Cardiac metastasis of a gastric adenocarcinoma

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A 76-year-old male was presented for artificial hip operation due to extensive arthritis and reduced walking distance caused by pain. As the patient reports to suffer occasionally from palpitations on admission, further cardiologic examination is planned before the operation. On conventional transthoracic echocardiography, a mass of unknown origin is seen in the left atrium. Multi-slice thoracic computed tomography revealed a mass adjacent to the heart of unknown origin with a diameter of 60 mm (Panel A). Thus, the patient is referred for further evaluation by cardiac magnetic resonance (CMR) imaging.

A CMR examination using a 1.5 T whole-body scanner was performed. On steady-state free-precession imaging, a large (64 × 58 × 62 mm³) inhomogeneous mass in the atrioventricular groove between left atrium and left ventricle could be visualized. The mass infiltrated atrium and ventricle, and compromised their function as seen on cine images. Transversal T2-weighted imaging (Panel B) showed mainly isodense signal intensity of the tumour. Ten minutes after application of 0.2 mmol/kg body-weight gadolinium-based contrast agent (Magnevist, Schering, Germany), a gradient-echo inversion recovery sequence (late gadolinium enhancement) was performed (Panels C and D). The mass revealed irregular contrast uptake. Areas of high signal intensity signify large extracellular distribution of the mass that is partly due to necrosis. In areas of low signal intensity, high intensity of cellular distribution or lack of contrast diffusion due to destruction or extrusion of vessels could be presumed. Hence, a central necrotic tumour would be most probable. Furthermore, the infiltration of the mass into the myocardium could be demonstrated by the late gadolinium-enhancement images.

A gastric adenocarcinoma was diagnosed following tumour staging after CMR diagnosis. The cardiac mass was most likely identified to be a metastasis of the gastric cancer. Being confronted with the situation, the patient refused further treatment and was dismissed on his own request.

The combination of cross-sectional imaging including CMR in this case has been shown to be helpful for further cardiac differential diagnosis. Besides information about ventricular and atrial volumes, a cardiac tumour could be verified providing additional tissue information by CMR and triggering further diagnosis and potential therapy in this particular patient. In this case, the acquisition of late gadolinium-enhancement images provided additional information about the infiltration of the tumour into the left atrium and ventricle. Thus, CMR should be considered in cardiovascular diagnosis in line with other diagnostic tests for abnormal masses because of its high diagnostic value which has direct implication for patient management.