Management of paroxysmal ectopic atrial tachycardia with long sinus pauses in a teenager

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Abstract

Sinus pauses in the setting of supraventricular tachycardia is rare in children. We describe an asymptomatic teen with irregular heart rate detected during an incidental exam who was found to have short runs of a slow ectopic atrial tachycardia on electrocardiogram and prolonged sinus pauses on routine ambulatory ECG. Successful catheter ablation of the ectopic atrial tachycardia led to resolution of the sinus pauses.

Introduction

Sinus node dysfunction with prolonged pauses is a rare finding in children unless they have had prior congenital heart surgery. Abrupt termination of a supraventricular tachycardia (SVT) or pacing can be associated with sinus pauses due to overdrive suppression of the sinus node [1]. However, such pauses are rarely seen in children despite the common prevalence of paroxysmal supraventricular tachycardia (PSVT) perhaps because of the relative healthy state of the sinus node. We describe a case of long sinus pauses in a teenager with an asymptomatic ectopic atrial tachycardia. Treatment with radiofrequency catheter ablation of the underlying tachyarrhythmia led to resolution of the sinus pauses.

Case report

An asymptomatic 14 year old boy was referred for evaluation of an irregular heart rhythm noted during a routine checkup. A standard 12-lead electrocardiogram revealed short runs of an atrial tachycardia (Fig. 1). The tachycardia rate was around 150 beats per minute. An ambulatory 24 hour Holter monitor done to assess the frequency and behavior of the tachycardia showed frequent sinus pauses (Fig. 2) with a longest pause around 5 s. The pauses were mostly (but not always) associated with termination of the SVT.

Because of the concerns of the long sinus pauses and because we felt that pharmacologic therapy could lead to worsening of the pauses, he was taken up for catheter ablation. At the ablation procedure, he was found to have an ectopic atrial tachycardia arising within the right atrial appendage. The ectopic focus was mapped with three dimension electro anatomical mapping (Carto, Biosense Webster), and successfully ablated.

Post ablation, he showed no sinus pauses with atrial burst pacing (normal corrected SNRT) and Holter monitor done one week later showed normal sinus rhythm with no pauses, and no sinus bradycardia (lowest heart rate was 42).

He remained asymptomatic.

Discussion

Sinus node dysfunction with long sinus pauses is rare in children with an otherwise normal heart. While sinus pauses due...
to overdrive suppression of the sinus node in the context of atrial fibrillation is described in adults, it has not been reported in children [2,3]. Adult reports have shown that ablation of the atrial fibrillation can lead to resolution of the sinus pauses [2,3]. However, it is unclear whether this also applies to children.

We decided to defer pacemaker therapy and instead opted for management of the tachyarrhythmia with catheter ablation. Ablation was preferred over medication because of potential concerns that an antiarrhythmic medication could lead to worsening of the bradycardia. Decision making was influenced by the fact that the patient was asymptomatic, with a normal cardiac structure and function on echocardiogram. While pacemaker placement would have been a permanent or semi-permanent intervention, ablation was preferred since it is a one-time procedure.

**Conclusion**

Sinus pauses can occur in young patients with paroxysmal SVT. Based on this case, we recommend that initial treatment should be directed towards the SVT and not to the bradyarrhythmia.

**Author disclosures**

The authors have no disclosures pertinent to this manuscript.

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