

Left atrial non-Hodgkin's lymphoma: A case report

He Ya-qun , Zhou jiang-ying , Zhao lin , Liu jian ^A

Department of ultrasound ,the First Affiliated Hospital of Chengdu Medical College, Chengdu, 610500

Corresponding author

Jian Liu, Department of Ultrasound, First Affiliated Hospital of Chengdu Medical College, Chengdu, Si Chuan, China, 610500.

Tel:+8613684049446.

E-mail: liujiansh@126.com

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Abstract

Primary cardiac lymphoma is an extremely rare cardiac tumor. Herein, we report a 67-year-old male patient who sought medical attention for recurrent heart palpitations and left atrial mass on echocardiography. The left atrial space-occupying lesion was surgically removed. The final pathological diagnosis was cardiac non-Hodgkin's lymphoma, and the patient's heart palpitations and discomfort significantly improved after surgery.

Keyword : Echocardiography; Non-Hodgkin's lymphoma; Primary cardiac lymphoma

A 67-year-old male patient was admitted for recurrent heart palpitations for >1 month. Physical examination revealed a temperature of 36.5 °C, pulse rate of 78 bpm, blood pressure of 135/74 mmHg, regular heart rhythm, normal heart sounds, no murmurs in different valve auscultation areas, and no apparent positive signs. The patient was generally in good condition and had no history of other diseases. Trans-thoracic echocardiography showed an solid lesion in the left atrium, approximately 4.2 cm × 2.5 cm in size, with clear borders, and uneven internal echoes, which oscillated with pulsations, entered the left ventricle during the diastolic phase, and decreased the mitral valve orifice area, with an effective area of approximately 1.4 cm² (Figures 1 and 2). Transesophageal echocardiography showed a hyperechoic mass in the left atrium that was attached to the interatrial septum, approximately 3.9 cm × 2.7 cm in size, with clear borders, and uneven internal echoes, which oscillated with pulsations, entered the left ventricle during the diastolic phase and decreased the mitral valve orifice area. Ultrasound revealed

an isoechoic-hyperechoic mass in the left atrium considering myxoma and moderate mitral valve stenosis accompanied by mild regurgitation, which is probably caused by myxoma (Figures 3 and 4). Non-enhanced chest computed tomography (CT) revealed cord-like enhanced hyperdense shadows in the lingular segment of the left upper lung lobe, a posterior segment of the right upper lung lobe, and basal segment of the right lower lung lobe, and possible inflammatory lesions, combined with clinical findings, as well as small subpleural nodular shadows in the apical segment of the left upper lung lobe and possible inflammatory nodules, vascular shadows, and lymph node shadows in the mediastinum. The patient underwent left atrial space-occupying lesion removal surgery. Intra-operative findings include the following: left atrial space-occupying lesion diameter of 3.0 cm × 5.0 cm, the lesions are dark-red jelly-like space-occupying, intact, and pedunculated. The base of the lesion was located at the left atrial wall on the anterior mitral valve leaflet and partially obstructed the mitral valve orifice (Figure 5). Pathological evaluations revealed the following: <left atrial mass> tumor cell immunohistochemistry LCA(+), MPO(-), EMA(-), S-D(-), CD56(-), MyoD(weakly +), CD38(-), CD138(-), K(-), λ(-), CD3(-), CD5(-), CD20(diffuse+), CD79a(diffuse+), PAX-5(diffuse+), CD30(-), ALK(-), BCL-2(+), BCL-6(few cells+), MUM-1(diffuse+), CD10(-), CyclinD1(-), CD15(-), CD43(-), Myogenin(-), EBER(-), C-Myc(+, around 70%), NF-KB(+), P53(-), and Ki-67(+, ~90%). Combined morphology and immunohistochemical results suggested that this mass was a non-Hodgkin's lymphoma, which is a high-grade B-cell lymphoma (non-germinal center phenotype) accompanied by a dual expression of BCL-2 and C-Myc. The FISH assay was recommended to confirm the presence of double-hit lymphoma (Figure 6). Heart palpitations and other discomforts in the patient significantly improved after surgery.

Figure 1. The sectional view of transesophageal echocardiography of the 4 heart chambers. A hyperechoic mass in the left atrium that is attached to the interatrial septum, approximately 3.9 cm × 2.7 cm in size, with clear borders, and uneven internal echoes.

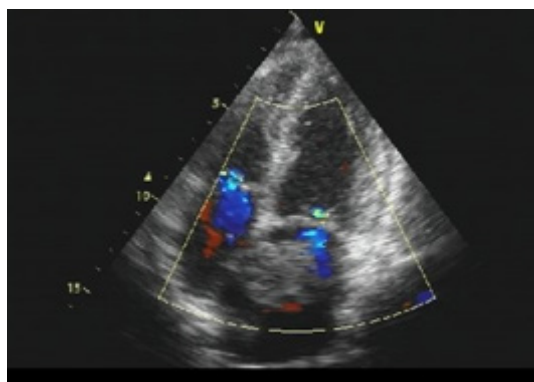


Figure 2. Slightly hyperechoic mass in the left atrium oscillates with pulsation and enters the left ventricle during the diastolic phase (arrows).

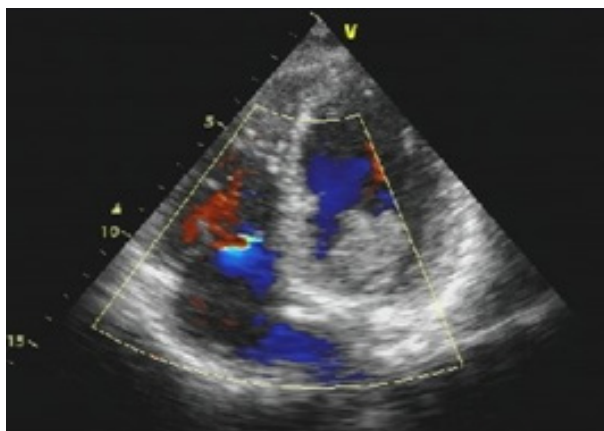


Figure 3. The sectional view of the 4 heart chambers in transesophageal echocardiography.



Figure 4. The dual atrial sectional view in transesophageal echocardiography: a hyperechoic mass in the left atrium that is attached to the interatrial septum, approximately 3.9 cm × 2.7 cm in size, with clear borders, and uneven internal echoes, which oscillates with pulsation and enters the left ventricle during the diastolic phase (arrows).

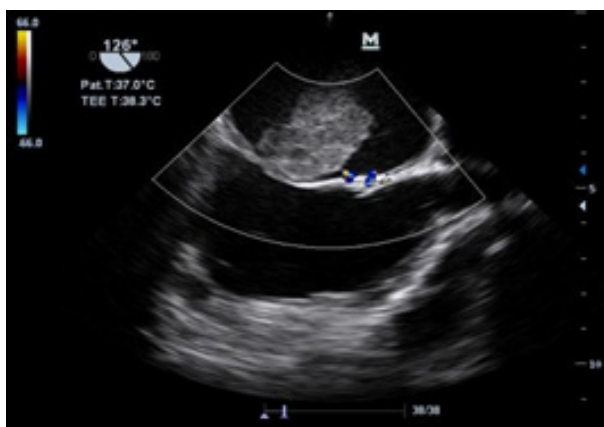
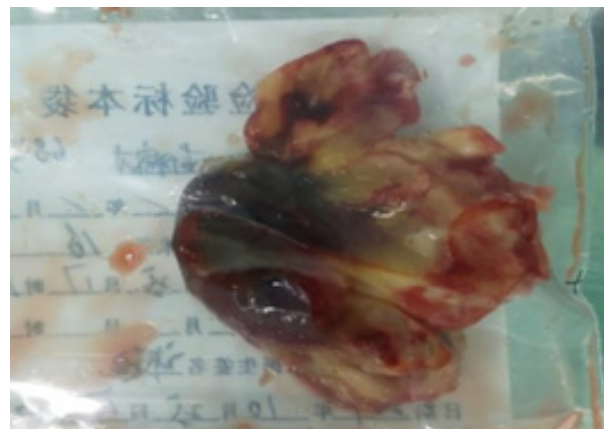
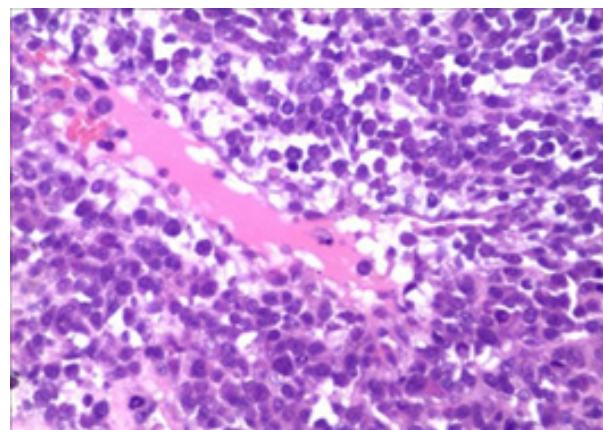


Figure 5. Tumor mass after surgical resection



Figures 6 and 7. Pathology: HE staining ×200



Discussion

Primary cardiac lymphoma (PCL) is rarely seen in clinical practice and accounts for 1.3%–2% of cardiac tumors[1]. As reported, the incidence is higher in males than females and most cases are diffuse large B-cell lymphoma[2]. Additionally, a study reported that PCL mostly occurs in patients with abnormal immune function since its incidence is higher in patients with acquired immunodeficiency syndrome and those who underwent organ transplantation[3]. PCL cases in the 4 heart chambers have been reported[4–6]. However, according to statistics, it usually occurs in the right heart, particularly the right atrium. The tumor may also invade the epicardium and pericardium, and comorbid pericardial invasion and pericardial effusion are common in clinical practice[7]. Additionally, most PCL cases are often accompanied by serous pleural effusion, elevated lactate dehydrogenase, and hypoalbuminemia[8]. PCLs are usually large and have irregular morphology. Transthoracic echocardiography has high sensitivity toward most cardiac

tumors and can clearly show tumor size, morphology, site, and mobility, and detect changes in tumor course and its secondary cardiac changes. Transesophageal echocardiography has higher sensitivity and specificity for certain tumors than transthoracic echocardiography and has advantages in detecting tumor size, morphology, site, mobility, and hemodynamic changes. Additionally, echocardiography can help in determining the benignancy/malignancy of tumors. A study pointed out that most benign tumors are present in the left heart, pedunculated, with high mobility, and clear borders with surrounding tissues; whereas, malignant cardiac tumors are mostly present in the right heart, pedunculated or non-pedunculated, without clear borders with the myocardium, with uneven echoes, and is often accompanied by pericardial effusion or pleural effusion[9]. However, in addition to myxoma, accurately diagnosing the pathological nature of other cardiac tumors in echocardiography is difficult. If PCL is highly suspected in a radiologic examination, biopsy is more important to clarify the nature of the lesion[10]. In our patient, both transthoracic echocardiography and transesophageal echocardiography showed solid lesions in the left atrium, and the diagnosis was myxoma, diagnosis did not match the pathology examination result due to a few possible reasons as follows: 1. Primary cardiac lymphoma is rare and ultrasound physicians have low awareness of the lesion; 2. Primary cardiac lymphomas often occur in the right atrium, but the tumor occurred in the left atrium and showed polyp-like growth, with inadequate malignant tumor characteristics, and is difficult to differentiate from myxomas. In the future, ultrasound physicians should comprehensively understand the nature of different possible cardiac space-occupying lesions and characteristic echocardiograms and combined with medical history to improve diagnostic accuracy. Additionally, immunohistochemical results are necessary for clinical treatment and prognosis evaluation.

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