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Article type: Clinical vignettes

Received: November 9, 2019.

Accepted: December 5, 2019.

Published online: December 5, 2019.

ISSN: 0022-9032

e-ISSN: 1897-4279

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The transverse sinus of pericardium: an unpleasant third wheel

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Short title: Pitfall in Echocardiography

Number of words: 500

Conflict of Interest: none to declare

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Atrial fibrillation (AF) is one of the most commonly encountered arrhythmias in clinical practice [1] whereas transesophageal echocardiography (TEE) of the Left atrial appendage (LAA) is of great importance to rule out intracardiac thrombus formation in the setting of AF [2].

A number of masses and pseudomasses may be discovered during echocardiographic examination of the LAA including the pericardial recesses, one of the most notable is the transverse sinus of the pericardium with important clinical implications [3,4].

Epicardial fat between the transverse sinus of the pericardium and the ascending aorta is a normal finding [5], however its presentation is highly variable ranging from almost absent to a significantly evident.

We present the case of a man with dense epicardial tissue fat in the pericardial transverse sinus mimicking an appendage thrombosis and causing confounding ultrasound features.

A 65-years-old Caucasian male was referred to our Echo-Lab (manufacturer echo device iE33 xMATRIX, Koninklijke Philips N.V.) complaining with exertional dyspnea. Electrocardiogram (ECG) demonstrated AF and TEE was performed to exclude LAA thrombosis, showing an isoechogenic mass in the LAA diagnosed as a thrombus.

After 4 weeks of anticoagulation with Dabigatran 150 mg bid TEE showed no variation.

A careful review of the exam however confirmed that the intracavitary mass actually was consistent with dense epicardial fat in the transverse pericardial sinus.

The anatomic complexity of LA pericardial coverings may be confounding at echocardiography since the transverse sinus, lies between the anterior LA and posterior wall of the ascending aorta and pulmonary artery, with fluid and occasionally with echo dense fibrinous material which could be mistaken for thrombus.

Rotating the transducer and/or changing the transducer imaging angle will this time reveal that the structure becomes:

- Echo dense fibrous material within the adjacent transverse sinus should be confused with LAA thrombus (Figure 1, Panel A, Clip 1)
- LAA with evident transverse sinus (Fig. 1, Panel B)
- LAA free from thrombosis (Fig. 1, Panel C, Clip 2)

TEE imaging evaluation in different planes and angulations is thus paramount in establishing a correct diagnosis. Identification of anatomic landmarks and the judicious use of image enhancing agents and transesophageal imaging may prove helpful in this respect.

References


2 Silverman ME. History and personal observations of electrical cardioversion of atrial fibrillation. Am J Cardiol. 2004; 94: 751-752.

3 Kerut EK. Anatomy of the Left Atrial Appendage, Echocardiography, 2008; 25: 669-673


Figure 1: Transesophageal Echocardiography, mid-esophageal view, Panel A) Echo dense fibrous material within the adjacent transverse sinus confused with Left atrial appendage thrombus (LA: left atrium, TS: Transverse Sinus; LUPV: Left Upper Pulmonary Vein); Panel B rotating the transducer, Left atrial appendage with evident transverse sinus, Panel C: Transesophageal Echocardiography, mid-esophageal view, Left atrial appendage free from thrombosis

AF: Atrial fibrillation; TEE: transesophageal echocardiography; LAA: Left atrial appendage; ECG: Electrocardiogram; LA: left atrium, ; TS: Transverse Sinus; ; LUPV: Left Upper Pulmonary Vein
Supplementary Video Material:

Clip 1: transesophageal echocardiography, Echo dense fibrous material within the adjacent transverse sinus should be confused with Left atrial appendage thrombus

Clip 2: Rotating the transducer and/or changing the transducer imaging angle reveal Left atrial appendage free from thrombosis