



Images in Cardiovascular Disease



Left Ventricular Non-compaction with Ventricular Aneurysms

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OPEN ACCESS

Received: Oct 1, 2019

Revised: Nov 19, 2019

Accepted: Dec 10, 2019

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Conflict of Interest

The authors have no financial conflicts of interest.

A 7-year-old girl with a lymphovascular malformation of the face was referred to a cardiologist because of a history of congestive heart failure at the age of 2-3 years with an uncertain diagnosis. She had no symptoms or current medications. On physical examination, her body temperature was normal with a heart rate of 118 beats/minute, blood pressure of 122/60 mmHg, respiratory rate of 20/minute and oxygen saturation of 95%. No cardiac murmurs were heard.

Cardiac magnetic resonance (CMR) imaging was performed due to a large anechoic lesion with echogenic tissue at the left ventricular apex on echocardiography (**Figure 1, Movie 1**). CMR revealed the spongy appearance of the myocardium along the lateral wall of the left ventricle (**Figure 2, Movie 2**) associated with ventricular aneurysms (**Figure 3, Movie 3**). Myocardial delayed enhancement revealed scars along the wall of the aneurysm with a mural thrombus (**Figure 4**). A diagnosis of left ventricular non-compaction (LVNC) with ventricular aneurysms was reached.

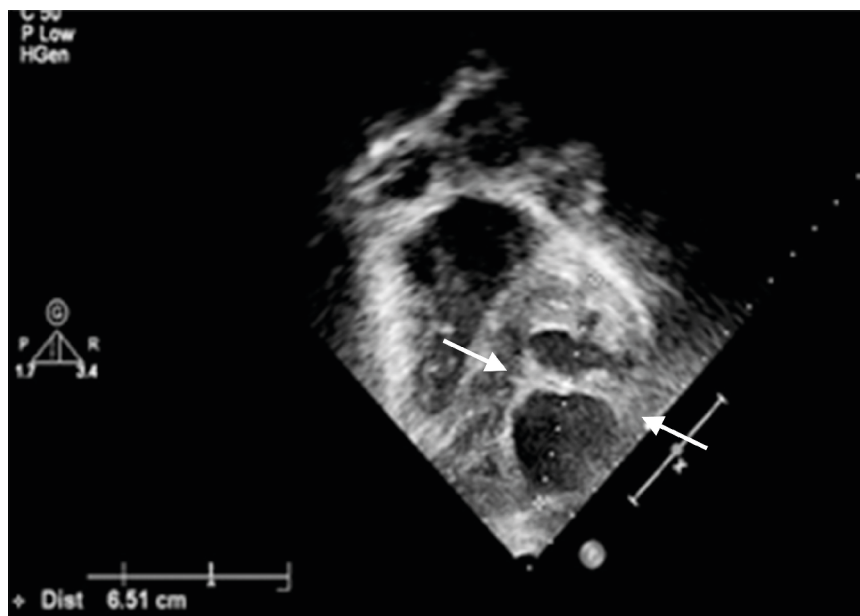


Figure 1. The apical four-chamber view shows a large anechoic lesion with echogenic tissue at the left ventricular apex (arrows).

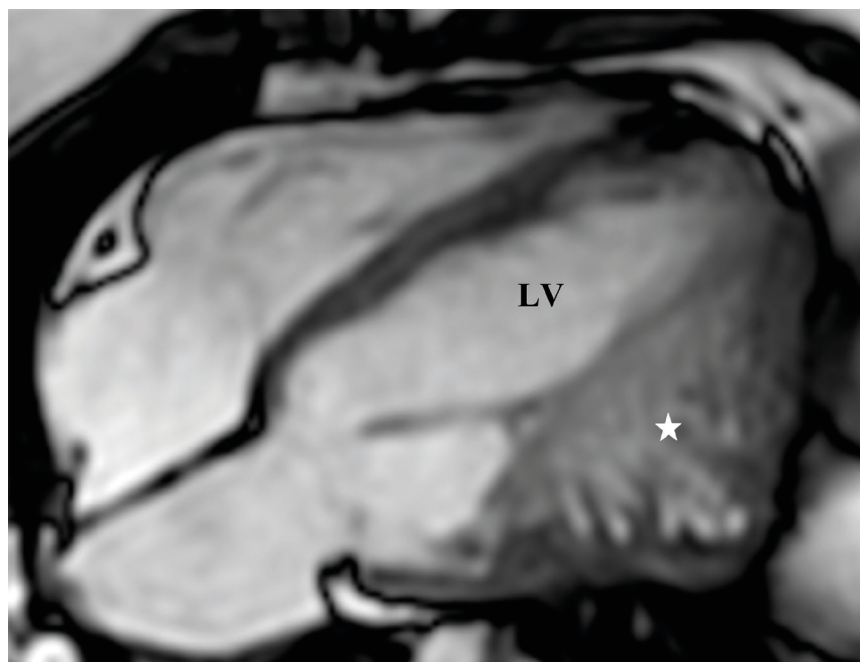


Figure 2. Cardiac magnetic resonance in the four-chamber view reveals a thick layer of deep intratrabecular recesses (asterisk) along the lateral wall of the left ventricle (LV), with a ratio of maximum thickness between the non-compaction and compaction layers greater than 2.3 in end-diastole.

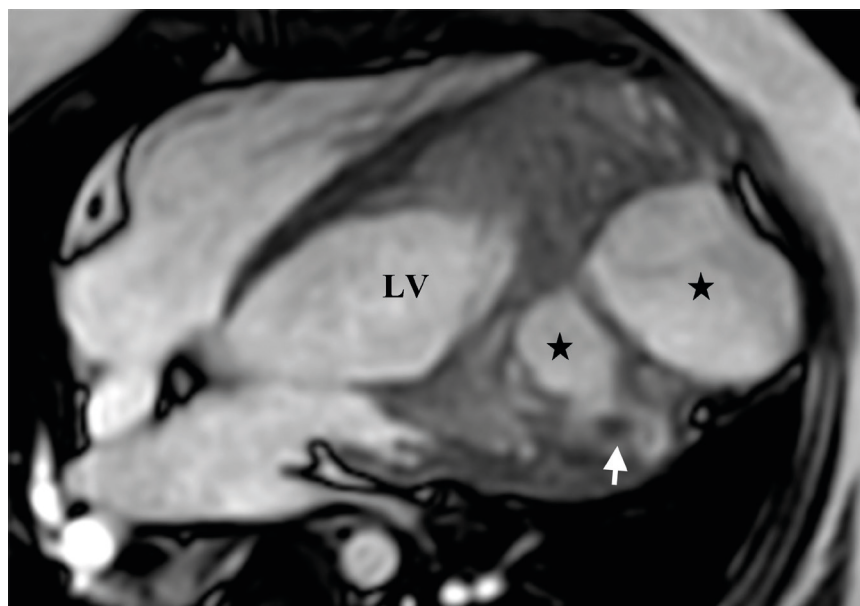


Figure 3. Cardiac magnetic resonance in the four-chamber view demonstrates ventricular aneurysms (asterisks) at the lateral wall of the left ventricle (LV) with a mural thrombus (arrow) in the aneurysm.

CMR criteria for the diagnosis of LVNC is a ratio of maximum thickness between the non-compaction and compaction layer greater than 2.3 in end-diastole, as seen in our patient.¹⁾ The pathophysiology of aneurysm formation in LVNC is postulated to be impaired microcirculation.²⁾³⁾ Since our patient's coronary magnetic resonance angiography was normal, the aneurysms were not related to coronary artery territory, and CMR revealed no other cardiac abnormalities, we suggest that the aneurysms might be congenital. The

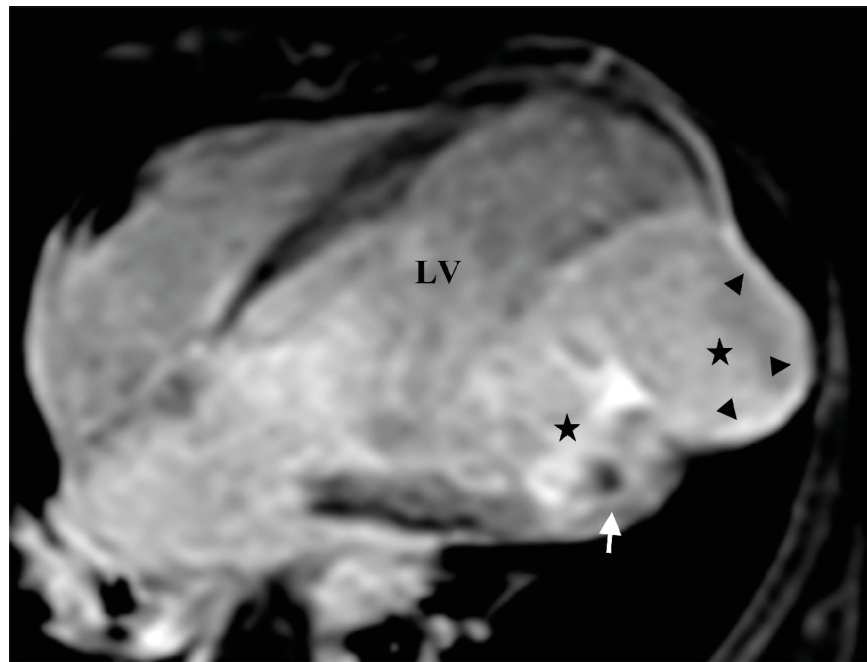


Figure 4. Myocardial delayed enhancement reveals a rim of hyperintense scarring (arrowheads) along the wall of the aneurysm (asterisk), with a hypointense mural thrombus (arrow) in the aneurysm (asterisk). LV: left ventricle.

patient was referred to a local hospital for continued monitoring without medication. Heart transplantation is proposed should she develop end-stage heart failure.

SUPPLEMENTARY MATERIALS

Movie 1

The apical four-chamber view shows a large anechoic lesion with echogenic tissue at the left ventricular apex.

[Click here to view](#)

Movie 2

Cine cardiac magnetic resonance in the four-chamber view reveals a thick layer of deep intratrabecular recesses along the lateral wall of the left ventricle with a ratio of maximum thickness between the non-compaction and compaction layers greater than 2.3 in end-diastole.

[Click here to view](#)

Movie 3

Cine cardiac magnetic resonance in the four-chamber view shows ventricular aneurysms at the lateral wall of the left ventricle appearing as akinetic outpouchings communicating with the left ventricle.

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