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Case report

Lipomatous hypertrophy of the interatrial septum

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Abstract

Lipomatous hypertrophy of the interatrial septum (LHIS) is a benign disorder characterized by a fatty accumulation in the interatrial septum. It typically occurs in obese, elderly patients and may cause arrhythmias. In this report we present the case of an oncology patient with metastasis of unknown origin and a fatty mass of the interatrial septum. Due to clinical suspicion of metastases multislice CT (MSCT) and magnetic resonance imaging (MRI) analysis were performed. Although MRI is a very accurate modality to diagnose LHIS, also MSCT scanning alone is a useful method. The incidence of LHIS is reported to be 2.2%, but is likely to increase in the future due to the aging population and the proliferation and increasing usage non-invasive imaging modalities.

Keywords: Magnetic resonance imaging; Tomography; Spiral computed

1. Introduction

Cardiac tumors are rare with an estimated cumulative prevalence of 0.002–0.3% at autopsy and 0.15% in echocardiography series [1]. The majority of heart tumors are benign, most of them are myxomas. Lipomas and fibromas are occurring less frequently. Metastatic involvement of the heart is about forty times more frequent [2]. Though cardiac magnetic resonance imaging (MRI) is an established technique in the evaluation of cardiac masses, transthoracic echocardiography remains the initial imaging modality. Actually there are a lot of advantages of cardiac MRI compared to transthoracic echocardiography [2]. Diagnosis of lipomatous hypertrophy of the interatrial septum (LHIS), a benign disorder of the interatrial septum, was formerly a diagnosis made at autopsy and defined by gross criteria [3].

2. Case report

A 61-year-old female patient was admitted to our hospital with a known cervical lymph node metastasis. Since the primary tumor was of unknown origin, she was referred to a computed tomography of the chest for tumor search. Besides her known metastasis she complained about dysphagia for 2 weeks. The patient had a history of ischemic heart disease and known premature beats. At admission inflammatory parameters were elevated with a C-reactive protein of 39.4 mg/l (<6 mg/l) and leucocytes of 10.290×10^{-9}/l ($3.2–9.8 \times 10^{9}$/l).

3. Imaging

Contrast enhanced CT of the chest showed a hypodens fatty lesion localized in the interatrial septum (Fig. 1). A density of −38 Hounsfield Units (HU) and a transversal dimension of 4.1 cm × 4 cm were measured. There was a connection to the inflow region of the right pulmonary veins, but neither evidence of stenosis or infiltration nor obstruction of the superior vena cava. There was no contrast enhancement of the interatrial mass. Since there remained clinical suspicion of malignancy and to rule out metastasis with high confidence, cardiac MRI for further evaluation of the lesion was scheduled. The MRI scan was performed with a 1.5-T unit (Magnetom Espree, Siemens). Images were obtained with ECG-triggering and breathhold technique. A four-channel,

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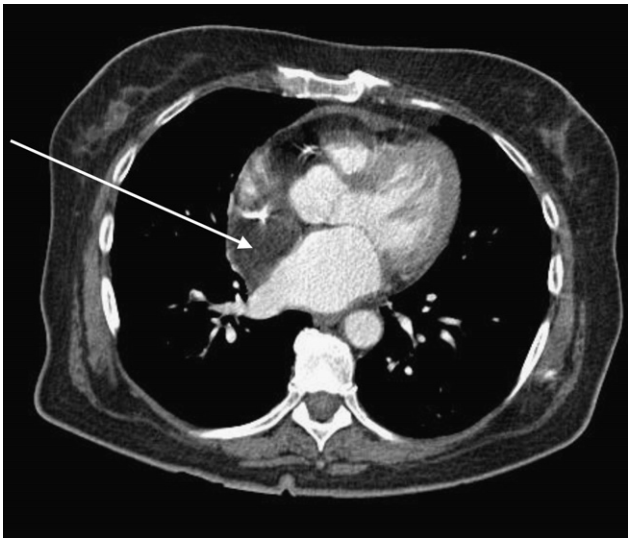

Fig. 1. Contrast enhanced CT demonstrating fatty mass of the interatrial septum with negative Hounsfield Units.

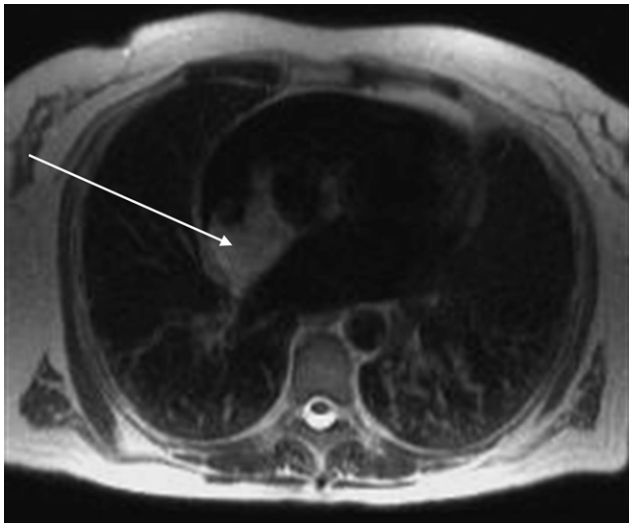

Fig. 3. T2-weighted HASTE MR (TR 1000, TE 89) showing fat-equivalent signal alterations of the interatrial lesion.

phased-array body coil was used. TrueFisp sequences showed an isointense mass overlying the right atrium (Fig. 2). In T2-weighted HASTE images the lesions presented as an hyperintense fatty mass (Fig. 3). Gd-enhanced perfusion analysis depicted no perfusion dynamic of the lesion compared to the left atrium (Fig. 4a and b, Movie 1) supporting the diagnosis of LHIS.

4. Discussion

LHIS is an uncommon benign cardiac mass which is characterized by an excessive deposition of adipose tissue and may result in marked thickening of the atrial septum [4]. The thickness of the atrial septum may exceed 2 cm in this condition [5]. LHIS was first mentioned in 1964 from Prior at postmortem examinations [4] and is increasingly recognized, probably due to improving imaging modalities. Its incidence ranges between 1 and 2.2% as described in autopsy studies [3,6]. Whereas in transthoracic echocardiography studies, incidences of up to 8% were reported [7]. A recent series of 1292 patients undergoing CT depicted an incidence of 2.2% [9]. Although advanced age, obesity, emphysema and atrial arrhythmias are commonly associated comorbidities the etiology of LHIS remains unclear. The formerly reported predominance in women [5,8] has been questioned [9].

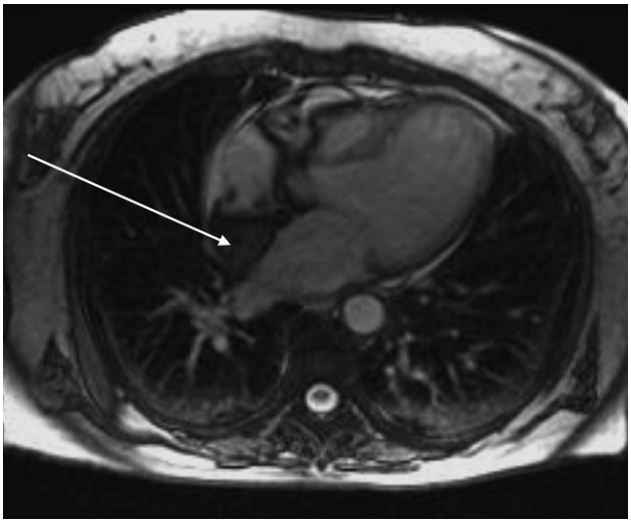

Fig. 2. TrueFisp MR (TR64.3, TE 1.1) demonstrating the isointense lesion without water-equivalent signal alterations.

The lesion is composed of adipocytes infiltrating the interatrial septum, along with interspersed hypertrophied myocytes and myocardial fibers [5]. O'Connor et al. described LHIS to be consistent of an unencapsulated accumulation of mature adipose tissue with cells resembling brown fat [10]. It may surround adjacent vascular structures without invading them [11].

As seen in our patient it can be associated with atrial arrhythmias. Other patients present with altered P wave configuration, recurrent pericardial effusion or sudden death [12,13]. Since at least two major interatrial conduction pathways (anterior and middle internodal pathway) course through the atrial septum, an interruption of these pathways caused by the abnormal fat deposition may be the reason for the rythm disorders [14]. Rarely, large lesions may even cause circulatory obstruction and require to undergo surgical treatment by resection and septal reconstruction [15,16]. In contrast, cardiac lipomas are usually asymptomatic [13]. On the other hand, metastases which are the most common cardiac tumors can also present with thickening of the atrial septum [11]. Furthermore, various rather rare cardiac masses, such as septal cysts, myxomas, rhabdomyomas, fibromas, fibroelastomas, mesotheliomas or cardiac amyloidosis, may