Case report

Lipomatous hypertrophy of the interatrial septum: indication for surgery?

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Abstract

A fortuitous finding during open heart surgery of lipomatous hypertrophy of the interatrial septum is described in a 65-year old man with ischaemic heart complaints due to coronary artery disease and with premature ventricular contractions. An incision biopsy confirmed the diagnosis. The choice of treatment of lipomatous hypertrophy of the interatrial septum is controversial. Indications for surgery and surgical techniques are discussed. © 1997 Elsevier Science B.V.

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1. Introduction

Lipomatous hypertrophy of the interatrial septum (LHIS), a nonencapsulated mass of adipose tissue, usually in continuity with the epicardial fat, is a well defined entity [2,3]. Most data is derived from autopsy studies, LHIS diagnosed during life being a rarity [3,7]. Most of the patients with LHIS are over 60 years of age and although most of the patients are asymptomatic, some others experience cardiac rhythm disorders [3,5]. The choice of treatment of LHIS is controversial. We present the case of LHIS, recognized during life and discuss the role of resection as a treatment modality of asymptomatic and symptomatic lipomatous enlargements of the interatrial septum.

2. Case report

A 65-year-old Caucasian male patient was admitted, having New York Heart Association (NYHA) class II angina pectoris. The obese patient had a history of infarction of the anterior wall of the left ventricle, hypercholesterolaemic and 40 years of smoking. Chest X-ray revealed marked cardiomegaly. The electrocardiogram showed a sinus rhythm with premature ventricular contractions. A coronary angiogram showed three vessel disease. Left ventriculography revealed poor contractibility.

A coronary artery bypass grafting was planned. During the venous cannulation procedure, a ‘tumour’ in the atrial septum was palpated by chance. The mass was not only located in the atrial septum, but extended along the inferior pulmonary vein of the right lung and the free wall of the left and right atrium. Transoesophageal echocardiography (TEE) revealed a bilobed echogenic atrial septum with a thickness of 19.3 mm, consistent with LHIS or lipoma (Fig. 1). Therefore, direct bi-caval cannulation and mode rate sys-
temic hypothermia (28°C) were used for cardiopulmonary bypass. Through an extended vertical transseptal atriotomy, the mass within the interatrial septum was approached for a large incision biopsy. Macroscopically, the tumourous tissue appeared to be lipomatous tissue. Frozen section diagnosis was not performed, as the result of the frozen section would not have influenced the operation strategy. It was impossible to resect the tumour in total due to its location. The atriotomy was closed by direct suture. The left internal mammary artery was anastomosed to the left anterior descending artery and a sequential venous graft was constructed to the first and second marginal branch and posterior descending artery, respectively. The patient was weaned successfully from extracorporal circulation. Until the 6th day after the operation, periods of atrial fibrillation and flutter could not be converted either chemically or electrically. Finally, a high-dose Rytmonorm intravenously resulted in a sinus rhythm. Abdominal problems resulted in a delayed discharge, 21 days after the operation. Pathological examination of the resected specimen showed an interatrial septum, thickened by non encapsulated accumulation of adipose tissue with mostly mature appearance (Fig. 2). Between the fat tissue some trapped myocardial fibres were found with changes ranging from degeneration and atrophy to reactive hypertrophy with large somewhat polymorphic nuclei.

3. Discussion

LHIS was first described by Prior in 1964 [4]. A review of the literature shows that in most cases LHIS is an incidental finding, but associated complicating factors may be atrial arrhythmias, altered P wave configuration [5,6], recurrent pericardial effusion [9] or sudden death [3]. Clinical significance of LHIS was clearly demonstrated by McAllister and Fenoglio [3], who found that in 28% of their series of 32 autopsy cases with LHIS, the cause of death was directly related to the atrial tumour. However, etiology of cardiac symptomatology was clinically uncertain in every case. LHIS has a definite tendency to be associated with cardiac arrhythmias. Cardiac irritability may be a result of atrophy of the myocardium with fibrosis, which accompany deposition of large amounts of fat tissue [2]. On the contrary, in the majority of true cardiac lipomas there is no association with cardiac symptoms, although some patients can be symptomatic, that depends on the size and localization of the tumour [2]. Microscopically, LHIS is characterized by a non encapsulated diffuse mass of fat tissue composed mostly of mature lipocytes. Occasionally, multivacuolar fat cells reminiscent of fetal fat cells, can be traced [2,4]. Etiology of LHIS is not known. The thickening of the interatrial septum can be associated with obesity and increase in fat deposition with advancing age [5]. A variety of lesions including myxomas, true cardiac lipomas, metastatic tumours, parietal thrombi, septal aneurysms, and amyloidosis can present as septal masses [7]. To exclude one of these lesions, TEE can be conducted. Fatty tissue has a high spin-echo intensity. A bilobed atrial septum with a high spin-echo intensity and a thickness of at least 15 mm is highly characteristic of LHIS or lipoma [1]. If the diagnosis is suggested preoperatively, a percutaneous transvenous biopsy can be done [8]. Computerized tomography [7] and magnetic resonance imaging [1] may give additional information. To verify the diagnosis, if found peroperatively, an incision biopsy can be made. Fine needle aspiration biopsy and frozen section diagnosis is another option.
A tumour palpated in the interatrial septum, extending into the free right atrial wall, has several therapeutic options. If LHIS is complicated by severe rhythm disorders or altered haemodynamic cardiac function, resection may be considered, although it often necessitates major surgery. In the case of a small tumour, the septum may be excised and closed primarily by suture, however small tumours rarely are symptomatic. If it concerns large LHIS, after removal of the tumour including atrial septum, replacement of the septum with a dacron or autologous pericardial patch may be necessary. LHIS extends into the region of the AV node, but most often is located anterior to the foramen ovale. LHIS is usually situated in the area of at least two proposed interatrial conduction pathways (anterior and middle internodal pathways). The interruption of these pathways could be the major reason for rhythm disorders in these patients [6]. Partial or total resection of the interatrial septum probably will not relieve the patient from his rhythm disturbances, not in the least when the AV node region is involved. In that case, the patient may end up with a pacemaker.

To conclude, we consider that a fortuitous finding of lipomatous hypertrophy of the interatrial septum without symptoms, diagnosed by transoesophageal echocardiography pre- or peroperatively, should not be surgically corrected. To confirm the diagnosis, a needle biopsy or incision biopsy during heart surgery can be made. Only in the case of altered hemodynamic function leading to congestive heart failure and severe rhythm disorders, should surgical correction be considered, depending on the growth and size of the tumour and its relation to the great vessels.

References