

Usefulness of 64-Slice Computed Tomography for Evaluation of Atrial Septal Aneurysm

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A 70 year old man with multiple risk factors for coronary artery disease and atypical chest pain was referred by his cardiologist to our department for coronary computed tomography angiography. CCTA was performed by using a 64-slice multidetector CT scanner with retrospective electrocardiographic triggering. CCTA revealed an atrial septal aneurysm located around the fossa ovalis and protruding into the

CCTA = coronary computed tomography angiography

right atrium. The portion of the atrial septum exhibiting aneurysmal dilatation protruded 18 mm beyond the plane of the septum, and the base of the aneurysmal portion was 27 mm in diameter. There was no evidence of thrombus formation on the concave aspect of the aneurysm sac or left-to-right shunting [Figure 1]. Transthoracic echocardiography performed before the CCTA was interpreted as normal.

ASA is an uncommon congenital cardiac abnormality, characterized by a diffuse or localized protrusion of the interatrial septum into the right or left atrium, or both [1]. The prevalence of ASA is 0.2%–3% in the general population [1]. The MDCT features of this anomaly were described for the first time, in 2006, by Zeina et al. [2]. Recently, Czekajaska-Chehab et al. [3] reported an incidence of 1.3% by using MDCT. Atrial septal aneu-

ASA = atrial septal aneurysm
MDCT = multidetector computed tomography

rysms have been related to thromboembolic events, atrial septal defects, mitral valve prolapse, systolic clicks and arrhythmias [1]. However, the majority of atrial septal aneurysms are detected incidentally. ASA is usually imaged with transthoracic or transesophageal echocardiography. ASA is recognized when a dilated portion of the interatrial septum protrudes at least 10–15 mm beyond the plane of the atrial septum or when the atrial septum shows phasic excursions more than 15 mm, during the cardiorespiratory cycle, with the base of aneurysm measuring more than 15 mm [1].

With the increasing use of electrocardiographic-gated cardiac MDCT and magnetic resonance imaging for non-invasive cardiac assessment, previously undetected cardiac abnormalities, such as ASA, are becoming evaluable. In the current case, CCTA using an MDCT scanner enabled us to visualize the ASA in its entirety and to exclude interatrial

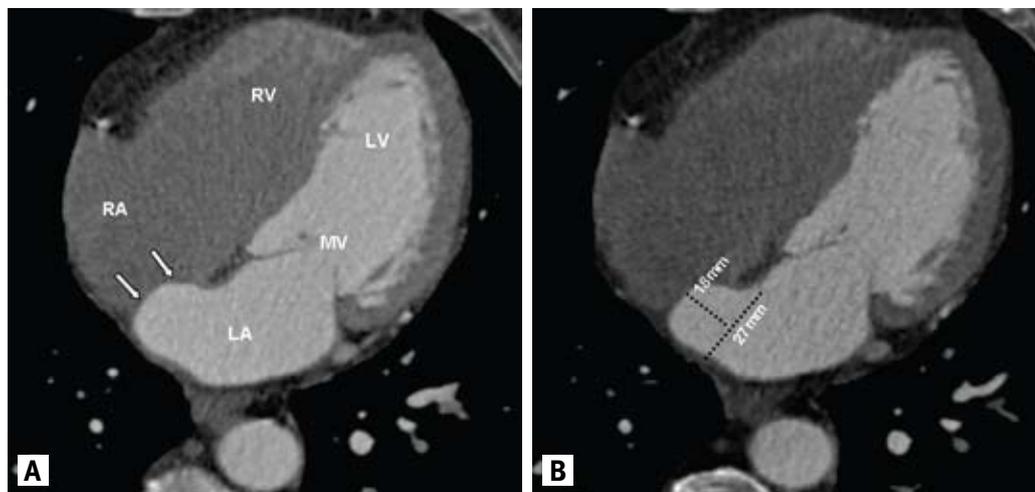


Figure 1. [A] ECG-gated coronary CT angiography performed with 64-MDCT scanner in a 70 year old man with atrial septal aneurysm. Axial image obtained at level of mitral valve (MV) shows large atrial septal aneurysm (arrows) located around fossa ovalis involving large portion of interatrial septum and protruding into right atrium (RA). No interatrial communication or shunting is present. Note difference of contrast enhancement between left and right atrium and homogeneous appearance. LA = left atrium, LV = left ventricle, RV = right ventricle. **[B]** Axial MDCT image in the same patient shows the atrial septal aneurysm diameters.

communication or thrombus formation within the aneurysmal cavity, a possible cause of cardiogenic embolism. By using the latest generation of MDCT scanners, with better temporal and spatial resolution and new post-processing

applications, the visualization of ASA will be available on routine non-ECG-gated thoracic MDCT examinations [Figure 2].

The ASA is best visualized on axial or four-chamber view reformatted images.

Radiologists and cardiologists reading these studies need to be aware of this anomaly and report it appropriately.

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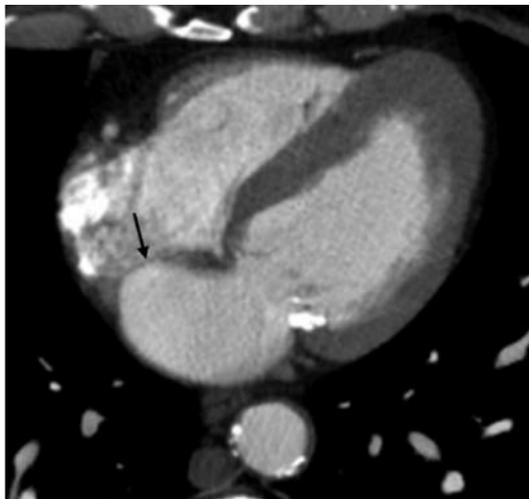


Figure 2. Atrial septal aneurysm detected incidentally on non-ECG-gated routine thoracic contrast-enhanced CT examination (performed with 64-slice MDCT scanner) in a 64 year old man