

Cardiac Imaging

Acute Ischemia of Fingers Caused by Permeable Foramen Ovale and an Elongated Eustachian Valve: Role of Cardiac Magnetic Resonance

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Key words: Elongated Eustachian valve, right atrial inflow obstruction, patent foramen ovale, paradoxical embolic events, *cor triatriatum dexter*, cardiac magnetic resonance.

Manuscript received:
April 28, 2013;
Accepted:
November 25, 2013.

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A 30-year-old man was admitted for acute ischemia of the fingers. Physical examination was normal, with normal sinus rhythm on the ECG. Transthoracic echocardiography showed a dilated right atrium (RA) with a suspected *cor triatriatum dexter*. Cardiac magnetic resonance found a mobile undulating elongated Eustachian valve (EV) (Figure 1 A, B, C), creating a posterior tunnel in the bottom of the RA with accelerated flow from the inferior vena cava (IVC) (Figure 1D). This tunnel was largely open at the top of the RA, causing no significant obstruction to the route of the venous return. However, it induced a kinking of the flow path (red arrow), reflecting against the atrial septum and a patent foramen ovale (PFO), thus explaining the possibility of paradoxical embolic events

(i.e. acute finger ischemia). An elongated EV is a persistent part of the embryological valve of the *sinus venosus*. This condition is rare and should not be confused with *cor triatriatum dexter*, in which there are attachments on the atrial septum giving the appearance of a divided atrium.¹ In this case, the interesting imaging finding relies on the relationship between the IVC return flow path, directed toward the PFO, which explains the paradoxical embolism in this patient.

Reference

1. Martínez-Quintana E, Rodríguez-González F, Marrero-Santiago H, Santana-Montesdeoca J, López-Gude MJ. *Cor triatriatum dexter* versus prominent Eustachian valve in an adult congenital heart disease patient. *Congenit Heart Dis.* 2013; 8: 589-591.

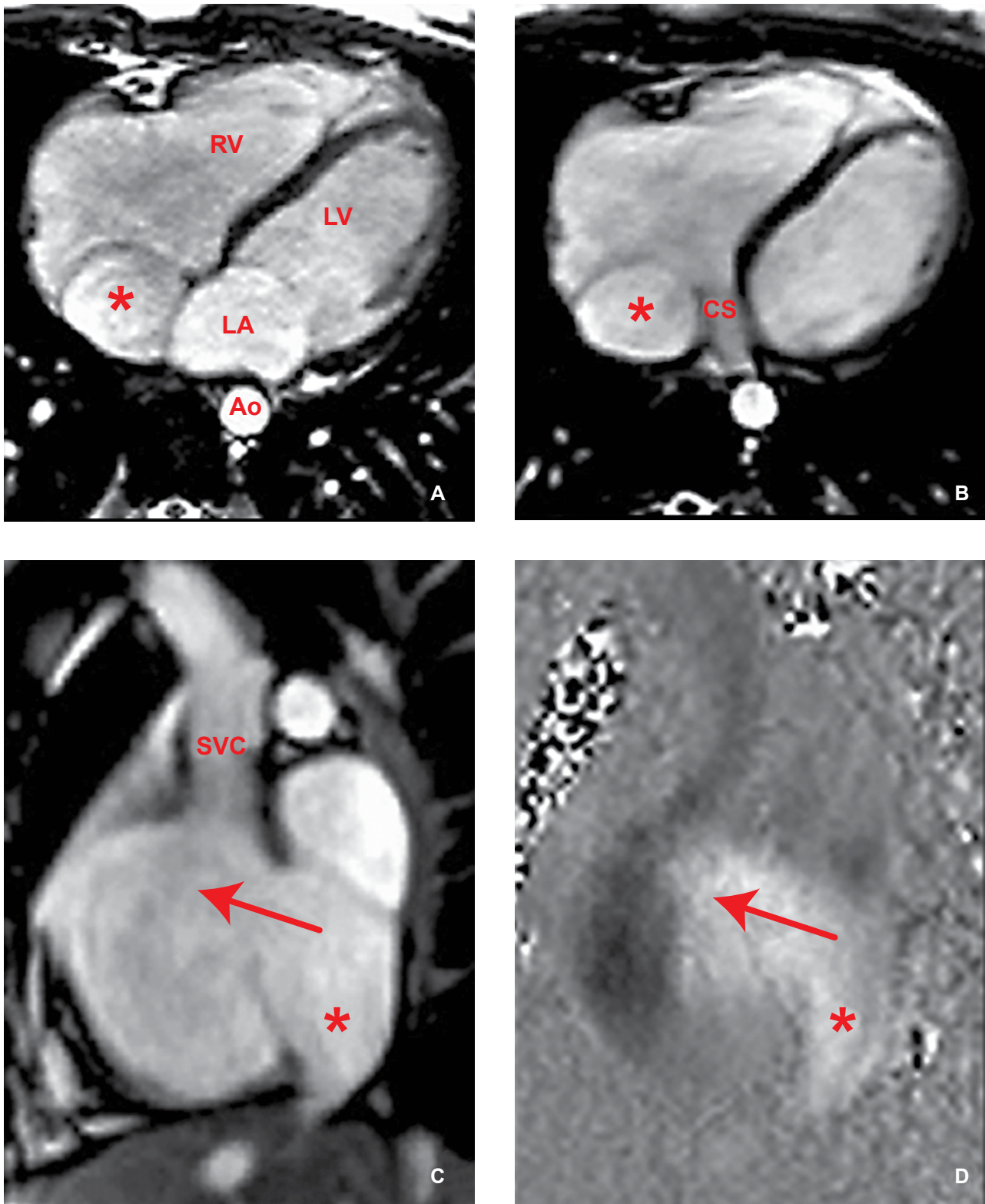


Figure 1. Axial (A,B) and sagittal (C) steady-state free precession cine views and cranio-caudally encoded velocity mapping, sagittal view (D) through the right atrium. The Eustachian valve appears as a thin membrane and creates a posterior tunnel at the bottom of the right atrium (asterisk). At the top of this tunnel, the venous return flow from the inferior *vena cava*, initially directed superiorly, reflects on the atrial septum and is directed anteriorly over the Eustachian valve toward the right atrium (red arrow).

RV – right ventricle; LV – left ventricle; LA – left atrium; CS – coronary sinus; SVC – superior vena cava; Ao – aorta