

Images in cardiovascular medicine

Evidence, at intravenous contrast echocardiography, of coronary arterial supply to a metastatic cardiac tumor

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In January 2000 a 55-year-old man was referred to our cardiology center for the evaluation of a suspected cardiac metastatic lesion. The patient had been submitted to partial hepatectomy in July 1998, due to hepatocellular carcinoma grade pT3, G2. Radiation therapy of a subcutaneous metastatic mass in the thoracic wall had subsequently been performed twice in 1999. The patient had also been submitted to transarterial chemoembolization and radiofrequency thermoablation of recurrent tumor lesions in the remaining liver segments and in the thoracic wall. In January 2000 nuclear magnetic resonance evaluation revealed the presence, within the apex of the right ventricle, of a lesion approximately 40 mm in diameter (Fig. 1). On ad-

mission the patient had no cardiac symptoms, and both cardiac auscultation and electrocardiography were normal. There were no signs of cardiac failure or of jugular venous congestion. A transthoracic two-dimensional echocardiographic study (Fig. 2) was suggestive of a large, non-mobile, echogenic mass in the apical portion of the right ventricular cavity with unimpaired diastolic filling. Using Levovist (Schering AG, Berlin, Germany) (Fig. 3), the patient was submitted to intravenous echocontrast study: the simultaneous appearance of the contrast medium within the interventricular septum and the right ventricular tumor mass suggested the presence of a coronary arterial supply to the latter. Coronary angiography confirmed that the blood supply

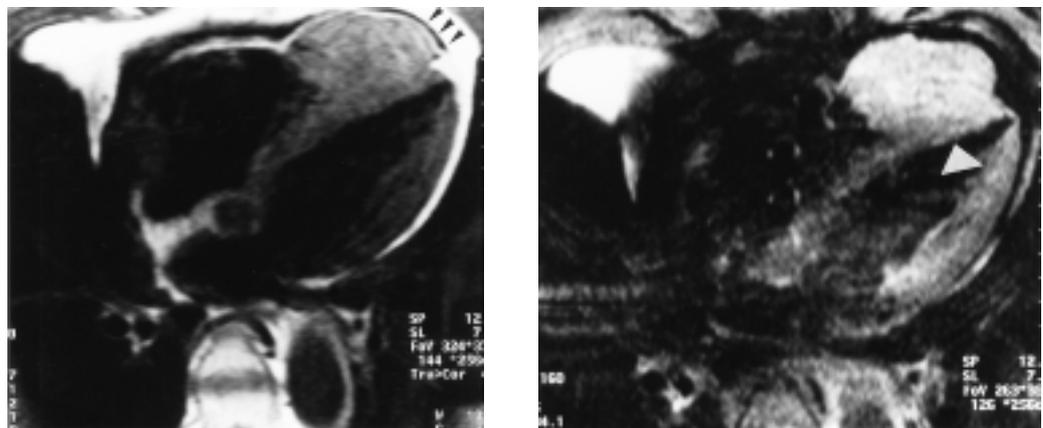


Figure 1. Nuclear magnetic resonance imaging, long-axis section of the cardiac chambers. Left panel: in the T1 sequence, the intensity of the signal of the tumor mass (arrowheads) is similar to that of the myocardium. Right panel: in the weighed T2 sequence the mass appears hyperintense. The interventricular septum also appears thickened (arrowhead), possibly due to tumor infiltration.

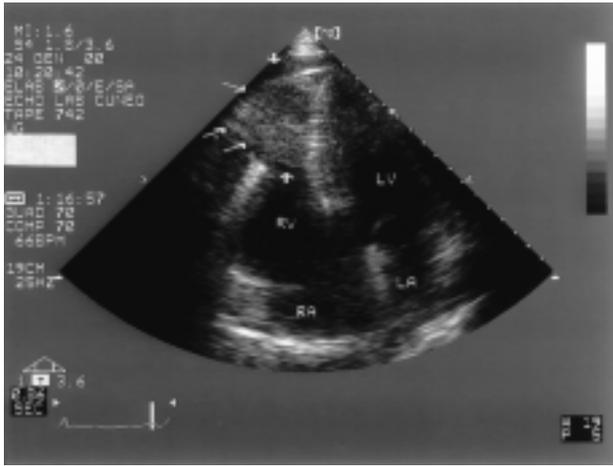


Figure 2. Two-dimensional transthoracic echocardiographic study, 4-chamber view. A single, non-mobile echogenic mass in the apical portion of the right ventricle (RV) is apparent (arrows). LA = left atrium; LV = left ventricle; RA = right atrium.

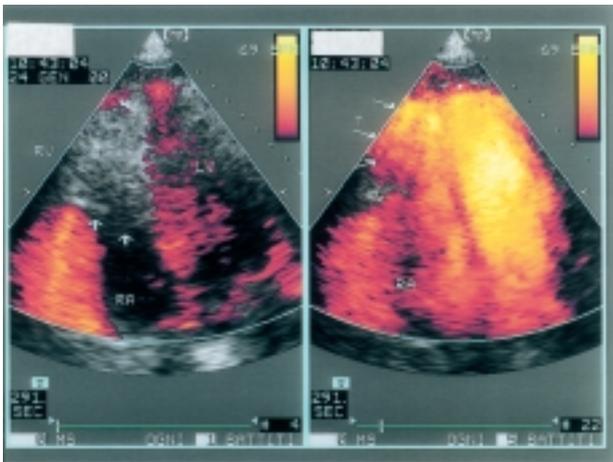


Figure 3. Two-dimensional intravenous echocontrast study, same view as figure 2. The left ventricular myocardial perfusion is detected in harmonic power Doppler mode. Left panel: before intravenous infusion of Levovist the echogenic mass (arrows) is visible in the apical portion of the RV. Right panel: during infusion of Levovist. The appearance of the contrast medium within the mass (arrows) at exactly the same time as in the LV, the interventricular septum and the apical/lateral walls of the LV suggests the presence of a common coronary arterial supply. T = tumor mass. Other abbreviations as in figure 2.

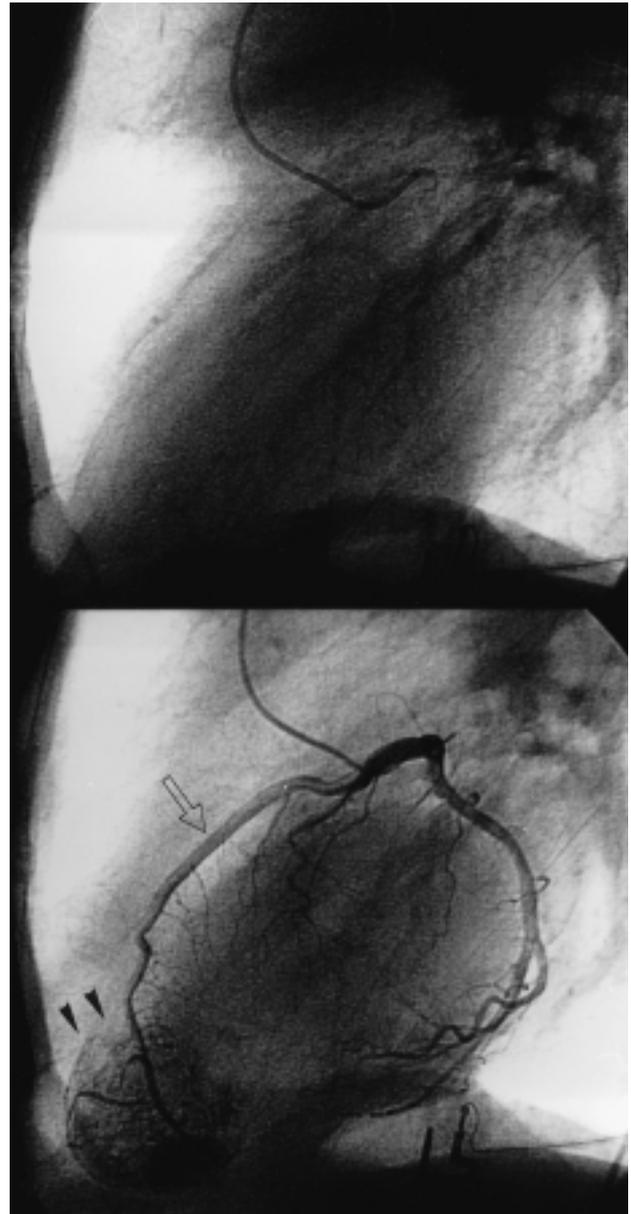


Figure 4. Left coronary angiogram in the left lateral projection. Upper panel: before contrast injection. Lower panel: at the end of contrast injection a marked blush area (arrowheads) is apparent at the cardiac apex, in the distribution area of the distal left anterior descending coronary artery (arrow).

to the mass within the myocardium at the right ventricular apex was mainly via the distal left anterior descending coronary artery (Fig. 4). Non-invasive intra-

venous echocontrast studies may be of help in the assessment of the arterial blood supply also for cardiac metastatic tumors.