

Asymptomatic metastatic osteosarcoma to the right ventricle: Case report and review of the literature

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Metastatic cardiac tumors are far more common than primary tumors, and benign primary cardiac tumors are common than malignant tumors. We report a 22-year-old Saudi woman with right femur osteosarcoma who was found to have a large right ventricular mass by transthoracic and transesophageal echocardiography. Diagnosis was highly suggestive by cardiac magnetic resonance imaging (MRI) and fluorodeoxyglucose positron emission tomography/computed tomography (FDG PET/CT) scan. We performed a review of the literature for metastatic osteosarcoma of the right ventricle.

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Abbreviations: RV, right ventricle, TTE, transthoracic echocardiography, TEE, and transesophageal echocardiography, MRI, magnetic resonance imaging, FDG, fluorodeoxyglucose, PET, positron emission tomography, CT, computed tomography.

Keywords: Cardiac tumors, Intracardiac metastasis, Cardiac osteosarcoma

Introduction

The heart may rarely be affected by primary or secondary tumors. Secondaries may occur by local extension or haematogenous spread [8,6]. Osteosarcoma very rarely metastasizes to the heart. About 27 cases in the last 55 years have been reported in the literature so far. However, the authors were unable to find any published description of a secondary intracardiac osteogenic sarcoma exactly like the one reported in this report, although, there have been rare lesions with

somewhat similar features in the literature [1]. Very rarely, cardiac tumors are incidentally discovered in asymptomatic patients [3]. We report a rare case of asymptomatic metastatic osteosarcoma to the right ventricle (RV) with a review of the literature.

Case report

A 22-year-old Saudi woman was diagnosed with high grade right femur osteosarcoma. She had

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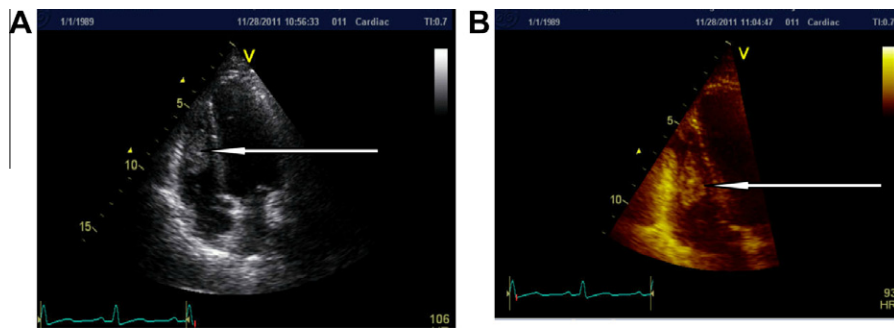


Figure 1. Transthoracic echocardiography showing RV mass. (A) Without and (B) with color superimposition.

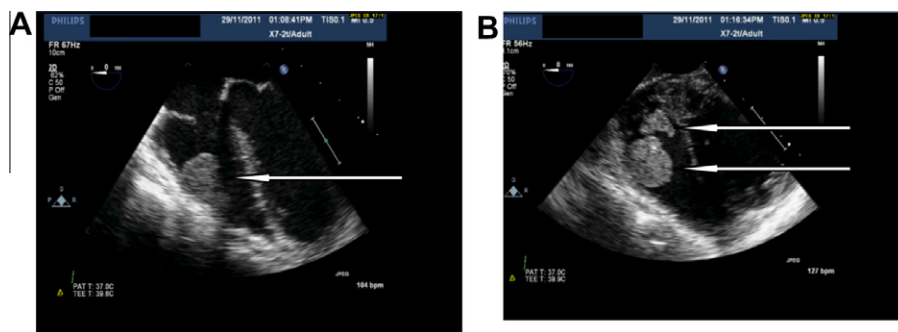


Figure 2. Transesophageal echocardiography showing RV mass. (A) Showing one mass and (B) showing 2 lobules.

limb-sparing surgery shortly after diagnosis followed by adjuvant chemotherapy. She did not have any cardiac complaints. During her elective admission under oncology, she had trans-thoracic echocardiography for pre-chemotherapy assessment and a well-defined RV mass was found (Fig. 1A and B). Differential diagnosis included tumor or thrombus.

Trans-esophageal echocardiography confirmed that the mass was attached to the RV free wall with a broad base. The mass was homogenous with multiple lobules and measured 4.5×3.2 cm (Fig. 2A and B).

Cardiac MRI with and without contrast was done. It showed a large mass in the RV. It was arising from the RV free wall and was occupying almost half of the RV (mid and apical cavity). It had irregular edges with intermediate enhance-

ment on T1 images and is hyperintense on T2 stir images. There was some evidence of contrast uptake on T1 weighted contrast images. It did not seem to have a significant fatty component on T1 weighted images with fat saturation. The magnetic resonance imaging (MRI) features were consistent with tumorous involvement of the RV (Fig. 3A and B).

A transthoracic echocardiography performed 4 months before the current admission was normal with no masses detected in the RV. This ruled out the possibility of a primary tumor from the heart and also indicates rapidly progressing mass in the RV.

Right ventricular biopsy through a femoral approach was performed.

Five biopsies were taken; the histopathology revealed thrombus and myocardium with no

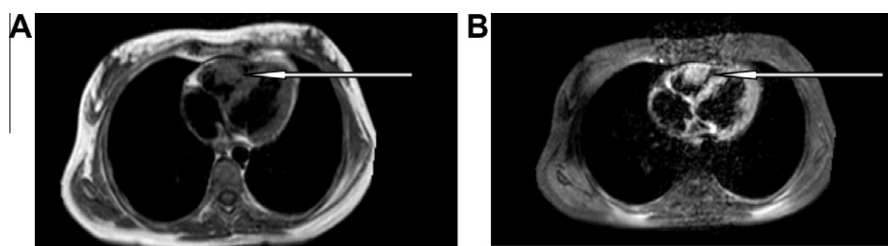


Figure 3. Cardiac MRI showing the RV mass. (A) Without contrast and (B) with contrast.

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