

CARDIOVASCULAR IMAGES

A joint publication of the Department of Radiology and Heart Center

Muscular Ventricular Septal Defect (VSD)

Rodrigo A. Pale, MD, Leon Shturman, MD and Suhny Abbara, MD

Clinical History

During routine physical examination of a 23 year-old asymptomatic male, a systolic murmur was discovered which prompted a transthoracic echocardiographic examination. The echocardiogram demonstrated mild left ventricular systolic dysfunction, with an ejection fraction of 47%, but failed to identify the cause of the murmur.

A cardiac gated coronary CTA, which was obtained to exclude coronary anomaly, ruled out the presence of coronary anomaly but revealed a small muscular ventricular septal defect (VSD).

The ventricles were otherwise morphologically normal, but cine CT evaluation demonstrated systolic LV dysfunction. The CT based functional LV parameters were: EF =51%, LV mass =173g; end systolic volume (ESV) =69ml; end diastolic volume (EDV) =141ml; and stroke volume =72ml.

This case illustrates the potential of cardiac CT to not only definitely exclude or rule in the presence of coronary anomalies, fistulas or myocardial bridges, but also to quantify ventricular function and to detect structural abnormalities such as a VSD. In this case the VSD may have otherwise been undetected which would have left the patient with an unexplained murmur.

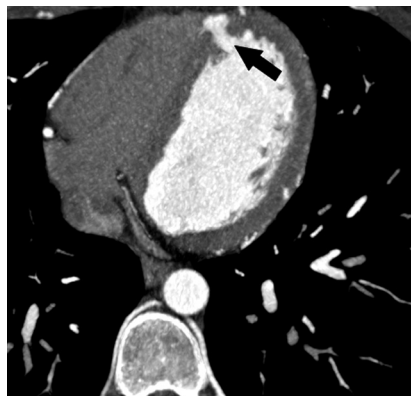


Figure A

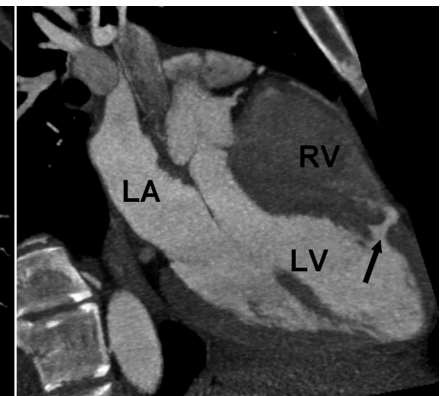


Figure B

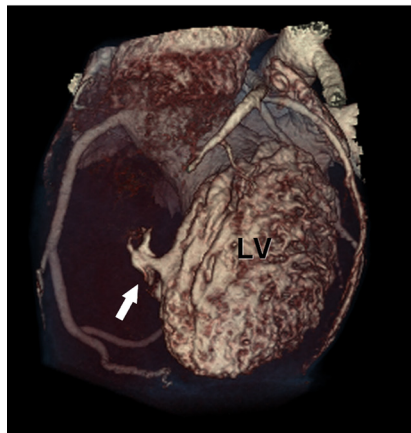


Figure C

Figure A-C. Coronary CT angiogram in an axial plane (A) and a LV longaxis view (B) show a defect in the muscular ventricular septum (arrows) and contrast flowing from the LV into the RV. The 3D image (C) shows a luminogram (CT ventriculogram) of the LV and a small amount of contrast squirting into the RV (arrow).

REFERENCES

1. Perloff J: Ventricular septal defect. In *The Clinical Recognition of Congenital Heart Disease*. 4th ed. Philadelphia, WB Saunders, 1999, pp 467-489
2. Feigenbaum H: Congenital heart diseases. In *Feigenbaum's Echocardiography*. 6th ed. Philadelphia, Lippincott, 2005, pp 559-6363.

Editors:

Suhny Abbara, MD
MGH Department of Radiology

Wilfred Mamuya, MD, PhD
MGH Division of Cardiology