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Case Report

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Hodgkin's Lymphoma Transformation into Diffuse Large B Cell Lymphoma Presented as a Right Atrial Mass: A Case Report

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ABSTRACT

Cardiac involvement can occur in lymphoma, with the right heart being predominantly affected. The prognosis for patients with cardiac involvement is poor. A 28-year-old man, with a 4-year history of Hodgkin's lymphoma, presented with progressive shortness of breath and ascites. Chest X-ray (CXR) and CT scan revealed multiple masses in the mediastinum. To exclude a pulmonary embolism, the patient underwent CT angiography, which incidentally revealed a filling defect in the right atrium. Trans-esophageal echocardiography confirmed the presence of a mass in the right atrium. Surgery was performed to obtain samples of the mediastinal masses and the right atrium mass. Pathological results indicated that the nature of the right atrium mass was diffuse large B-cell lymphoma (DLBCL), suggesting that the Hodgkin's lymphoma had transformed into DLBCL. The transformation of Hodgkin's lymphoma to DLBCL can occur, and cardiac involvement is not common. Given that the transformation of Hodgkin's lymphoma into DLBCL can occur many years after the initial diagnosis, the authors recommend follow-up of these patients, as the prognosis may be worse than for non-transformed subtypes.

Introduction

Metastatic tumors are more prevalent than primary cardiac tumors. Cardiac metastases of lymphoma origin are among the most malignant cardiac tumors. Autopsy evaluations of patients with lymphoma have revealed that 16% of patients with Hodgkin's lymphoma and 18% of patients with non-Hodgkin's lymphoma had cardiac involvement [1-4]. B-cell lymphoma is the most frequent cardiac hematological malignancy [5]. The prognosis for patients with either primary or secondary cardiac lymphoma is generally poor.

The authors present a patient with a history of Hodgkin's lymphoma that transformed into DLBCL with cardiac involvement.

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Case Presentation

The patient, a 28-year-old man, presented with progressive dyspnea and ascites. He has been a known case of Hodgkin's lymphoma for 4 years and has been undergoing radiotherapy and chemotherapy. He received chemotherapy for the last time one week before the current visit, after which he developed dyspnea and swelling in the abdomen and face.

Physical examination revealed mild tachycardia and tachypnea, facial swelling, ascites, peripheral edema (+2), and decreased lung sounds at the base of both lungs.

A chest X-ray upon admission showed mediastinal widening and pleural effusion. A CT scan revealed multiple masses in the mediastinum. Examination of the ascites fluid showed it to be a high SAAG fluid.

A contrast-enhanced spiral CT scan of the chest revealed several masses, including a mass (9.2 × 5.0 cm) above the aortic arch on both sides of the trachea, a mass (7.0 × 6.5 cm) in the right para-mediastinal area extending close to the anterior wall of the thorax, and a mass (10.8 × 7.5 cm) in the right para-cardiac area between the heart and the diaphragm. Elevation of the left diaphragm and passive collapse of the lungs were also evident. Bilateral pleural effusion and mild pericardial effusion were seen.

A CT angiography of the pulmonary artery was performed to rule out pulmonary embolism, which incidentally revealed a filling defect (4.6 × 3.0 cm) in the right atrium, indicating the possibility of a mass (Fig. 1). It was also found that the upper part of the SVC and IVC were under pressure from the mass and showed a relative decrease in diameter (Fig. 2). No evidence of aortic arch stenosis was observed.

The patient underwent a transthoracic echocardiography (TTE) and, due to poor view, subseq-uently underwent trans-esophageal echocardiography (TEE). Prior to TEE, an endoscopy was performed to rule out esophageal stenosis due to a complaint of dysphagia. No strictures were observed, only varicose veins in the upper and middle portions of the esophagus. TEE revealed an immobile large mass, approximately 4.8 * 3.6 cm, attached to the posterior wall of the right atrium that occluded the IVC entrance to the RA, suggestive of tumor invasion (Fig. 3). The patient underwent surgery, the RA mass was removed, SVC was reconstructed, and extracardiac masses that entrapped the IVC were resected. Samples from the intracardiac mass, intramediastinal lymph node, mediastinal mass, and pericardial tissue were taken for pathological examination. Immunohistochemistry revealed evidence of large B-cell lymphoma in all samples. The patient was hospitalized in the ICU for about 1 month after surgery. After confirming the diagnosis, the authors initiated a new chemotherapy regimen and the patient's symptoms decreased and his general condition improved. However, after three months, he refused to continue treatment and died four months later.

Discussion

Primary cardiac tumors are rare. Malignant tumors

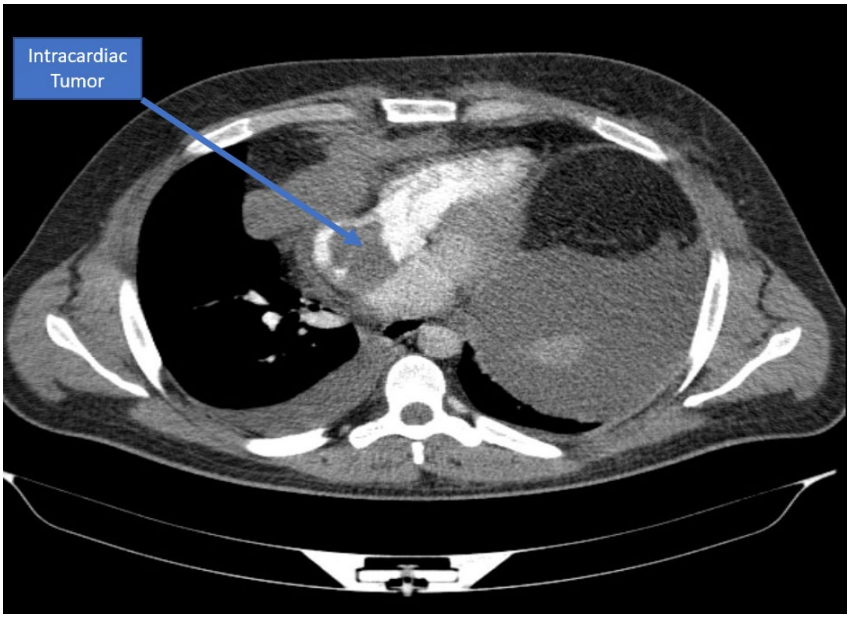

Fig. 1. Intracardiac tumor, contrast enhanced CT scan

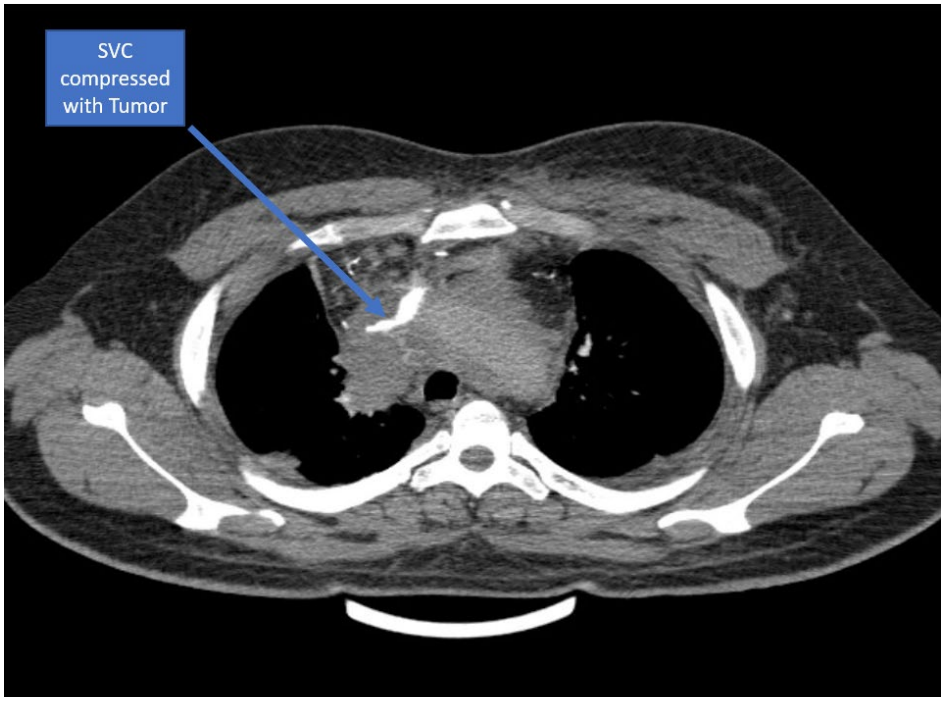

Fig. 2. SVC compression with tumor, contrast enhanced CT scan

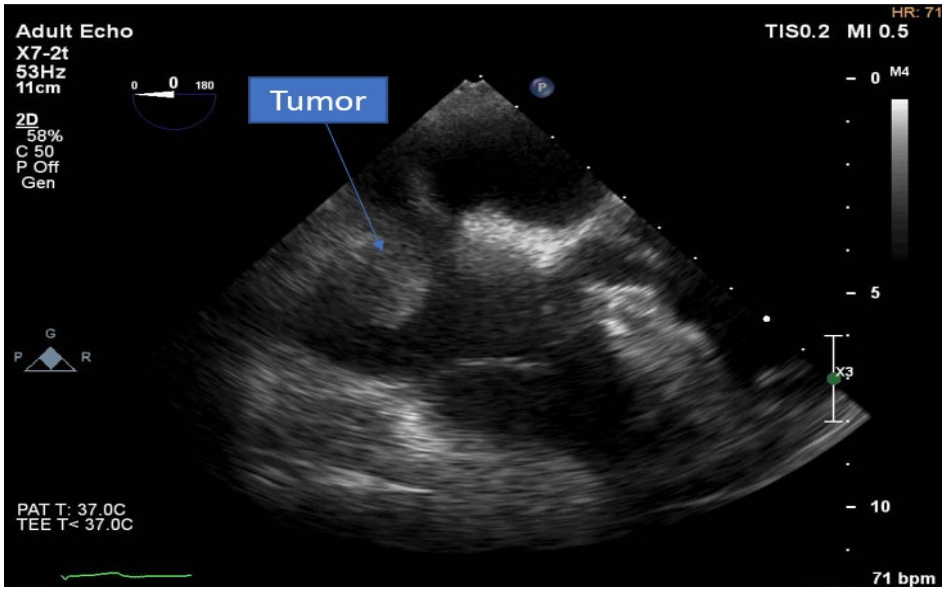

Fig. 3. Intracardiac tumor, Transesophagial echocardiography

constitute 15% of primary cardiac tumors. The most common primary malignant tumors are sarcomas and lymphomas [1, 6]. Primary cardiac lymphomas are rare, with a frequency of 1.3% of all primary cardiac tumors [7] and 0.5% of all lymphomas [5]. They tend to involve the right-sided cardiac chambers, especially the right atrium, and are often multifocal [8].

B-cell lymphoma is the most frequent cardiac hematological malignancy [5]. The prognosis for patients with either primary or secondary cardiac lymphoma is usually poor. While indolent lymphomas have a favorable prognosis, each indolent lymphoma has the potential to transform into an invasive subtype. Hodgkin's lymphoma can also transform into DLBCL [9]. Imaging modalities such as chest X-ray, echocardiography, CT scan, magnetic resonance imaging, and radioisotope imaging can be used for the diagnosis of lymphoma.

In a large study conducted by the Mayo Clinic, it was found that 7.6% of patients with nodular lymphocyte-predominant Hodgkin's lymphoma (NLPHL) transformed into DLBCL. Those with a history of chemotherapy or splenic involvement were at a greater risk for transformation. Studies on the prognosis of transformed Hodgkin lymphoma into DLBCL have yielded contradictory results [10]. Early detection and appropriate management may improve patient survival.

The authors' patient, with a history of Hodgkin lymphoma treated by chemo-radiation therapy, presented with progressive dyspnea and edema. In addition to chemotherapy-induced heart failure, it is important to consider that compressive effects and obstruction of heart structures by a mass can lead to the patient's symptoms. Echocardiography is the first appropriate step to evaluate the pericardium, cardiac chambers, and valves. It seems necessary to conduct scheduled follow-ups and a diagnostic plan for patients who have survived from Hodgkin's lymphoma

Declarations

Authors contribution

AS performed the echocardiography, contributed to data collection, and participated in writing the manuscript. AS also collected data, followed up with the patient, interpreted the CT scan, and reviewed the manuscript. MS performed the surgery and treated the patient. AM contributed to writing the manuscript and revisions. All authors read and approved the final manuscript.

Availability of data and materials

The data is available from the corresponding author upon reasonable request.

Ethics approval and consent to participate

This study adhered to the tenets of the Declaration of Helsinki. The local ethics committee approved this case report.

Consent for publication

The authors obtained written consent from the patient for the publication of this case report.

Competing Interest

The authors declare no potential conflicts of interest.

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