

Mysterious Bedside Echocardiogram

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Chief Complaint: Shortness of Breath

History of Present Illness: A 65 year old male with a past medical history of hypertension, benign prostatic hyperplasia, non-small cell lung cancer status post partial lobectomy presenting with rapid heart rate, shortness of breath, generalized weakness, and fatigue for 1 day.

Pertinent Physical Exam: cachectic ill-appearing male with dry mucous membranes, tachycardic, irregular rhythm, respirations with accessory muscle use and rhonchi present, otherwise unremarkable.

Imaging: Bedside Ultrasound

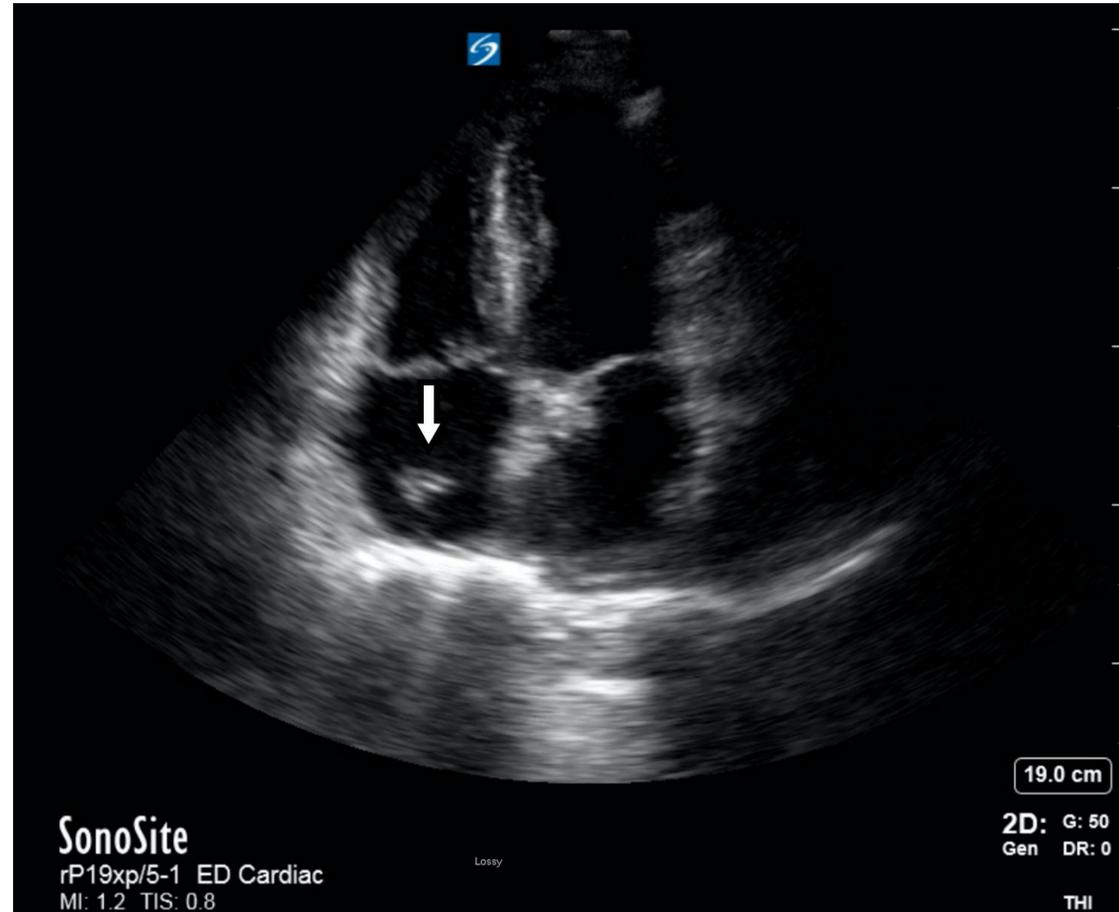
Questions:

1. Given the above information, what is your interpretation of the associated ultrasound image?

The ultrasound finding is a Chiari network in the right atrium

2. What is your impression of this patient?

Patient has a supraventricular tachycardia



Pearls:

- Recognizing the incidental finding of a Chiari network in the right atrium when performing bedside point of care ultrasound on patients visiting the emergency department. Understanding this variant will allow for decreased confusion on etiology of the hyperechoic structure identified per discussion above.
- Chiari network has been associated with with accessory pathways of atrioventricular conduction

Case Discussion: The pertinent finding associated with the ultrasound image represents a Chiari network. This finding is a well-documented and published physiologic variant of the right atrium that was initially discovered in 1897 by Austrian pathologist Hans Chiari¹. It is a remnant of the sinus venosus valve, which typically resorbs during development of the heart. Under normal physiologic circumstances, the sinus venosus will split to form the valve of the inferior vena cava as well as the coronary sinus². These valves are also referred to as the Eustachian valve and the Thebesian valve respectively³.

As ultrasound increases in availability and its use becomes more widespread in the emergency department as a point of care adjunct, it is vital that emergency medicine physician is able to identify and differentiate between the Chiari network that can be seen in the right atrium, thrombus that forms from within the atria, vegetations and tumors. Some literature suggests that there is an associated increased risk of thrombus formation as well as risk of endocarditis as the Chiari network can serve as a potential nidus^{4, 5}.

Interestingly enough, the presence of a Chiari network has also been associated with accessory pathways of atrioventricular conduction³. Our patient presented with supraventricular tachycardia that was eventually rate controlled. The formation of the Chiari network in this patient during development of the heart may have been an underlying contributing factor. Ultimately, the patient was discharged home with rate control medication and follow up with cardiology. Nonetheless, it is important for emergency physicians to be aware of this finding when evaluating patients with point of care bedside ultrasonography.



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