Multirow Detector Computed Tomography Assessment of Intraseptal Dissection and Ventricular Pseudoaneurysm in Postinfarction Ventricular Septal Defect

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A 46-year-old man had an acute inferior myocardial infarction after physical exercise. There was no evidence of heart failure. The ECG showed a 3-mm ST-T segment elevation with Q waves in leads D2, D3, and VF and a 3-mm depression in leads V2 to V4. Immediate coronary angiography evidenced a tight stenosis with distal slow flow that was located in the right coronary artery. Percutaneous transluminal coronary angioplasty, with implantation of 2 stents, was successfully performed. A normal flow was restored. Post-procedure ECG showed an isoelectric ST-T segment in leads D2, D3, and VF. Maximal creatine kinase elevation was 500 IU at 12 hours after the onset of clinical symptoms. Subsequent cardiac auscultation uncovered a loud holosystolic murmur. Color-coded Doppler echocardiography demonstrated a ventricular septal defect with a left to right shunt.

A multirow-detector computed tomography (CT, Volume Zoom, Siemens) scan procedure was performed with 4 iodine-enhanced, ECG-triggered, 1-mm slice acquisitions. Rotation time was 500 ms, accounting for a total breath-hold of 37 seconds. Diastolic gated and 3D reconstructions were performed at 70% RR intervals, with 0.6 mm increments of reconstruction. Three-dimensional reconstructions with volume rendering showed both complex posterior ventricular septal rupture (Figure 1) and contiguous unsuspected pseudoaneurysm of the posteroinferior wall of the left ventricle (Figure 2).

A biventricular endocardial patch was used for surgical repair with infarct exclusion. Recovery was uneventful. A postoperative CT scan showed that there was no residual septal defect or left ventricular aneurysm.

Figure 1. Coronal view in the plane of the pulmonary artery with 3D rendering technique showing a ventricular septal defect (arrow) that was responsible for a right-to-left shunt, which was found on Doppler ultrasonography. PA indicates pulmonary artery; RV, right ventricle; and LV, left ventricle.
Figure 2. Coronal view in the plane of the aorta (Ao) showing a contiguous pseudoaneurysm (An) of the inferior septal segment of the left ventricle (LV). RV indicates right ventricle.
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