


Accelerated idioventricular rhythm in a healthy newborn: frightening but non-threatening

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Brief Report

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Abstract

Accelerated idioventricular rhythm is a rare but benign form of ventricular tachycardia which might be challenging to differentiate from other more worrisome forms. We present the case of a healthy newborn diagnosed with an accelerated idioventricular rhythm which is spontaneously terminated without the need for medical therapy.

Accelerated idioventricular rhythm is a benign but rare form of ventricular tachycardia that does not require treatment in the great majority of cases.

When presenting in the neonatal period, AIVR is usually diagnosed in a healthy child being monitored for another reason.¹ AIVR is characterised by the presence of a wide complex tachycardia, usually with rates around 10% faster than sinus rhythm in an asymptomatic, otherwise well patient.^{1–8} In addition to this, AIVR may be associated with atrioventricular dissociation and fusion beats.^{3,4}

Case report

We present the case of a 25-day-old newborn, born at full-term after an uneventful pregnancy. Parents were non-consanguineous and family history was irrelevant. He presented to the emergency department due to a head injury, after he had fallen from his mother's arms. The head CT showed a small subdural haematoma and he was admitted to an intermediate care unit for monitoring over a 24-hour period. During this time, the ECG monitoring was arrhythmic, but the baby was clinically well and haemodynamically stable. His ECG revealed a broad complex tachycardia with a rate of around 150 beats per minute, atrioventricular dissociation, and left bundle branch block alternating with a sinus rhythm of about 140 beats per minute. A diagnosis of AIVR was made. Afterwards, a 24-hour ECG monitoring was performed, which confirmed this diagnosis (Fig 1). Additionally, this exam revealed a prolonged corrected QT interval. Echocardiogram showed no structural abnormalities and preserved cardiac function. Since there were no other criteria for long QT syndrome (no symptoms, no bradycardia, no T wave *alternans*, no family history of sudden death or long QT syndrome), no specific treatment was started and he was discharged to the outpatient clinic.

At 2 months of age, the follow-up ECG showed sinus rhythm and QTc within the normal range for his age (404 m/seconds). The 24-hour monitoring at the time was normal, apart from borderline QTc (Fig 2). Currently, at 6 months follow-up, he remains asymptomatic in sinus rhythm with normal QTc.

Conclusion

Differentiating AIVR from ventricular tachycardia may be somewhat challenging, but there are a few clinical features to help distinguish the two: in AIVR, the diagnosis is usually made by chance in a haemodynamically stable, asymptomatic child, while in VT, the child is usually unwell and unstable. Furthermore, AIVR typically converts to sinus rhythm with exertion, while VT does not.³ Additionally, AIVR usually presents with small, intermittent tachycardia bursts while VT tends to present with long runs.^{3–5}

Even though the echocardiogram is usually normal, this tachycardia can also be associated with CHD, although it does not seem to change the clinical outcomes in such cases.⁶ This arrhythmia is self-limited, benign, never degenerating into VT,⁸ and resolving within the first year of life, with no treatment being recommended in the paediatric population.^{1,4–8}

Congenital long QT syndrome is very rare in the neonatal period, but it is an important cause of sudden cardiac death in the first year of life and should be ruled out.^{9,10}

In the case presented above, the prolonged QT interval was an isolated finding, as there were no other features of LQTS in his personal or family history, nor in the ECG monitoring.

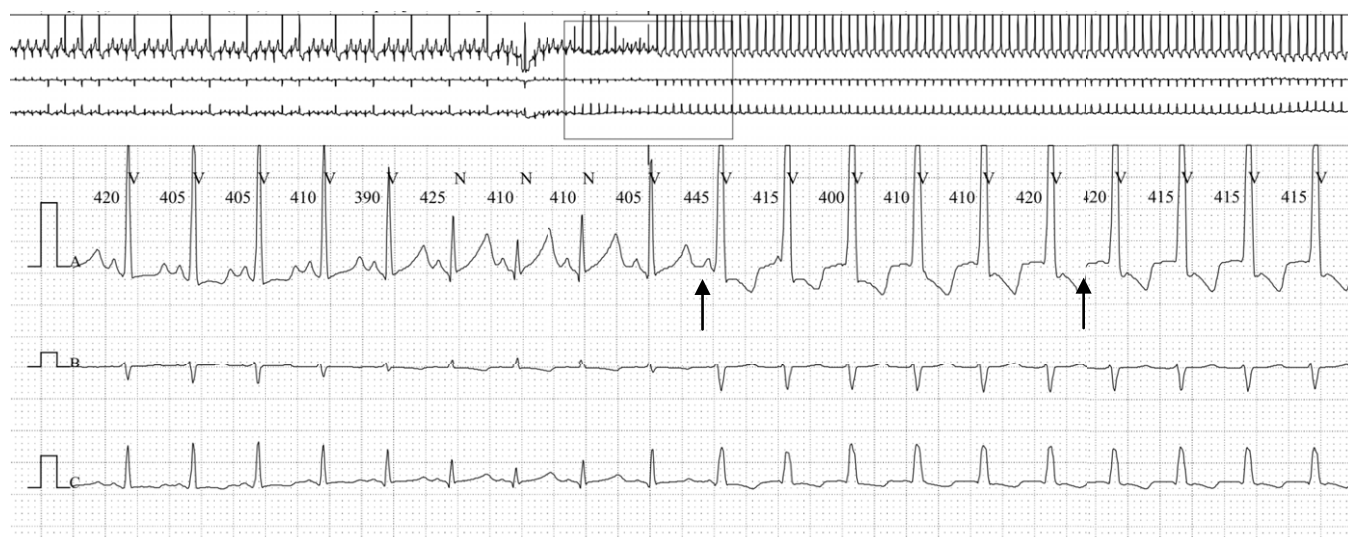


Figure 1. Rhythm strip showing accelerated idioventricular rhythm. The arrows point to the p waves which demonstrate the atrioventricular dissociation. The first complex after the first arrow is also a fusion beat. The Qtc is prolonged (489 m/seconds, Bazett).⁹

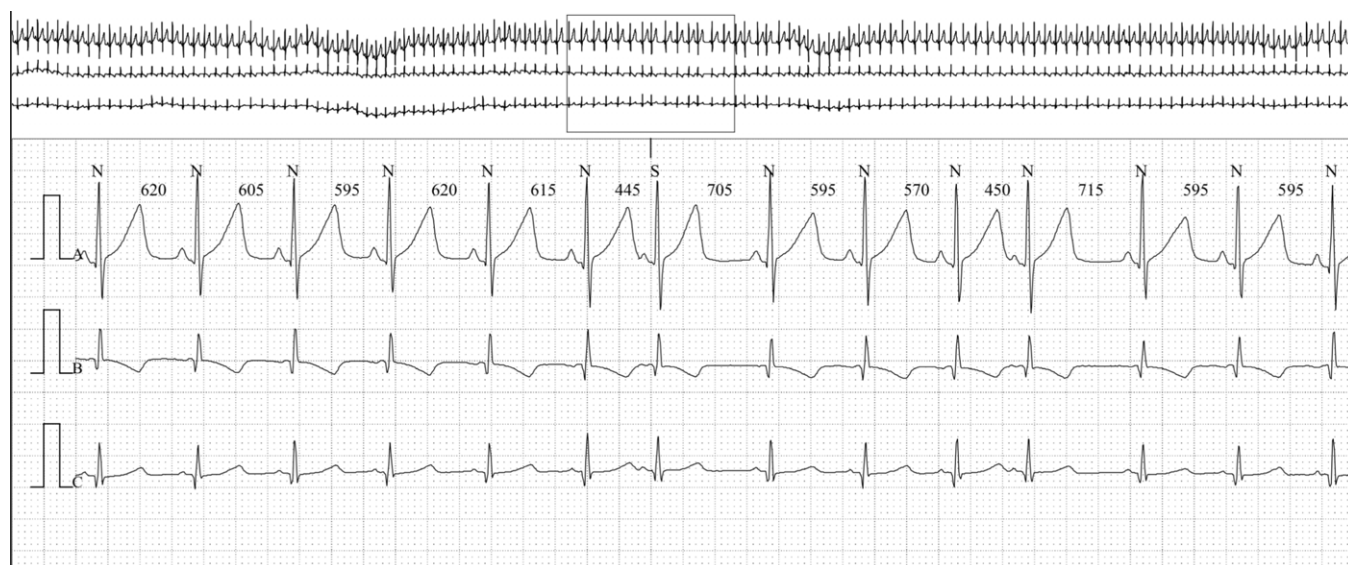


Figure 2. Rhythm strip of the same patient, performed at 2 months of age, now in sinus rhythm. The Qtc interval is borderline (462 m/seconds, Bazett).⁹

In summary, in the neonatal period, AIVR is benign and self-limited. Although differential diagnosis with VT might be challenging in some cases, in the presence of a clinically well, stable child, careful follow-up is sufficient and no treatment is recommended. Additionally, LQTS is a worrisome entity and should be carefully excluded, especially in the neonatal period.

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Conflicts of interest. None.

Ethical standards. The author asserts that all procedures contributing to this work comply with the ethical standards of the relevant national guidelines on human experimentation (please name) and with the Helsinki Declaration of 1975, as revised in 2008, and has been approved by the institutional committee (Comissão de Ética - Hospital de Santa Cruz, CHLO).

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