CASE REPORT

Right Ventricular Inflow Obstruction due to Giant Hematoma Formed by Chronic Constrictive Pericarditis

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A 26-year-old man having chronic constrictive pericarditis with rare complications is described. Right ventricular inflow obstruction was caused by an intracavity giant mass which was surrounded by thick calcified pericardium. The mass consisted of old bloody fluid with some calcified tissue. The findings of auscultation closely mimicked those of tricuspid valvular stenosis.

(Internal Medicine 32: 346-349, 1993)

Key words: constrictive pericarditis, right ventricular inflow obstruction, pericardiectomy

Introduction

Chronic constrictive pericarditis impairs normal diastolic filling of the heart and usually results in the classic clinical triad of increased venous pressure, ascites, and a small quiet heart. Although pericardial fibrosis with or without calcification can cause local cardiac constriction, subpulmonic stenosis (1-3), aortic stenosis (1), and mitral orifice constriction (1, 4, 5), right ventricular inflow obstruction has not been described as a complication of this disease. The patient reported here had a diastolic murmur mimicking tricuspid valvular stenosis associated with a pericardial cavity hematoma formed by chronic constrictive pericarditis.

Case Report

A 26-year-old man was a healthy carpenter prior to the insidious appearance of facial edema and dyspnea on exercise. During a 5-year period, he was treated with occasional administration of diuretics and was free of symptoms. He was referred to our hospital because of a recent increase in dyspnea, facial edema, and fatigue. There was no history of chest bruises, consistent fever, or exposure to tuberculosis.

On admission, the jugular vein was markedly distended with visible wave form. The liver was palpable 5 cm below the right costal margin. Ascites and peripheral edema were noted. Auscultation at the lower left sternal border disclosed a high pitched early diastolic extrasound (pericardial knock) and a grade 3/6 diastolic rumbling murmur with inspiratory accentuation. The chest X-ray film showed no enlargement of the cardiac silhouette, but calcification in the region of the posterior and inferior cardiac borders was noted.

Two-dimensional echocardiography showed narrowing of the right ventricle and right atrium. Computed tomography showed a giant mass within the pericardial cavity (Fig. 1). The right side of the heart was compressed by the mass. The outer surface of the mass was a thick layer of calcification which surrounded an inner amorphous low density material. Magnetic resonance imaging revealed similar findings but the increased T2 time of the mass suggested the existence of stagnant fluid within the calcified cavity (Fig. 2).

The patient underwent cardiac catheterization. Pressures (mmHg) were: right atrium, a = 22, v = 22, mean = 19; right ventricle, 31/9; right ventricular end-diastole, 20; pulmonary artery, 34/19; pulmonary wedge, a = 21, v = 21, mean = 18; left ventricle, 130/12; and cardiac index, 2.0. The simultaneous recordings of right atrial and right ventricular pressure showed an 8 mmHg pressure gradient at early diastole (Fig. 3).

A diagnosis of chronic constrictive pericarditis was made and a pericardiectomy was performed. At operation, both left and right hearts were surrounded by thick (8-10 mm), fibrotic, partially calcified tissue. Partially coagulated, old bloody fluid which contained fibrous or calcified tissue was found inside the mass, which oppressed the right side of the heart. Most of

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Received for publication December 4, 1992; Accepted for publication March 4, 1993
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Internal Medicine Vol. 32, No. 4 (April 1993)
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Fig. 1. Axial image of computed tomogram with contrast medium. A large mass, which is surrounded by thick calcified tissue, oppresses the right heart. Calcification is also seen at the posterior wall of the heart. Right panel is a diagrammatic representation of the computed tomogram. RV: right ventricle, IVS: interventricular septum, LV: left ventricle.

Fig. 2. Axial (left) and sagittal (right) views of magnetic resonance imaging. A giant mass is demonstrated within the cardiac cavity, which oppresses the right heart. Prolongation of T2 time at the inner area of the mass indicates the existence of fluid. The calcified tissue and entrapped fluid were removed. Pathological examination of the resected tissue revealed acellular fibrosis and hyalinization with calcification. A pathological diagnosis of idiopathic constrictive pericarditis was made. The diastolic rumbling murmur disappeared following the operation.

One month later, the pressure gradient between right atrium and right ventricle during early diastole had disappeared (Fig. 3). Because of the increase in the right ventricular early diastolic pressure, pressure configuration formed “dip and plateau.” Computed tomography and magnetic resonance imaging showed subtotal removal of the calcified tissue and the mass. The symptoms improved gradually over a period of months.
Fig. 3. Simultaneous recordings of right atrial (RA) and right ventricular (RV) pressures before (left) and after (right) operation.

**Discussion**

Among 53 patients with chronic constrictive pericarditis studied by Paul et al. (5), 16 cases underwent autopsy and 2 showed persistence of small, unobliterated cavities. Indeed, it is not unusual that small collections of fluid are entrapped between adhesions in patients with this disease (6). However, reports of large amount of fluid collections are extremely rare.

Effusive-constrictive pericarditis is a common cause of pericardial fluid which produces hemodynamic features similar to chronic constrictive pericarditis. This disease is usually caused by connective tissue disease, tuberculosis, or neoplasm and has a subacute clinical course. Cardiac silhouettes tend to be larger and pericardial calcification is seldom seen. Chronic adhesive (or obliterator) pericarditis may cause completely obliterated cavities, or pockets of varying sizes (6). This disease, however, differs from chronic constrictive pericarditis by the absence of embarrassment of the heart.

The giant mass observed in the case presented here consisted of a thick layer of calcified tissue within the pericardial cavity within which there was old, partially coagulated bloody fluid, and some fibrous, calcified tissue. The patient had suffered from the disease for over a 5-year period. His previous history, clinical course, pathological examinations of the resected pericardium, and the content of the mass showed no specific etiology for the formation of the mass and calcification of the pericardium. The case showed typical clinical features of classic chronic constrictive pericarditis. It is, therefore, reasonable to diagnose this patient’s condition as idiopathic chronic constrictive pericarditis. The reason such a large amount of fluid was entrapped within the mass is not known. Nevertheless, it is noteworthy that such a large hematoma can be formed in association with chronic constrictive pericarditis and can cause significant hemodynamic changes by compressing the heart.

Pericarditis is an unusual cause of obstruction of cardiac structures. Several cases of right ventricular outflow obstruction and narrowing of the mitral orifice due to circumferential calcification by annular constrictive pericarditis have been reported (1–5). However, as far as we know no case of right ventricular inflow obstruction has been reported. In the case presented here, findings at auscultation closely mimicked that of tricuspid valvular stenosis because of a combination of pericardial knock sound and diastolic rumbling murmur with inspiratory accentuation at lower left sternal border. The fact that the murmur and signs and symptoms of right side failure disappeared following operation suggest that in this patient an unusual manifestation of constrictive pericarditis was responsible for the right ventricular inflow obstruction. It should be noted, therefore, that constrictive pericarditis can complicate right ventricular inflow obstruction.

**References**

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