

Sinus competition in right atrial isomerism

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Case

A 13 months old boy with a history of heterotaxy syndrome, dextrocardia and right atrial (RA) isomerism was transferred to our hospital due to supraventricular tachycardia despite existing antiarrhythmic therapy (Sotalole). Initially he presented with a reduced left ventricular ejection fraction and a heart rate of 230 bpm. The ECG showed a narrow complex tachycardia which could be terminated with Esmolol intravenously. The patient regained stable sinus rhythm. One day later the monitor ECG showed sinus rhythm of 110 bpm with alternating p-wave axis associated with mild changes in heart rate. Figure 1 shows a monitor ECG tracing with an inferior p-wave axis at 110 bpm. Figure 2 shows a monitor ECG tracing with a superior p-wave axis at 117 bpm. Both tracings were recorded within one minute at the pediatric intensive care unit. The patient was in supine position and sleeping. We hypothesize that one sinus node is positioned more to the patients right and anteriorly (Figure 1) with a

spontaneous depolarization rate around 110 bpm. A second sinus node seems positioned more to the patients left and posteriorly (Figure 2) with a higher spontaneous depolarization rate. Holter monitoring also demonstrates competing p-wave axis.

Changes in p-wave axis were also present during Holter monitoring and support the presence of bilateral sinus node tissue with competing heart rates. Bilateral sinus node tissue is reported to be present in 54% of patients with RA isomerism and may be associated with several, mostly supraventricular, arrhythmias [1].

Compliance with ethical standards

Funding

None.

Conflict of interest

We declare no conflict of interest.

Ethical approval

This article does not contain any studies involving humans participants or animals performed by any of the authors.

Informed consent

Not applicable.

Reference

1. Ware AL, Miller DV, Porter CB, Edwards WD (2012) Characterization of atrial morphology and sinus node morphology in heterotaxy syndrome: an autopsy-based study of 41 cases (1950-2008). *Cardiovasc Pathol* 21: 421-427.

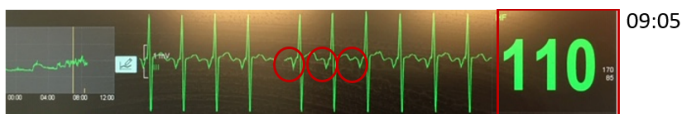


Figure 1. ECG tracing with an inferior p-wave axis at 110 bpm



Figure 2. ECG tracing with a superior p-wave axis at 117 bpm

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