

Letter to the Editor

Tachycardia induced cardiomyopathy in an infant with atrial flutter: A challenging but reversible cause of heart failure



Sir,

A one-month-old asymptomatic full-term infant was referred for tachycardia, featuring 216 beats per minute as

per routine examination. Apart from the tachycardia, a mild systolic murmur (grade 1/6) at the left sternal border and liver enlargement (3–4 cm under the costal margin)

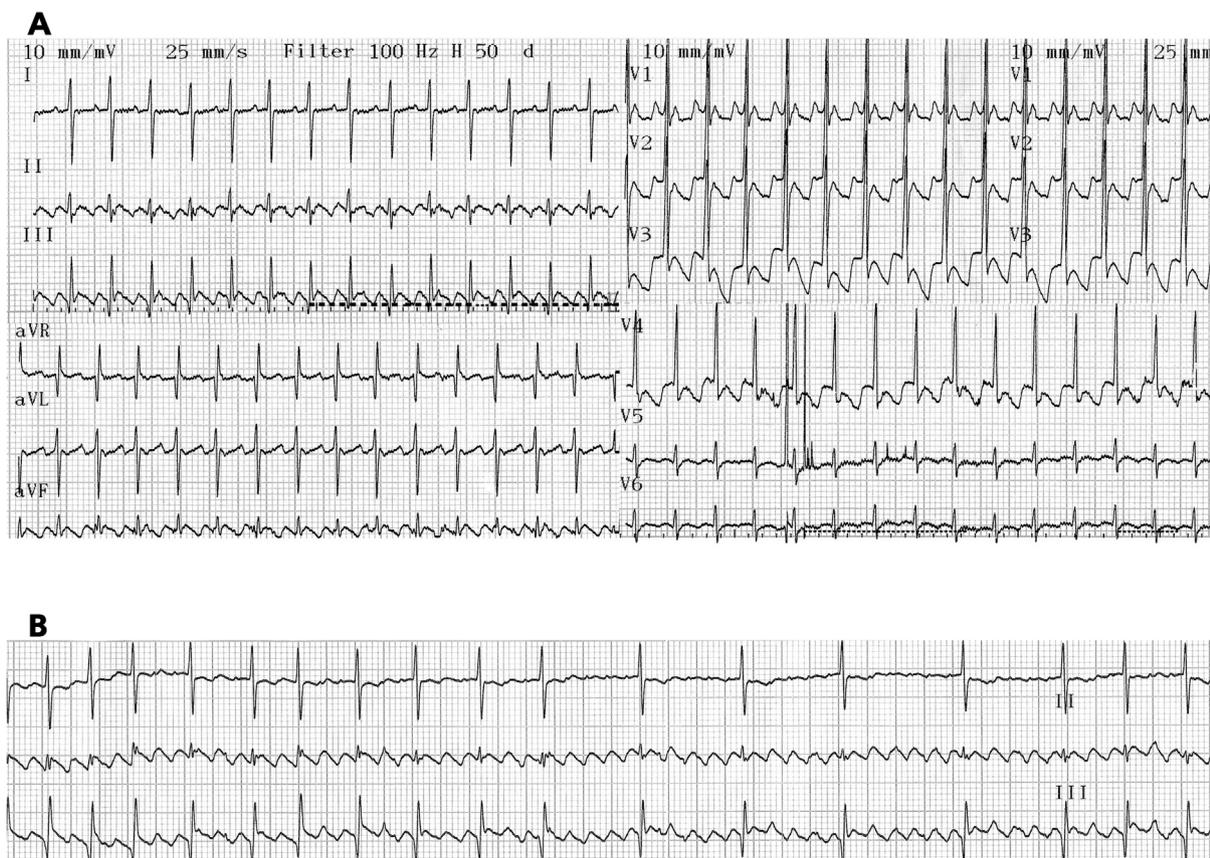


Figure 1 A) Twelve-lead electrocardiogram showing AF. Note the negative p wave with sawtooth pattern in leads II, III, and aVF with positive p waves in lead V1. B) Intravenous bolus infusion of adenosine decreases the ventricular response without terminating the AF. The sawtooth pattern of p waves becomes more apparent in inferior leads (II, III).

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were observed. The blood pressure was 97/33 mmHg, whereas the full blood count, C-reactive protein, acid base balance, biochemical profile, and thyroid function tests were within the normal limits. Furthermore, the blood cultures and screening for metabolic diseases were negative.

The electrocardiogram showed narrow QRS tachycardia with negative p waves in leads II, III, and aVF and positive p waves in lead V1 (Fig. 1A). The intravenous administration of adenosine resulted in transient atrioventricular block and unmasked atrial flutter (AF) waves (Fig. 1B). The synchronized electrical cardioversion (0.5 J/Kg) was subsequently performed, and a normal sinus rhythm was achieved. The initial echocardiogram revealed a small atrial septal defect with bidirectional shunt, dilation of both atria, and a hyposystolic myocardium (ejection fraction: 42%–45%, fractional shortening: 19%–21%). A moderate tricuspid regurgitation with medium elevation of pulmonary arterial pressure (peak gradient: 46.65 mmHg) was also observed. Propranolol and digoxin were initiated, and although arrhythmia showed no recurrences (as evidenced by 24 h Holter monitoring), a low ejection fraction persisted for 6 days. The serial echocardiograms showed progressive improvement of cardiac function with normalization of all indices in 10 days. The above findings confirmed the diagnosis of idiopathic AF tachycardia-induced cardiomyopathy (TIC). Anti-arrhythmic therapy was successfully discontinued after 2 months without any complications.

AF is an uncommon arrhythmia during neonatal life and infancy and is the most frequently unrecognized etiology of dilated cardiomyopathy in children.¹ Occasionally, AF may be complicated by TIC, which is characterized by congestive heart failure and left ventricular dysfunction. However, TIC is reversible after normalization of the heart rate.^{2,3} The underlying mechanisms of TIC in children include rapid atrial or ventricular rates, the duration of tachycardia, atrioventricular dyssynchrony, and heart rate irregularity.² As the majority of neonates and infants initially experience asymptomatic tachycardia, the heart rate should be carefully monitored by the pediatrician in all regularly scheduled checkups. Early recognition is critical to avoid ventricular dysfunction, as TIC is usually related to the duration of the tachycardia.

Declarations of interest

The authors have no conflicts of interest relevant to this article.

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