

In Search of a Less Invasive Approach to Cardiac Tumor Diagnosis



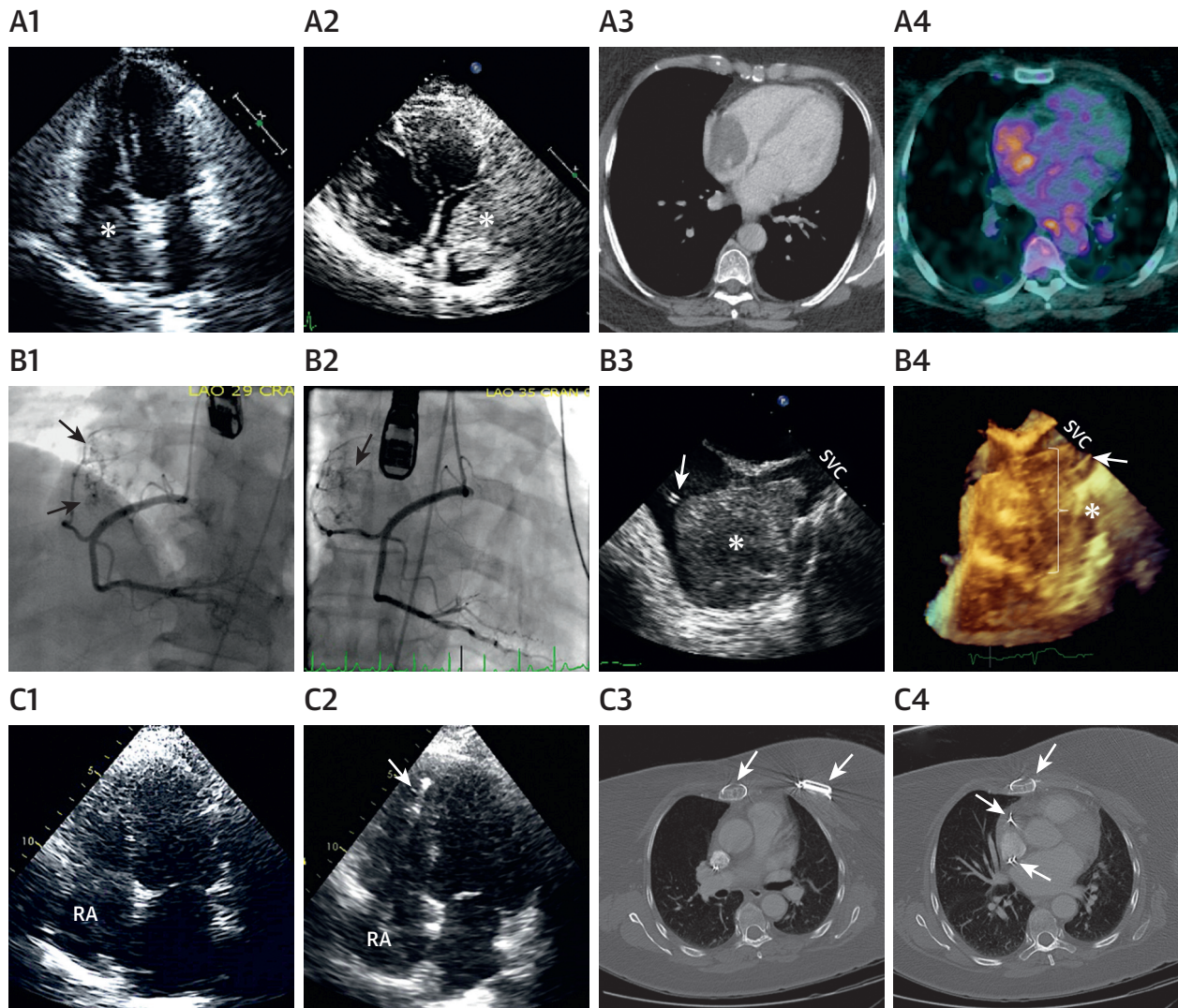
Multimodality Imaging Assessment and Biopsy

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PRIMARY CARDIAC TUMORS ARE RARE, WITH MYXOMA BEING THE MOST COMMON BENIGN HISTOLOGY, whereas malignancies are usually sarcomatous (1). They are found incidentally or on imaging prompted by flow obstruction or valvular dysfunction symptoms. The presence of cardiac tumors imposes a complete multimodality evaluation (Figures 1 to 4). Transthoracic echocardiography is an appropriate initial imaging modality due to its wide availability and lack of radiation, but it provides limited tissue characterization (2). Cardiac magnetic resonance is the reference modality for differentiation and characterization of cardiac masses (2). Computed tomography or positron emission tomography are useful complementary tests for patients unable to undergo cardiac magnetic resonance or for distinguishing between benign and malignant tumors (1). Even with the established imaging diagnosis of cardiac tumor, “the tissue is the issue.” Imaging-guided management should involve histopathologic diagnosis via biopsy, which is fundamental in this era of personalized cancer care. Data regarding cardiac tumor biopsies is limited.

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FIGURE 1 Right Atrial Myxoma in a Patient With Ovarian Cancer

A 61-year-old woman with ovarian cancer was referred for a right atrial (RA) mass (**asterisk**) discovered incidentally on transthoracic echocardiogram as a filling defect in the RA (**A1, A2**). (**A3**) Computed tomography showed a hypoattenuating, heterogeneous mass (4.7×2.7 cm). (**A4**) Positron emission tomography revealed thoraco-abdomino-pelvic metastases and a corresponding area of hypoattenuation in the RA, suggestive of cardiac metastasis. Histologic diagnosis was needed to differentiate between cardiac metastasis and primary tumor. (**B1, B2**) Coronary angiography showed "tumor blush" (**arrows**). (**B3, B4**) Transesophageal echocardiography and fluoroscopy-guided RA tumor biopsy (**arrows** at biptome, **asterisk** on tumor; [**B4**] shows a 3-dimensional reconstruction) diagnosed atrial myxoma, abutting the superior vena cava (SVC). Surgical removal of the mass with reconstruction of the RA free wall and dual-chamber pacemaker implantation were performed. Follow-up transthoracic echocardiogram showed normal RA (**C1**) with pacemaker leads (**arrow**) (**C2**). (**C3, C4**) Chest computed tomography showed sternal wires and artifacts (**arrows**) from the pacemaker.

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