

Diagnostic Integration in Atrial Septal Defect

Integración diagnóstica en la comunicación interauricular

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Images correspond to a 24-year-old male patient, asymptomatic, referred to our center for tricuspid regurgitation and right chamber dilation.

Transthoracic echocardiography (TTE) (Figure 1 A) showed enlarged right ventricle (RV) with preserved systolic function, right atrial (RA) and ventricular (RV) overload, and moderate tricuspid regurgitation. He presented hyperflow both in the RV inflow and outflow tracts (tricuspid E-wave velocity 1.1 m/sec, pulmonary velocity 2 m/sec). Systolic pulmonary pressure was 45 mm Hg. The 2D TTE showed an intact atrial septum; however, shunt calculation was estimated in 2.2/1. Marked enlargement of the sinus venosus was observed. An IV polygeline solution was infused (right chamber contrast, Figure 1 B) in the right arm, with microbubble passage from the RA to the LA at “high” interatrial level, interpreted as a possible sinus venosus type atrial septal defect (ASD) [at the superior vena cava (SVC) opening].

A cardiac 64-row multislice computed tomography (MSCT) with contrast and IV infusion in the left arm was performed due to suspected association with persistent left vena cava (PLVC), in addition to the ASD. The presence of sinus venosus ASD was confirmed (Figure 1 C), and although the upper right pulmonary vein drained into the LA, it was closely related to the ASD orifice (Figure 1 D). ASD size: 1.4 cm. The MSCT 3D image reconstruction showed a large PLVC, 1.8 cm diameter, draining into the posterior and inferior walls of the RA (Figure 2, arrows).

Multislice computed tomography is a diagnostic imaging method with excellent spatial and temporal resolution, very useful for the diagnosis of coronary artery disease. (1) The advent of new CT scanners has reduced the time of exposure and amount of radiation, and improved diagnostic capacity. (2, 3)

Our patient was diagnosed SVC type ASD associated with PLVC using TTE and IV polygeline infusion, plus MSCT, avoiding transesophageal echocardiography (TEE), a gold standard for “high” ASD diagnosis) and invasive catheterization. Indication for MSCT allowed the accurate measurement of ASD size, assessment of pulmonary venous anatomy, coronary tree and coexistence of other congenital diseases, and confirmed the presence of SVC type ASD associated with PLVC.

In patients with suspected “high” ASD by TTE, TEE is the common indication, and if diagnosis is confirmed, a catheterization should be performed as preoperative evaluation method. However, other diagnostic tools are currently available. The integration of TTE and MSCT allows rapid noninvasive diagnosis, and its effective radiation dose is similar or lower than for invasive catheterization. The synergy of information when the same physician-operator reports TTE and MSCT improves the diagnosis by integrating the strengths of both methods: anatomy in MSCT plus interpretation of flows, gradients and pressures in TTE.

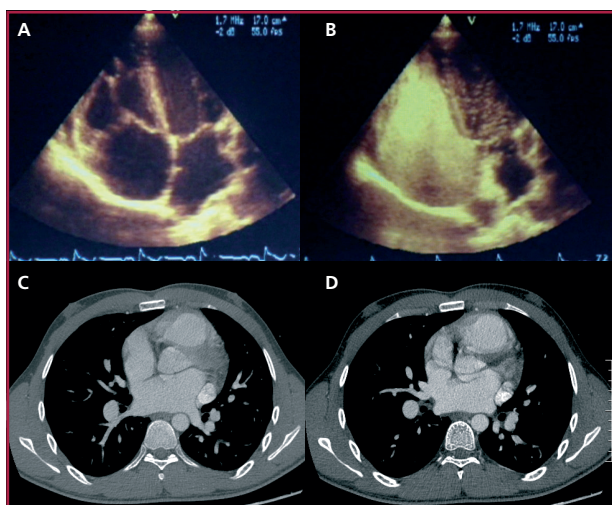


Fig. 1



Fig. 2

Conflicts of interest

None declared.

REFERENCES

1. Pujadas S, Hidalgo A. Cardiopatías congénitas por resonancia magnética y tomografía computarizada con multidetector. *Rev Esp Cardiol Supl* 2009;9:57E-66.
2. Nicol ED, Gatzoulis M, Padley SPG, Rubens M. Assessment of adult congenital heart disease with multi-detector computed tomography: beyond coronary lumenography. *Clin Radiol* 2007;62:518-27.
3. Cook SC, Raman SV, et al. Multidetector computed tomography in the adolescent and young adult with congenital heart disease. *J Cardiovasc Comput Tomogr* 2008;2:36-49.