

Misdiagnosed right atrial tumor identified by intraoperative transesophageal echocardiography

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A 16-year-old male patient was referred to our institution due to occasional chest tightness for one month. Electrocardiogram showed some atrioventricular junctional beats. Transthoracic echocardiography revealed a hyperechoic mass about 1.4×0.5 cm in size in the right atrium. He was then scheduled for operation under the impression of possible right atrial myxoma. After general anesthesia, a transesophageal echocardiography (TEE) examination revealed a serpentine, highly mobile echocardiographic structure with focal thickening within the right atrium (Fig. 1). The curvilinear right atrial

echoes originated from coronary sinus and were attached to the right atrial wall (Fig. 2). The hyperechoic target did not obstruct right ventricular inflow. There was only mild tricuspid regurgitation. A prominent Chiari network was then diagnosed. The operation was cancelled. Subsequently, the patient was regularly followed in outpatient clinics.

The valve of the sinus venosus at an early stage of embryonic development nearly divides the right atrium into two chambers and it normally disappears early in fetal life. When there is extensive resorption of the right sinus venosus valve,

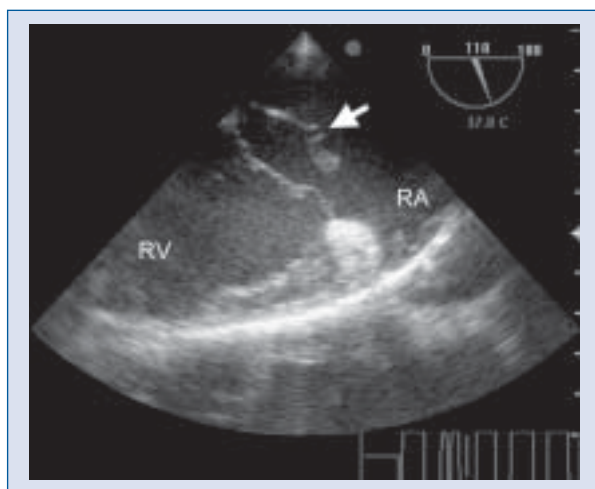


Figure 1. The modified midesophageal bicaval view shows a serpentine echocardiographic target with fenestration in the right atrium (arrow); RA — right atrium, RV — right ventricle.

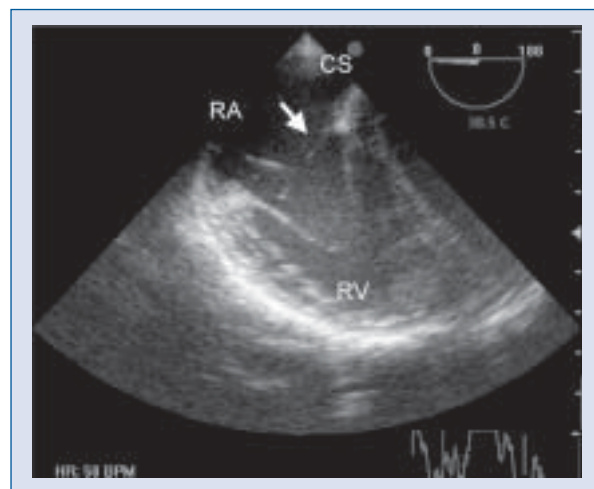


Figure 2. The modified midesophageal view centered at the coronary sinus shows the curvilinear structure originating from the coronary sinus and connecting to the right atrial wall (arrow); CS — coronary sinus, RA — right atrium, RV — right ventricle.

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remnants form the valves of inferior vena cava (Eustachian valve) and coronary sinus (Thebesian valve). The incomplete regression of right sinus venosus valve may form fenestrated membranes called Chiari network. The Chiari network originates from either the Eustachian or Thebesian valve and is attached to the wall of the right atrium or the interatrial septum. Its prevalence is 2% in normal hearts and it is seldom clinically important [1, 2]. The presence of Chiari network may mimic right atrial lesion, so careful differential diagnosis is mandatory. The structure originated from the coronary sinus with additional attachment site in the wall of right atrium and did not form a complete separation within right atrium, so it should not be termed cor triatriatum dexter or Eustachian or Thebesian valve. The elongated and fenestrated highly mobile echogenic mass with the same echodensity of cardiac chamber also make the diagnosis of vegetation or thrombus not likely. When right-sided cardiac lesion is suspected, TEE is a better diagnostic tool than transthoracic echocardiography [3]. Multiplane TEE can provide multiple high-resolution views

of the right atrium to visualize the entire chamber. In addition, the quality of transthoracic echocardiographic images is often limited, especially in superior vena cava and superior portion of the right atrium. As to our patient, the preoperative transthoracic echocardiographic examination only revealed the focally thickened mass and failed to demonstrate the thin filamentous part of the Chiari network. This case demonstrates that prompt intraoperative TEE examination before surgical incision can have major impact on surgical management and even prompt cancellation of the unnecessary operation.

References

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