IMAGES **in PAEDIATRIC CARDIOLOGY**

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Abstract
Background: The crista terminalis is a normal cardiac structure located in the right atrium. It is not usually seen using standard view transthoracic echocardiography techniques, but on occasion, hypertrophy allows for easy visualization of this structure, which can be mistakenly labelled pathologic.
Case: We report the first known case of a prominent crista terminalis detected in a fetus.
Conclusions: This case confirms the presence of a prominent crista terminalis in a developing fetus, a variant which was exclusively described in the pediatric and adult populations until now. Although a prominent crista terminalis is a benign variant, the correct identification of this structure has important diagnostic implications. This report aims to increase familiarity with the appearance of a prominent crista terminalis on both fetal echocardiography and newborn transthoracic echocardiography in hopes that this will aid in the correct diagnosis of this variant in the future.

Keywords
Prominent crista terminalis, right atrial mass, echocardiogram, fetus

Background

The crista terminalis is a normal anatomical structure found at the superior aspect of the right atrium. It is a well-defined, smooth fibromuscular ridge originating from the atrial septum and extending in a crescent shape between the openings of the superior vena cava and inferior vena cava along the lateral wall of this chamber, at the mouth of the right atrial appendage.[1] Typically, this structure is not visualized during standard transthoracic echocardiography, but occasionally the crista terminalis is particularly prominent and readily seen with this technique. Previous accounts of a prominent crista terminalis in the echocardiography literature describe its appearance as an area of increased echogenicity in the right atrium projecting from the interatrial septum.[1,2] Here we describe the first known case of prominent crista terminalis identified in a fetus.

Case

A healthy 26-year-old pregnant female was referred to our clinic for follow up regarding an abnormally echogenic structure detected in the fetal right atrium during her routine 20-week ultrasound. Subsequent fetal echocardiography performed at 29 and 33 weeks gestation also displayed an area of echogenic prominence in the right atrium extending from the posterolateral wall at the level of the cavoatrial junction (Figures 1, 2).

Figure 1: Fetal echocardiography conducted at 29 weeks gestation. Apical 4-chamber view showing an echogenic focus extending from the posterolateral wall of the right atrium suggestive of prominent crista terminalis. PCT – Prominent Crista Terminalis, RA – Right Atrium, LA – Left Atrium, RV – Right Ventricle, LV – Left Ventricle.

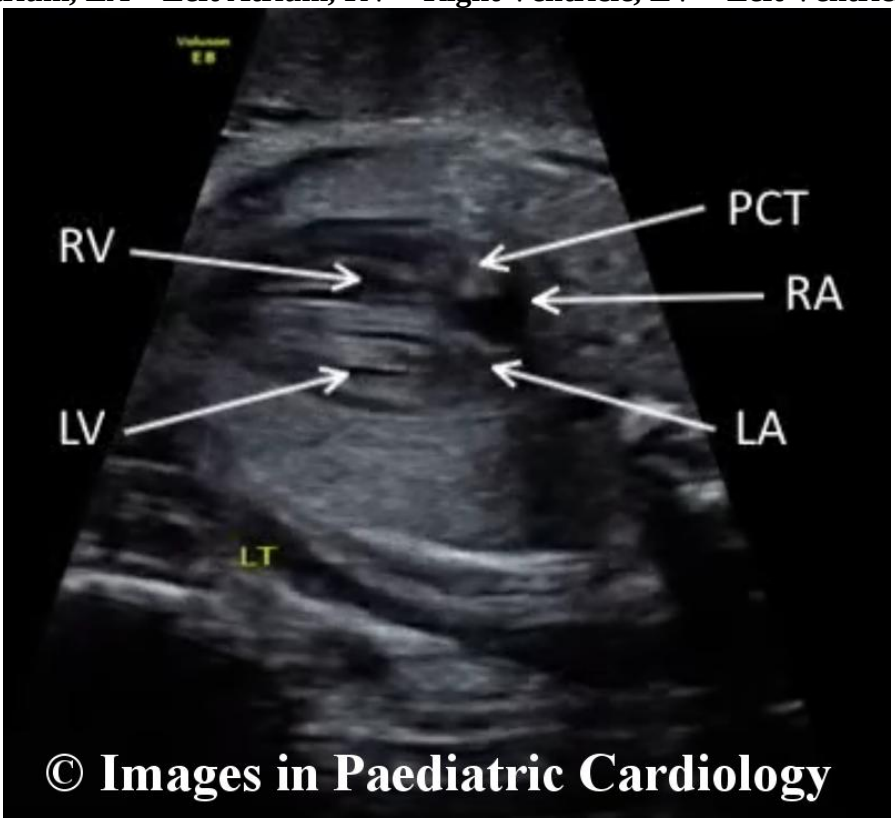
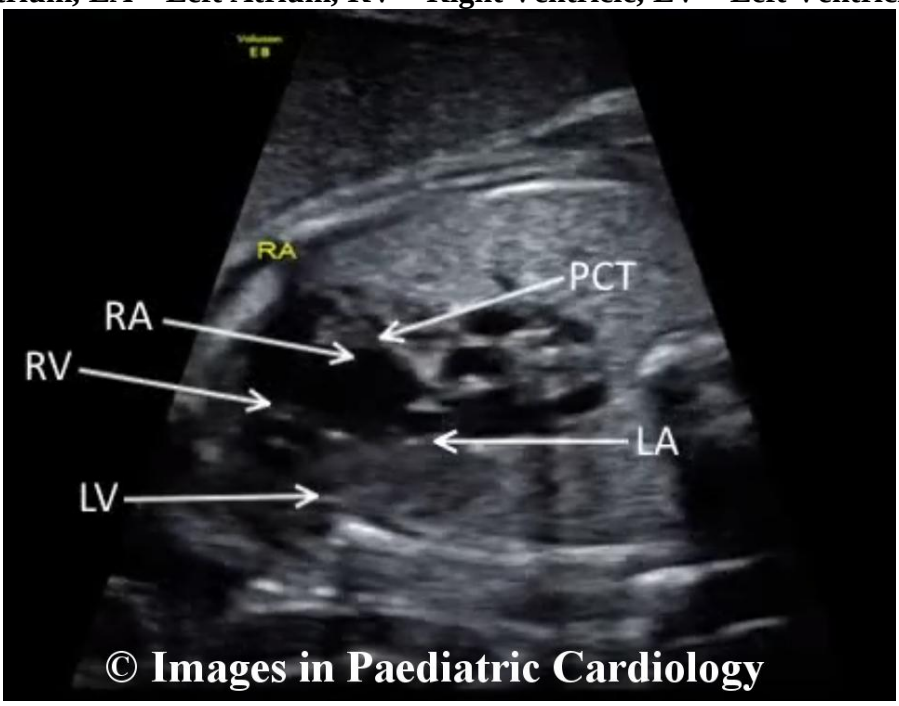


Figure 2: Fetal echocardiography conducted at 29 weeks gestation. Transverse 4-chamber view showing an echogenic focus extending from the posterolateral wall of the right atrium suggestive of prominent crista terminalis. PCT – Prominent Crista Terminalis, RA – Right Atrium, LA – Left Atrium, RV – Right Ventricle, LV – Left Ventricle.



Select views also showed what appeared to be a membranous structure crossing the atrium to insert on the superior aspect of the interatrial septum, without any obstruction to atrial blood flow. The mother reported no complications during pregnancy, and no known heart conditions in either the maternal or paternal genetic lines. The birth of the fetus was free from any notable cardiac events, and subsequent transthoracic echocardiography of the infant showed a comparable right atrial echogenic focus (Figure 3,4). The child remains well, with no obstruction to right atrial inflow on serial echocardiography, and no progression in the size of the mass to suggest a tumor.

Figure 3: Transthoracic echocardiogram of infant. Subcostal apical view showing prominent crista terminalis. PCT – Prominent Crista Terminalis, RA – Right Atrium, LA – Left Atrium, RV – Right Ventricle, LV – Left Ventricle.

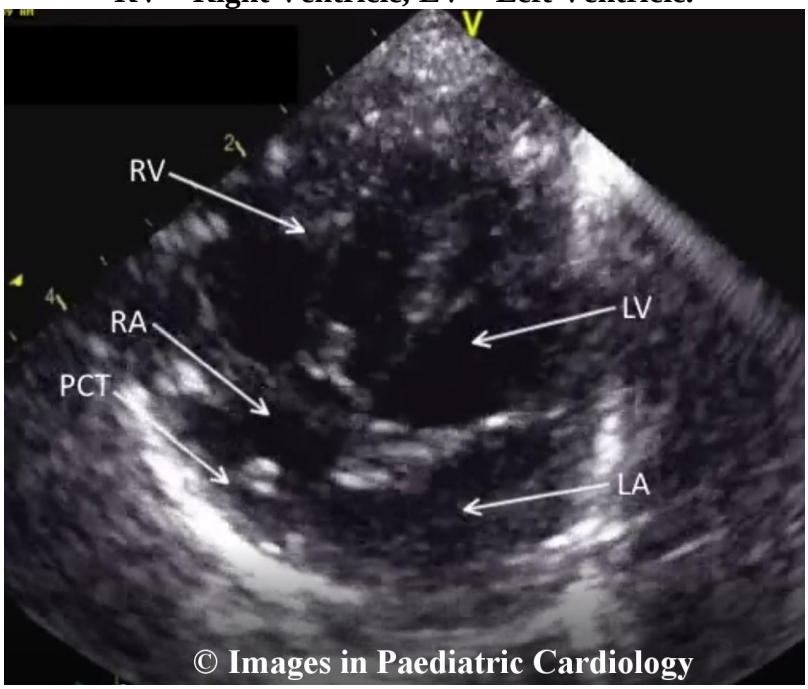
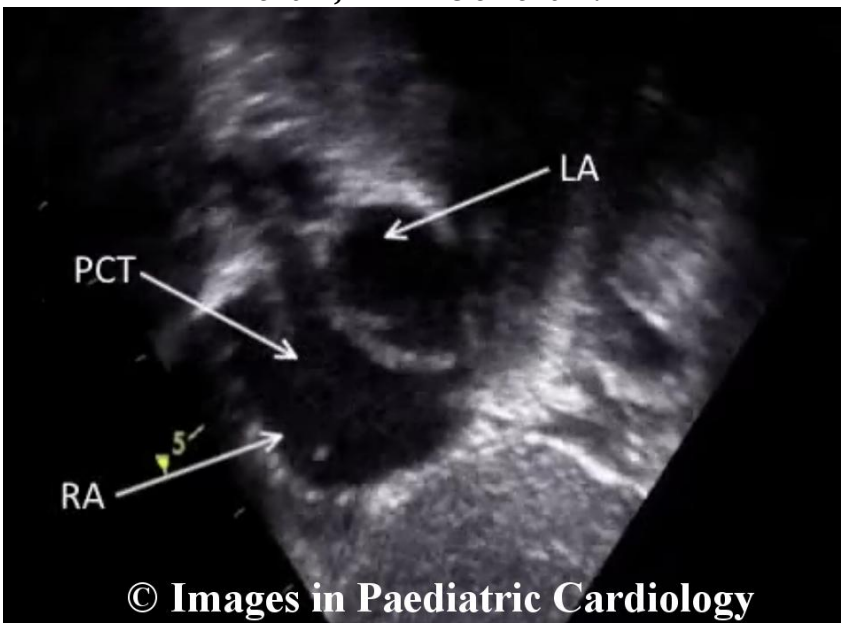


Figure 4: Transthoracic echocardiogram of infant. Subcostal left anterior oblique view showing prominent crista terminalis. PCT – Prominent Crista Terminalis, RA – Right Atrium, LA – Left Atrium.



Conclusions

A prominent crista terminalis is a rare anatomical variant that has only been described a handful of times in the literature. This is the first account of its appearance in a developing fetus. When such a structure is detected, it is important to correctly distinguish a prominent crista terminalis from other right atrial masses with similar presentations, as misdiagnosis carries important implications for patient care. While a prominent crista terminalis is a benign variant, cardiac thrombi and cardiac tumors, the leading differential diagnoses, are pathologic. The inability to correctly distinguish a prominent crista terminalis from these pathologic right atrial masses can lead to unnecessary anxiety, monitoring, and clinical interventions for the patient.[3-5] The existing literature on this topic is sparse, and therefore more is required to adequately familiarize clinicians with the characteristics of a prominent crista terminalis on both fetal echocardiography and newborn transthoracic echocardiography. This report builds on the pediatric, and inaugurates the fetal literature around prominent crista terminalis with the goal of increasing diagnostic accuracy in the future thereby reducing unnecessary additional tests for the patient.

References

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