Cavernous hemangioma of the right atrium

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Abstract

Cardiac hemangioma is a rare primary benign tumour, localised in the right atrium in 23% of cases. In a 60-year-old patient, who complained of remote chest discomfort and recent exertional palpitation, a right atrial mass was discovered by magnetic resonance imaging and echocardiography. A selective operation was performed and the tumour was resected. Histology revealed it to be a cavernous hemangioma. Due to the potential risks associated with cardiac hemangioma, surgical resection and postoperative follow-up are recommended.

Key Words: cardiac hemangioma, right atrial hemangioma, surgical resection

Kardiol Pol 2008; 66: 974-976

Introduction

Cardiac hemangioma is a rare primary benign tumour with an incidence of 1-2% [1]. Most cardiac hemangiomas are asymptomatic, and are discovered incidentally at autopsy, or by echocardiography, computerised tomography, or magnetic resonance imaging check-up. Symptomatic patients may manifest arrhythmias, pericardial effusions, congestive heart failure, embolic events or even sudden death [2]. It may occur anywhere in the heart, but shows right ventricular predominance [3]. Right atrial hemangioma accounts for 23.2% of all cardiac hemangiomas [3]. Reiner et al. reported the first case of cardiac hemangioma which developed in the right ventricle in a 56-year-old male asymptomatic patient [4]. Scattered cases continued to be reported. Pioneer pathologists have given different histological classifications for cardiac hemangiomas; however, cavernous type characterised by multiple, dilated, thin-walled vessels with extensive thrombosis remains a constant pattern. We hereby present a recent case of right atrial hemangioma in a 60-year-old patient who underwent successful surgery.

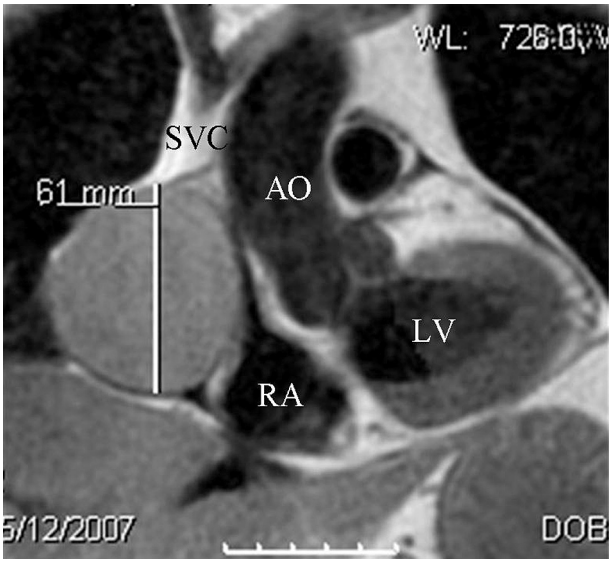

Figure 1. Magnetic resonance imaging from a coronal view illustrated an elliptical mass measuring 6.1 mm in diameter attached to the right atrium, compressing the right atrium and superior vena cava.

AO – aorta, LV – left ventricle, RA – right atrium, SVC – superior vena cava

Case Report

A 60-year-old male patient had intermittent chest discomfort in the past 20 years and developed an exertional palpitation 2 months prior to admission. On admission, his vital signs were normal. Auscultation did not show any remarkable findings. Results of laboratory examinations were within normal ranges. Electrocardiogram showed normal sinus rhythm. Magnetic resonance imaging revealed an elliptical mass measuring 6.3 × 6 × 5.7 mm attached to the right atrium, compressing the right atrium and superior vena cava, with stenosis of the proximal portion of the superior vena cava (SVC). The dimension of the distal part of SVC was

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normal. The inferior vena cava was free of compression (Figure 1.). Echocardiography demonstrated normal dimensions of left and right ventricles, and the right atrium was compressed by a 6.5 × 3.5 cm mass.

A selective operation of the right atrial mass was performed under standard cardiopulmonary bypass on 20 February 2008. Intraoperative transoesophageal echocardiography showed a mass attached to the right atrial wall (Figure 2.). Operative findings confirmed the preoperative magnetic resonance imaging and echocardiographic results. An elliptical mass extending 6.5 cm in diameter was attached to the right atrium. The right atrium and the SVC were compressed, causing SVC stenosis in its proximal portion. The inferior vena cava was free of compression (Figure 3). After cardiopulmonary bypass was established, the mass was resected completely under cardioplegic heart arrest. The removed mass turned out to be spherical, measuring 6 × 6 × 5 cm, weighing 105 grams. It was encapsulated by an intact brownish outer membrane, which was exceedingly slithery, looking like a sworn mature plum from the view of the smooth surface. It felt squishy, fleshy and tensile by palpation. Patchy trabecular structures of the right atrium could be seen on the coarse surface of the mass (Figure 4.). Removal of the mass caused an iatrogenic defect on the free wall of the right atrium (Figure 5.), which was repaired by a bovine pericardial patch. Both venae cavae were intact. The operative course was smooth and the patient had an uneventful postoperative recovery. Pathological study revealed it to be a cavernous hemangioma.

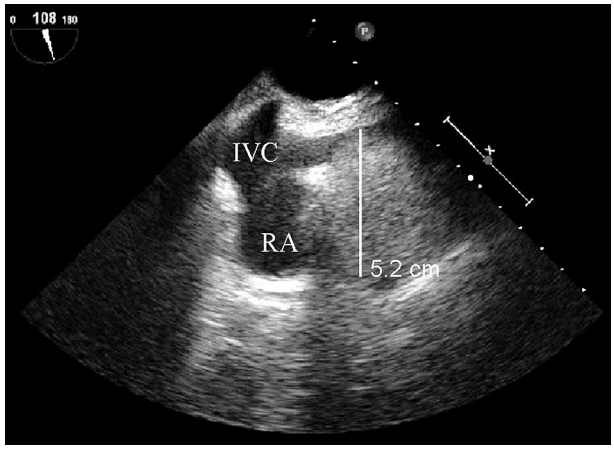

Figure 2. Intraoperative transoesophageal echocardiography showed a mass attached to the right atrial wall measuring 5.2 cm. The inferior vena cava was free of compression

IVC – inferior vena cava, RA – right atrium

Discussion

Cavernous hemangioma is an extremely rare primary cardiac tumour. In 1976, Raabe et al. [5] reported one case of right atrial cavernous hemangioma and collected 7 other previously reported cases. Fewer than 20 cases of right atrial cavernous hemangiomas have been reported in English literature. This lesion may develop in either sex at any age from a fetus to 80 years [1, 6]. Prenatal ultrasound can help diagnosis in a fetus by direct visualisation of the tumour or signs of pericardial effusion [1, 7]. The symptoms depend on the anatomical location of the tumour and the resultant cardiac haemodynamic consequences [8]. Adults usually present with constitutional and circulatory symptoms [5, 8–12]; new onset atrial fibrillation [6], or cerebral stroke [13] developed in some patients. In the present patient, the tumour originated from the free wall of the right atrium,

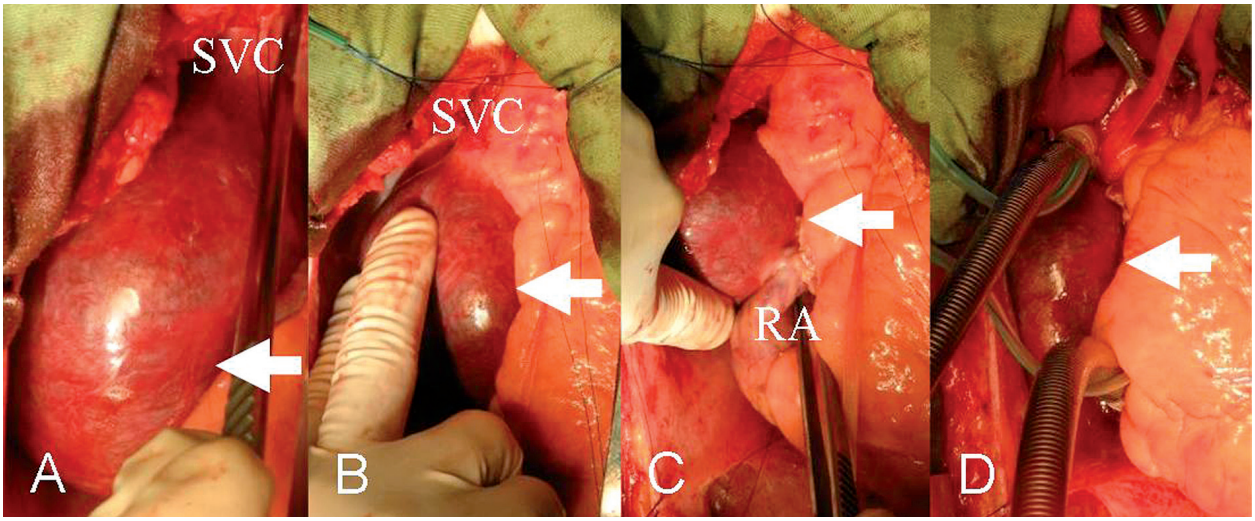

Figure 3. Operative views of the right atrial haemangioma. **A** – a saccular tumour (arrow) attached to the free wall of the right atrium was visible in the pericardial cavity, **B** – the origin of the superior vena cava was affected by the tumour (arrow), **C** – the inferior vena cava was free of compression, and **D** – the tumour (arrow) was located between two vena cava cannulations

RA – right atrium, SVC – superior vena cava

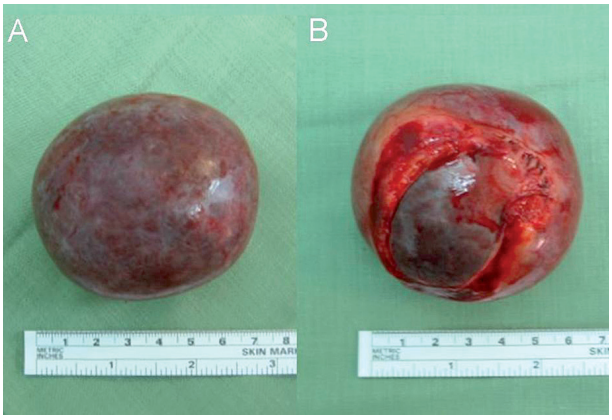

Figure 4. The resected tumour turned out to be spherical. **A** – It was encapsulated, smooth, looking like a sworn mature plum from the view of the smooth surface. **B** – A small amount of trabecular structures of the right atrium could be seen on the coarse surface of the mass

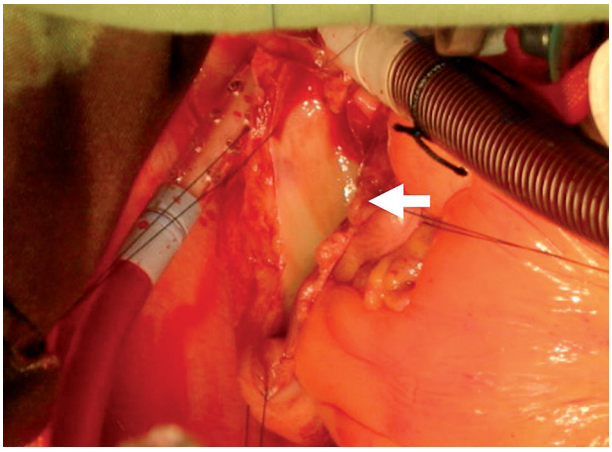

Figure 5. Removal of the mass caused an iatrogenic defect (arrow) of the free wall of the right atrium, because the tumour encroached the full thickness of the free wall of the right atrium

growing externally, leading to compression of the right atrium and SVC.

The tumour may arise from epicardial, myocardial or endocardial, intracavitary, intramural or extramural tissue of the right atrium, measuring 1.2-2.5 cm in a fetus [7], and 4-13 cm in adults [1, 2]. Rapid growth of the tumour was noted in a fetus [1]. In the modern era, echocardiography remains a reliable diagnostic tool for preoperative diagnosis, supplemented by computerised tomography and magnetic resonance imaging. Complete surgical resection is the treatment of choice, and the prognosis of patients with a resectable tumour is quite good [12].

In the present patient, the hemangioma was extramural, tangential to the free wall of the right atrium, without communication with each other. It involved the whole layer of the right atrial wall and caused compression of the right atrium and SVC. The intact outer membrane facilitated complete removal.

Due to the potential risks of a cardiac hemangioma, surgical resection is recommended when possible. Postoperative follow-up is necessary for monitoring of recurrence.

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