Case report

Staphylococcal postoperative subannular left ventricular false aneurysm

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Abstract

A 37-year-old male with acute complicated methicillin-sensitive Staphylococcus aureus mitral valve endocarditis underwent urgent valve replacement with a bileaflet prosthesis. The postoperative course was complicated with fever and heart failure. Echocardiography showed a large subannular false aneurysm of the left ventricle. Three weeks later resection and closure of the defect with a patch made from a cryopreserved thoracic aorta homograft were performed. The most significant aspects of this rare complication are commented on.

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1. Introduction

Left ventricular false aneurysm (LVFA) is uncommon. It has been described after myocardial infarction and as a late complication of mitral valve surgery. Because of the tendency to enlarge and rupture, operation is recommended. This report refers to a patient with LVFA developing following mitral valve replacement (MVR) for methicillin-sensitive Staphylococcus aureus (MSSA) endocarditis.

2. Case report

The patient is a 37-year-old male drug addict. He was admitted because of headache and fever. Blood cultures grew MSSA. Transthoracic echocardiography (TTE) showed severe mitral regurgitation due to posterior leaflet rupture and a 1.3 cm vegetation. The diagnosis of MSSA endocarditis was made, later complicated with systemic emboli to the brain and spleen, and renal and congestive heart failure (CHF). Cardiac tamponade prompted urgent surgical treatment with 800 cc of bloody fluid aspirated from the pericardium. There were ruptured chordae tendineae of the posterior mitral leaflet and no evidence of annular abscess. The mitral valve was replaced with a 27 mm Sorin-Bicarbon bileaflet prosthesis (Sorin Biomedica, Saluggia, Italy). The left atrium was approached below the intraatrial groove and the valve was implanted using 2/0 interrupted pledgeted braided polyester sutures implanted from the atrial aspect.

His postoperative course was complicated with CHF and sepsis. TTE on day 23 showed a large paracardiac cavity. Doppler analysis confirmed flow below the mitral annulus near the posteromedial commissure and normal functioning mitral prosthesis. The suspicion was that of subannular abscess (Fig. 1). Reoperation was performed and a 9.5 x 7.5 cm LVFA was found. After removal of thrombus, a 2 cm orifice in the left ventricular wall was identified below the mitral annulus. A 4 cm circular tailored patch from a cryopreserved thoracic aorta was used to close the defect. The patient was successfully weaned off cardiopulmonary bypass. Intraoperative transesophageal echocardiography (TEE) confirmed the absence of perivalvular leak. The patient completed 6 weeks of i.v. cloxacillin (2 g q4 h) and gentamycin (80 mg q8 h) for the first 2 weeks and was discharged on postoperative day 12. One year after surgery he is currently leading an active life without evidence of infection.

3. Comment

LVFA is uncommon. A recent review found 290 cases [1] and infarction accounted for more than half of the cases. One-third developed after a surgical procedure, mostly
MVR. Endocarditis was identified as the cause of LVFA in only two patients. A study from Sakai et al. [2] showed eight cases or 0.8% of 1050 patients undergoing MVR over a period of 12 years. All eight cases presented after a reoperative mitral valve operation, which accounted for 253 cases or 3.1% of redo operations in this series. Therefore, a mitral reoperation should be considered as a risk factor for LVFA.

Extended decalcification during removal of the native valve, an oversized prosthesis, protruding struts of the prosthesis, extended resection of the papillary muscles and inadvertent incision of the ventricular wall are possible causes of submitral rupture [3]. In some cases LVFA can appear late in the follow-up. Infection might cause destruction of the subannular region, more fragile than the remaining of the cardiac skeleton. The literature review for LVFA following MVR for endocarditis confirmed a total of four cases, one in a 4-year-old child [4,5].

Symptoms are non-specific, the most common being CHF (36%), chest pain (30%) and dyspnea (25%). Detection by routine TTE in otherwise asymptomatic patients has been reported several years after surgery [2]. Diagnostic evidence of LVFA is frequently obtained with ventriculography (87%); TEE has also been shown to be diagnostic in more than 90% of cases, allowing the differential diagnosis from other perivalvular complications [6].

There is general agreement regarding surgery as the treatment of choice, despite an early high mortality (23%), since untreated LVFA tend to enlarge and rupture [7]. In some cases, close follow-up of asymptomatic patients led to conservative treatment of LVFA [2,8]. There are two reported cases of spontaneous closure of the LVFA [9]. The case described herein is of particular interest because of the combination of two etiologic determinants of LVFA. The progression of an aggressive perivalvular infection led to rapid and destructive erosion of the LV wall, and it should be considered in our case as the main influencing factor for development of a LVFA. In our case we considered removal of the prosthesis unnecessary and potentially dangerous because of an expected longer operative time and risk of further mitral annular weakening. Furthermore, the availability of cryopreserved homologous vascular tissue has been, in our opinion, of paramount importance in order to select the best material to close the LVFA. The use of synthetic patch material was considered a suboptimal choice in this patient, considering the underlying active infectious condition.

References