made, the aneurysm was attributed to myocardial ischemia secondary to severe fibrous pericarditis, with the presence of fibrous bands in the anterior descending coronary artery due to local extrinsic compression. In view of the recurrence and the diagnosis of pulmonary tuberculosis after surgery, the possibility of myocardial involvement by tuberculosis was considered. This hypothesis was confirmed by a review of the first pathological examination. As far as the pathogenesis of myocardial involvement is concerned, dissemination from a pericardial focus through accidental puncture of the myocardium cannot be ruled out. The aneurysm was detected by echocardiography following pericardiocentesis, whereas in the first examination there were only signs of pericarditis and pericardial effusion.

Aneurysmectomy using CPB is associated with low morbidity and mortality. In both surgeries, we followed the same principles used in the management of ischemic aneurysms, avoiding aortic cross-clamping and keeping the heart beating for myocardial preservation. In the second surgery, brief aortic cross-clamping was necessary for identification of the aneurysm neck, due to the giant and lobulated nature of the aneurysm.

Three aspects make this report unique: (1) the rare diagnosis of cardiac aneurysm caused by tuberculosis, especially in a child; (2) its recurrence, which is even rarer; and (3) the successful surgical treatment.

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