Right Atrial Mass: 
Time for Contrast Echocardiography

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CASE REPORT

We present the case of a 42-year-old man with dyspnea New York Heart Association class III-IV, leg edema and ascites for the last 3 months. ECG and chest X-ray were unremarkable. The echo study revealed a large triangular mass in the right atrium attached to the interatrial septum with a wide base. There were also severe tricuspid stenosis and regurgitation. A real time myocardial contrast enhancement (MCE) echocardiographic study with low mechanical index and bolus injection of contrast showed contrast hyper-enhancement of the tumor compared to the surrounding myocardium, suggesting a highly vascular or malignant tumor (visual assessment). Mass contrast enhancement (MaCE) persisted several minutes after the disappearance of MCE (Figure 1, panels A-C). A computed tomography (CT) study confirmed the location, shape and vascularity of the mass, while histological examination after surgery disclosed an angiosarcoma. The patient succumbed to his disease 2 months later.

DISCUSSION

During continuous infusion of contrast, which is a well-established imaging technique, malignant tumors display a stable contrast hyper-enhancement compared to the surrounding myocardium. On the contrary, with the bolus injection of contrast, as in our study, there is a transit time of tissue contrast enhancement which is proportional to tissue vascularity (blood volume-BV-) and inversely proportional to blood flow (BF) (Figure 2). Using this technique, malignant tumors, such as angiosarcoma,
display persistence of contrast enhancement compared to the surrounding myocardium. This can help in the differential diagnosis between malignant and other tumors of the heart.