RIGHT VENTRICULAR MYXOMA WITH SYNCOPE BY THE OBSTRUCTION OF RIGHT VENTRICULAR OUTFLOW TRACT

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Abstract : We report a rare case of right ventricular myxoma that was almost occupying the right ventricular outflow tract. The patient was admitted for syncope, and three-dimensional reconstruction of the heart using multislice spiral computed tomography made apparent a large tumor mass occupying both the right ventricular outflow tract and the proximal main trunk of the pulmonary artery. Invasive right atrial angiography demonstrated a tumor mass rushing back and forward in the right ventricular outflow tract, and mostly blocking blood flow to the pulmonary artery. Based on these findings, the patient underwent successful resection of the right ventricular mass arising from right ventricular anterior papillary muscle. The pathological examination of the mass was consistent with typical myxoma cells.

Key words : myxoma, complication, computed tomography

INTRODUCTION

Intra-cardiac myxoma is the most common tumor of the heart, with an estimated incidence of 0.5 cases per million people per year[1]. The symptoms vary greatly among patients depending on the size and location of the tumor. Up to 80% of myxoma localizes in the left atrium, whereas those emerging from the right side of the heart are rare[2]. Here we present a rare case of right ventricular myxoma who complained of syncope because of the temporal occlusion of right ventricular outflow tract by tumor mass.

CASE REPORT

A 67-year-old woman with the complaint of syncope was admitted to our hospital. On admission, she had a blood pressure of 146/86 mmHg with no signs of right-sided heart failure. On physical examination, a grade 2/6 systolic ejection murmur was audible at the second left parasternal intercostal space. The electrocardiogram showed a normal sinus rhythm of 72 beats/min. The chest x-ray film showed normal results. Transthoracic

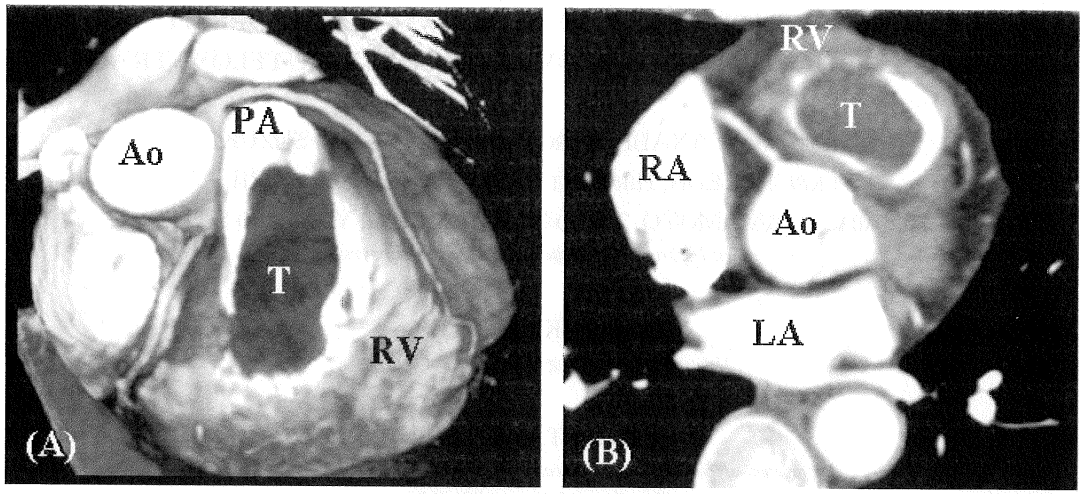

Fig. 1. (A) Volume rendering cardiac images of MSCT. Massive cardiac myxoma occupying right ventricular outflow tract, and protruding into the main pulmonary artery. (B) Axial transverse reconstruction (multiplaner reformation: MPR) CT of the right ventricular outflow. Note the narrowing of right ventricular outflow tract by cardiac myxoma. Ao= ascending aorta, PA= pulmonary artery, RV= right ventricle, RA= right atrium, LA= left atrium, T= tumor mass.

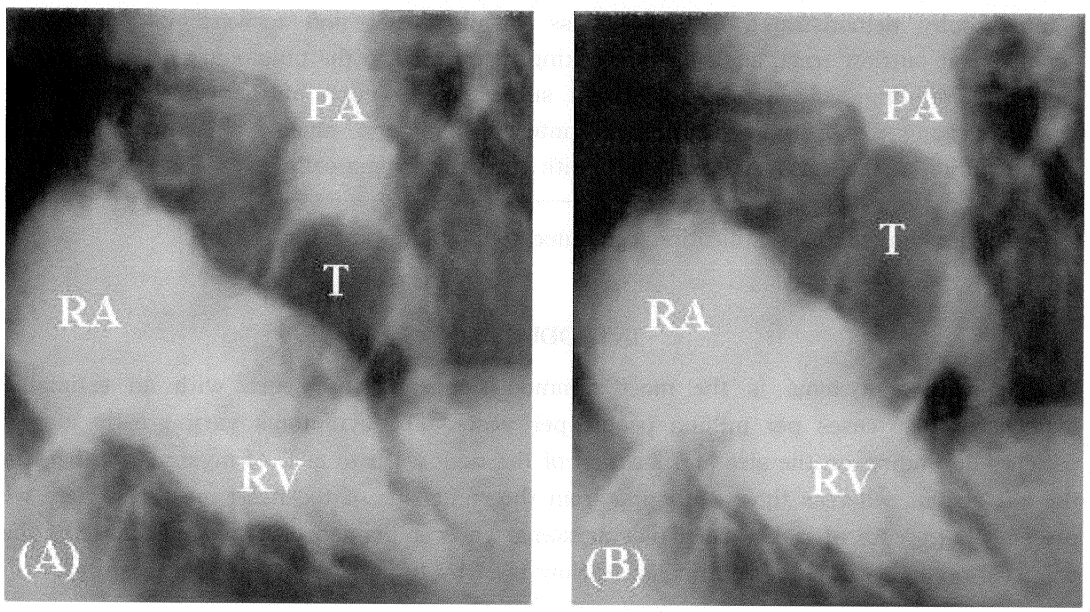

Fig. 2. Right atrial angiography. Note that tumor mass moving back and forward in the right ventricular outflow tract, and mostly wedging into main trunk of pulmonary artery during systole. (A) diastolic phase. (B) systolic phase. PA= pulmonary artery, RV= right ventricle, RA= right atrium, T= tumor mass.

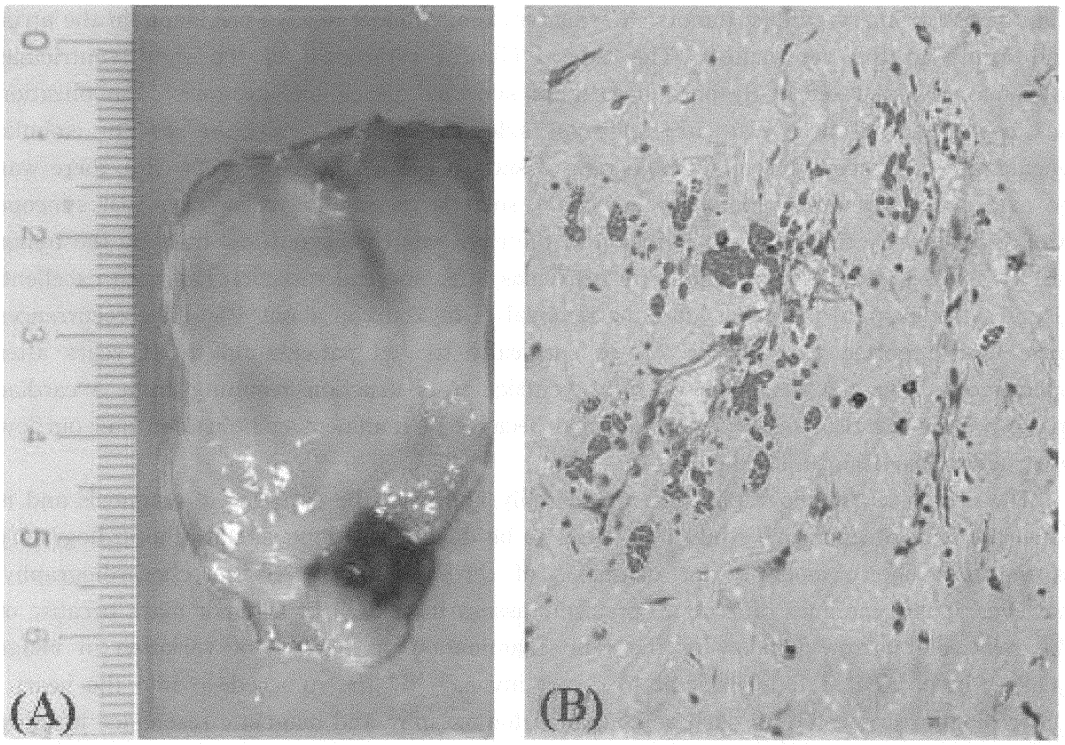

Fig. 3. (A) Macroscopic view of the operative specimen. A round, firm, and encapsulated mass measuring 3.5 X 5.7 cm that attached to the right ventricular anterior papillary muscle. (B) High power microscopic appearance of cardiac myxoma shows minimal cellularity. Only scattered spindle cells with scant pink cytoplasm are present in a loose myxoid stroma.

echocardiography revealed an intracardiac movable mass originating in the tricuspid valve. The patient underwent a computerized tomographic (CT) examination of the heart with a 4-slice multislice CT (MSCT, Somatom Volume Zoom, Siemence, 0.5-second rotation time, 4×1mm detector collimation, 1.25mm slice-width). A 3-D reconstruction of the heart clearly demonstrated a large tumor mass occupying both the right ventricular outflow tract and the proximal main trunk of the pulmonary artery (Fig. 1A). Axial transverse reconstruction also showed severe narrowing of the right ventricular outflow lumen by the mass (Fig. 1B). Invasive right atrial angiography demonstrated a tumor mass rushing back and forward in the right ventricular outflow tract, and mostly blocking blood flow to pulmonary artery (Fig. 2A and 2B). With the aim of preventing sudden death due to pulmonary embolism, the patient underwent surgical removal of the right ventricular mass. Macroscopic examination revealed a fragile tumor mass (5×3cm) arising from the right ventricular anterior papillary muscle (Fig. 3A). The histological examination of surgical specimens demonstrated typical myxoma cells (Fig. 3B). The postoperative course was uneventful.

DISCUSSION

Primary cardiac tumor is relatively rare, and the proportion of myxoma occupies more

than half of primary cardiac tumors[3]. Cardiac myxoma almost always originates in the atria, and rarely in the ventricules[2]. The typical clinical symptoms of the right ventricular myxoma are illustrated as dyspnea, chest pain, syncopal attack, and cyanosis[4]. Embolization has been reported in 8% to 10% of right sided cardiac myxoma[5]. In case of embolic phenomena or syncope there is a high risk of sudden death[6]. In the present case, there was no evidence of previous pulmonary embolism, so it is reasonable to consider that syncope was developed by the temporal occlusion of the right ventricular outflow tract by the tumor mass. The prognosis for patients with myxomas after surgical resection has been excellent. Usually, the hospital mortality after the removal of myxoma is about 4%[2]. Late recurrences have been reported to occur in 2% of surgically treated patients up to 24 years after operation[7]. After the diagnosis of right ventricular obstruction resulting from a cardiac mass, prompt surgical resection is indicated because of imminent embolization and outflow obstruction, resulting in sudden death.

The use of echocardiography has considerably improved the accuracy of diagnosis and is often the only preoperative study that needs to be done. Two-dimensional echocardiography is the first choice modality for diagnosis of cardiac tumors. With echocardiography, however, it is sometimes difficult to precisely assess the extent of a tumor mass because of the relatively narrow window of the echo examination or because of variation in image quality. In particular, it is difficult to detect invasion by the tumor deep into the heart. Other diagnostic techniques such as computed tomography and magnetic resonance imaging have been suggested[8]. Computed tomography and magnetic resonance imaging scanning may allow precise identification, localization and size determination. Fortunately, recent technological development of MSCT scanners with retrospective ECG gating results in a significant reduction of heartbeat-related motion artifacts, and three-dimensional reconstruction of the CT images enables detailed visualization of the cardiac anatomy. Using MSCT in the present case, we were able to precisely determine the localization and size of the tumor and to visualize severe narrowing of the right ventricular outflow lumen by the tumor.

This case report highlights the fact that right ventricular outflow obstruction associated with episodes of syncope may be related to a cardiac myxoma. We recommend the use of MSCT scanning to obtain important information that accurately identifies the precise anatomy of right ventricular myxoma and aids the surgical procedure.

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