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CASE REPORT
Cardiac tumors

Mediastinal cyst: a case report (RCD code: VI)

Katarzyna Bańska[1]*, Piotr Pysz[2], Zbigniew Gąsior[2]

[1] 2nd Department of Cardiology Upper Silesian Heart Center Katowice, Poland; [2] Department of Cardiology SHS, Medical University of Silesia, Katowice, Poland

Abstract

We report a case of a 57-year-old female patient in whom a mediastinal tumor was found. Differential diagnosis included chiefly allergic alveolitis or an ectopic thymus. The exact nature of the lesion has not been fully elucidated yet and the patient remains under close follow-up. JRCD 2015; 2 (2): 64–66

Key words: mediastinal tumor, pericardial tumor, pericardial cyst, magnetic resonance imaging

Introduction

Mediastinal tumors comprise a heterogeneous group and are rarely met in clinical practice. They can be classified according to their location (Table 1) and nature. Majority of them originates from the anterosuperior mediastinum (50–60%) followed by posterior (20–25%) and medial mediastinum (15–20%) [1]. Most frequently occurring are the lymphomas, which typically involve myocardium and pericardium along with neighboring tissues.

Primary tumors of pericardium are exceptionally rare. They occur 40 times less frequent than metastatic lesions [3,4,5]. A case of a 61-year-old female patient was reported in whom a primary synovial sarcoma was identified within irregular soft tissue fragments affecting pericardial sac next to the left atrium. The final diagnosis was based on autopsy and histopathology findings [4].

Sarcomas represent majority of primary cardiac tumors. They may develop in the form of angiosarcoma, fibrosarcoma, osteosarcoma, leyomyosarcoma, rabdomyosarcoma, myxosarcoma, neurofibrosarcoma or liposarcoma and the echocardiographic differential diagnosis may be particularly challenging. Mesotheliomas are yet another pericardial tumors typically developing after previous exposure to asbestos [2, 3, 4].

Teratomas mainly occupy genital organs but are also found in approximately 15% of cases of anterior mediastinum tumors in adults and 24% of those in children. The diagnosis has been made in individuals between the ages of 1 to 73. The suspicion should be raised by the presence of calcifications (bone tissue, teeth) on imaging studies. Cases of syncope caused by compression of heart and great vessels have been described [6].

Noteworthy, a number of pseudotumors may be found during imaging of mediastinum. These can be caused by any of the following: benign cardiovascular anomalies, goiter, hydrocele neck, hernias, pancreatic pseudocysts, abscesses, chordomas, ectopic tissue (thymus). In the last case a risk of thymoma should also be taken into account [2,3].

Cysts

In the medial mediastinum pericardial cysts along with bronchocele and mucocele can be found. The pericardial cysts, though rare (1:100 000), constitute 11% of pericardial tumors. They can either be congenital (with wall built of mesothelium cells capable of fluid excretion) or result from inflammation or parasite infection (Echinococcus). Except for the latter one they usually remain asymptomatic, are incidentally found during imaging tests and require no treatment. Rarely they can cause cough, dyspnea, syncope or stenocardia.

Echinococcus infection occurs mostly in Mediterranean countries, Middle East, central Asia, Australia, South America, Africa, New Zealand and Russia. Echinococcal cysts most commonly develop in liver and lungs but can also occupy pleura, pericardium, mediastinum or chest wall [7]. As those located in mediastinum are difficult to distinguish from common cysts on imaging tests the final diagnosis may only be feasible after surgical excision [7, 8, 9].

Mucocele generally affects lower lip but can also develop anywhere within paranasal sinuses or oral cavity. Mucous glands' ducts obstruction, due to chronic inflammation or local trauma, is usually the trigger. Bronchocele most frequently develops in the presence

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* Corresponding author: 2nd Department of Cardiology Upper Silesian Heart Center, Ziołowa str. 45-47, 40-635 Katowice - Ochojec, Poland; tel: +48 32 359 86 94; email: kasiabanska@op.pl

Table 1. Classification of mediastinal tumors according to their location [1]

Anterior mediastinum	Posterior mediastinum	Medial mediastinum
Thymomas	neurogenic tumors	– cysts (bronchial, pericardial, primitive gut tube)
Lymphomas	esophageal tumors	– lymphomas
Neuroendocrine tumors (goiter, parathyroid tumors)		– granulomas
germ cell tumors – dermoid cysts, teratomas		– metastatic tumors of lymph nodes
mesenchymal tumors		– Castelman's disease (non-cancerous proliferation the lymphatic system cells)
		– vascular tumors

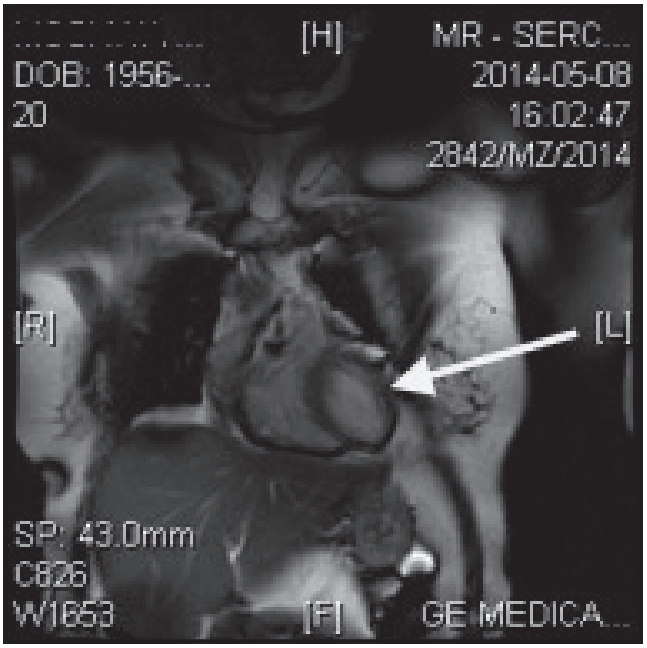

Figure 1. Magnetic resonance. Mediatinal cyst (arrow)

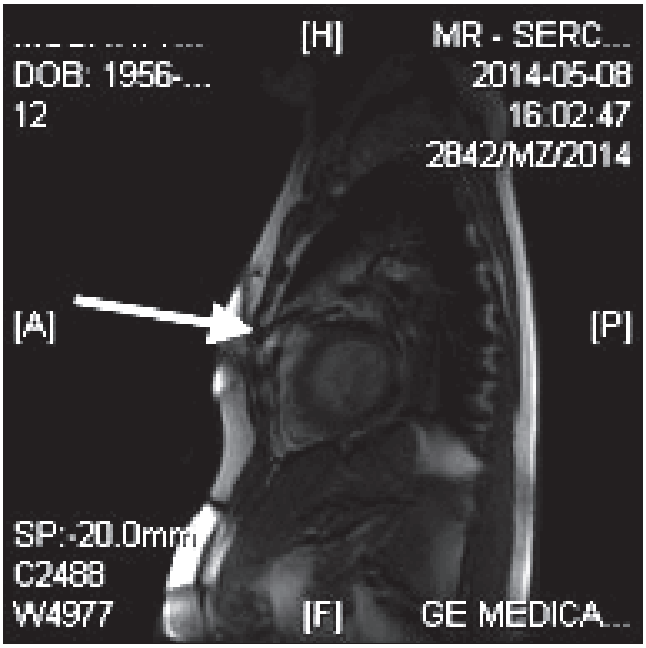

Figure 2. Magnetic resonance. Mediatinal cyst (arrow)

of congenital bronchial hypoplasia, obturation (typically neoplasmatic) or rupture [11]. Both of the above lesions can be found in mediastinum and the differential diagnosis may require magnetic resonance imaging [12]. Cases of bronchocele rupture with progressive dyspnea and stenocardia have been reported. The fluid entered the pericardium and after complete resection of the lesion full recovery took place [13]. Also known are the cases of compression of cardiac chambers, arrhythmias or even sudden cardiac death during exercise caused by a large pericardial cyst [8]. Such reports may justify implementing of surgical treatment after topographically relevant diagnosis.

Imaging useful for differential diagnosis of cysts, lipomatous tissue conglomerates, aortic aneurysms and solid tumors involves echocardiography, computed tomography (CT) and magnetic resonance (MR). Surgical treatment, with either open or thoracoscopic access, is usually needed in cases of large lesions causing compression of surrounding organs or in those with uncertain diagnosis. Parasitic cysts are preferably aspired and then injected with ethanol or silver nitrate after a 4-week pretreatment with daily dose of 800mg albendazol [2, 3, 5, 8, 9, 10]. Successful percutaneous treatment has also been reported in the case of symptomatic pericardial cyst [4].

Case report

A 57-year-old female patient had suffered from stable Canadian Cardiovascular Society (CCS) class I angina along with New York Heart Association (NYHA) class II heart failure symptoms for several years. She had also had a history of pharmacologically treated hypertension and dyslipidemia. In 2010 the echocardiogram was normal and the coronary angiography revealed no significant stenotic lesions. Accordingly, the patient was next referred for further pulmonary evaluation. During a routine follow-up visit in the cardiology outpatient clinic she presented a result of a computed tomography (CT) scan performed on pulmonologist's recommendation. It revealed a 36×10 mm lesion with the density of 33–41 hounsfield units (HU), extending along the anterolateral aspect of pericardial sac at the level of pulmonary trunk and showing no detectable contrast uptake. Findings

within the lung tissue were described as suggestive of nonspecific interstitial pneumonia, allergic alveolitis or other with need for further testing including biopsy.

Clinical status of the patient remained stable. Repeated echocardiogram again showed normal function of ventricles and atria with no external compression, unaffected mitral inflow pattern and normal appearance of pericardium. Consequently, magnetic resonance (MR) imaging was performed in axial planes and long axis views (Figure 1, 2). It confirmed the presence of a well-defined, elastic structure with signal morphology suggestive of high protein content. It was located in the lower mediastinum, anteriorly to the right ventricle outflow tract, pulmonary artery and anterior wall of the left ventricle. No delayed enhancement was noted and the size of the lesion measured in cardiac short axis view was 45x10mm. Interpreting radiologist suggested differential diagnosis between bronchocele or mucocele and ectopic thymus tissue.

With the benefit of MR findings echocardiography was once more performed. This time, in modified parasternal short axis view, it succeeded in visualizing a 15x30mm normoechogenic structure in pertinent location, which could simplify monitoring of the patient.

Additionally, the patient was scheduled by pulmonologist for a follow-up chest CT in 6 months. Nevertheless, before this could be accomplished, the patient was admitted to cardiology clinic in April 2015 due to stenocardia. Coronary angiography showed significant progression of coronary artery disease resulting in multivessel involvement with 50% stenosis of left main. Subsequently, coronary artery by-pass grafting was performed as follows: left internal mammary artery (LIMA) to left anterior descending artery (LAD), venous grafts to diagonal (Dg), marginal (Mg) branches and posterior descending artery (RPD). Considering the extent and length of the procedure the mediastinal structure was not addressed.

Conclusion

The observed lesion is mostly probably the result of allergic alveolitis or an ectopic thymus tissue [14]. The patient will remain under close pulmonary and cardiac follow-up with use of echocardiography and MR imaging.

Even though mediastinal lesions may not derive directly from pericardium their influence on heart and great vessels can still be substantial. Since the results of echocardiography and other imaging modalities applied in these patients are not necessarily entirely unambiguous the differential diagnosis requires careful vigilance.

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