Reversibility of tachycardia-induced cardiomyopathy after radiofrequency ablation of incessant supraventricular tachycardia in infants

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Abstract
Tachycardia-induced cardiomyopathy developed in a 3 month old infant with permanent junctional reciprocating tachycardia, which was incessant despite medical treatment. The patient underwent transcatheter radiofrequency ablation. There were no complications and 8 months after the procedure the patient was symptom free without medication.

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Keywords: junctional reciprocating tachycardia; cardiomyopathy; radiofrequency ablation.

Permanent junctional reciprocating tachycardia (PJRT) is an uncommon form of incessant supraventricular tachycardia that occurs predominantly in infancy and childhood. Because PJRT is often resistant to medical treatment, such patients are at a high risk of developing tachycardia-induced cardiomyopathy. Lately radiofrequency transcathe ter ablation has become established as an effective and safe treatment to eliminate accessory pathways in adults and children. We describe successful radiofrequency ablation of PJRT in an infant with tachycardia-induced cardiomyopathy.

Case report
The patient, a 3 month old girl, was symptom free until she was 2 months old, when progressive feeding difficulties and tachypnoea were noted. The initial physical examination found signs and symptoms of heart failure with a heart rate of 230 beats/min. She weighed 4.5 kg. The characteristics of the surface electrocardiogram were consistent with the diagnosis of PJRT: narrow-complex tachycardia with negative P wave in leads II, III, and aVF and a long RP interval. Echocardiography showed left ventricular dilation and a shortening fraction of 20%. The patient was treated for both heart failure and tachycardia with digoxin, diuretics, and amiodarone for 20 days. Because tachycardia remained incessant we decided to attempt radiofrequency ablation. Informed consent was obtained from her parents.
cava (figs 1 & 2). The radiofrequency current was set at 25 W for 60 s. The tachycardia was terminated in the first second. The total procedure time was 3 hours with a total fluoroscopy time of 24 minutes. There were no complications. Subsequently ventricular function progressively improved. Echocardiography a week after ablation showed a shortening fraction of 30%. Eight months after ablation she was symptom free without medication and the surface electrocardiogram showed sinus rhythm.

Discussion

The existence of tachycardia-induced cardiomyopathy caused by persistent abnormal high rates is well established.  

It is especially common in patients who have PJRT. Tachycardia can be asymptomatic for a long time before heart failure develops.  

Our patient, however, presented with tachycardia-induced cardiomyopathy. It is vital to make the correct diagnosis in these patients because ventricular dysfunction does not usually improve with conventional treatment.

In their patient the ventricular accelerated rhythm that developed after ablation was treated with amiodarone. There were no complications in our patient. Our experience suggests that radiofrequency transcatheter ablation may be the best treatment in children with PJRT that does not respond to medical treatment. The presence of tachycardia-induced cardiomyopathy is an indication for radiofrequency ablation even in small infants.


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