Cardiac Imaging

Sinus of Valsalva Aneurysm with Obstruction of Right Ventricular Outflow Tract

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A 67-year-old man was admitted to the hospital for non-cardiac surgery. The physical examination revealed a grade 4/6 systolic ejection murmur over the precordium. The chest X-ray showed cardiomegaly and the patient was referred for further cardiac evaluation.

Cardiac catheterization and transesophageal echocardiography (TEE) demonstrated an aneurysm originating from the right coronary sinus of Valsalva and causing obstruction of the right ventricular outflow tract (RVOT).

Since rupture is one of the major complications of the sinus of Valsalva aneurysm, surgical treatment was suggested to the patient.

Noninvasive, pre-operative assessment of the anatomic relation between the aneurysm and the surrounding cardiovascular structures was performed with a 1.5 T MRI study.

T1-weighted fast spin-echo breath hold images confirmed the TEE and catheterization findings (Figure 1). b-SSFP GE (balanced steady state free precession gra-

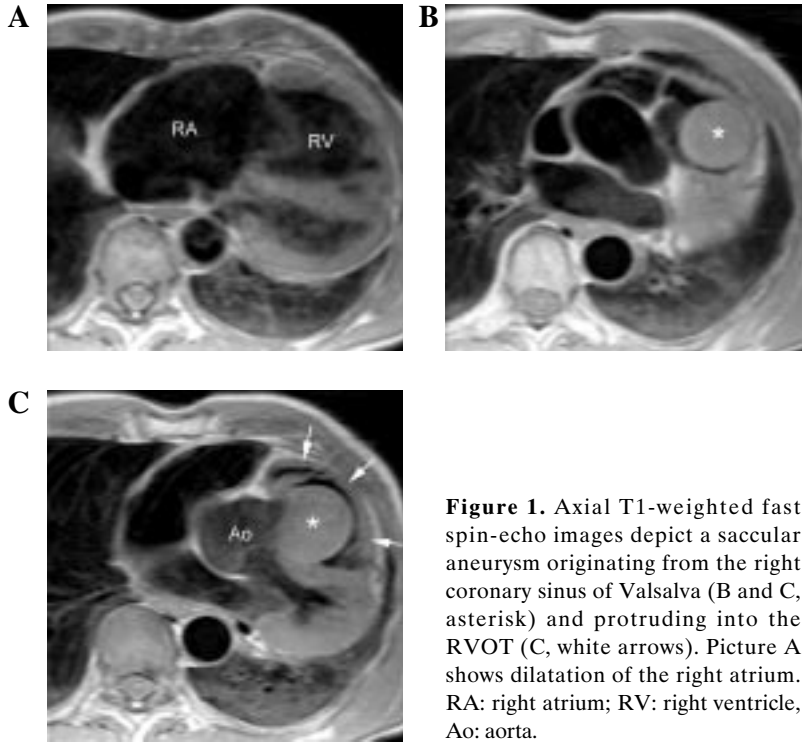

Figure 1. Axial T1-weighted fast spin-echo images depict a saccular aneurysm originating from the right coronary sinus of Valsalva (B and C, asterisk) and protruding into the RVOT (C, white arrows). Picture A shows dilatation of the right atrium. RA: right atrium; RV: right ventricle, Ao: aorta.

dient echo) images showed subtotal obstruction of the RVOT causing secondary dilatation and dysfunction of the right cavities (Figure 2); the aneurysmal sac showed a characteristic phasic expansion and relaxation. There was evidence neither of rupture nor of thrombus formation in the aneurysm.

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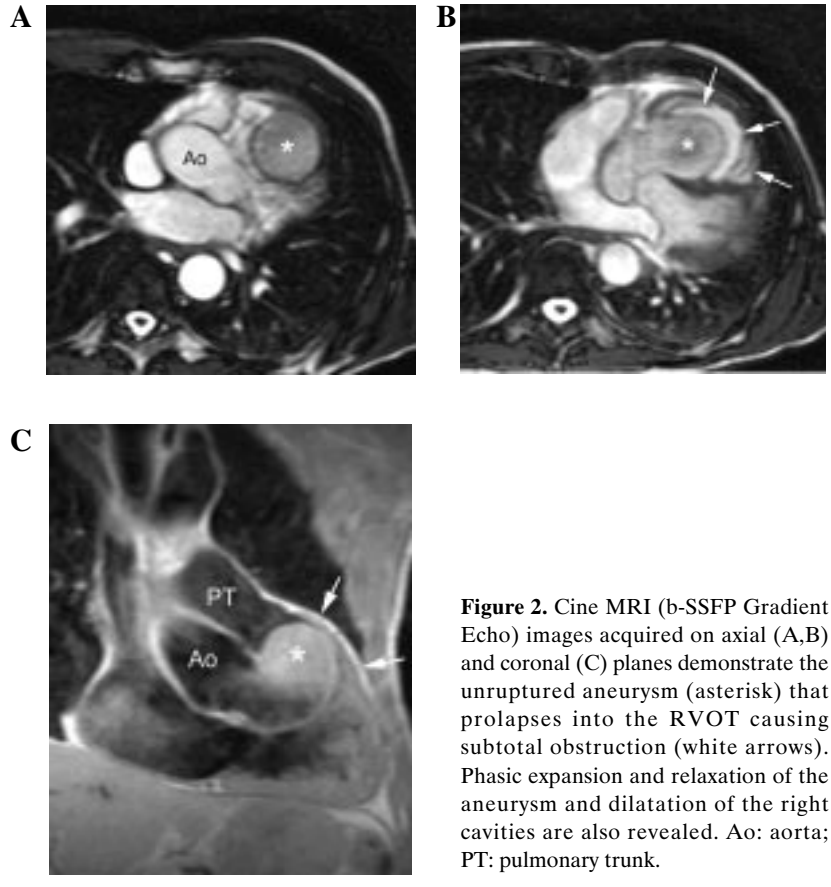

Figure 2. Cine MRI (b-SSFP Gradient Echo) images acquired on axial (A,B) and coronal (C) planes demonstrate the unruptured aneurysm (asterisk) that prolapses into the RVOT causing subtotal obstruction (white arrows). Phasic expansion and relaxation of the aneurysm and dilatation of the right cavities are also revealed. Ao: aorta; PT: pulmonary trunk.