CASE REPORT

Successful radiofrequency catheter ablation of atrial trigeminy in a young patient

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Abstract

A case is reported of a 35 year old man with atrial parasystolic trigeminy. The patient presented with a 10 year history of sustained supraventricular extrasystole causing symptoms leading to several hospitalisations and continuous unemployment. He had been treated ineffectively with several drug combinations. Radiofrequency catheter ablation of a right atrial focus completely suppressed the ectopic activity. This is the first report to demonstrate the efficacy and safety of radiofrequency catheter ablation in atrial ectopic trigeminy.

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Keywords: atrial trigeminy; ectopic atrial tachycardia; radiofrequency catheter ablation

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We report a patient who underwent radiofrequency catheter ablation for persistent ectopic atrial extrasystole. To our knowledge no previous cases have been published. This case report aims to demonstrate the efficacy and safety of radiofrequency catheter ablation in atrial ectopic trigeminy.

Case report

A 35 year old man presented with a 10 year history of supraventricular ectopy confirmed by programmed electrophysiological examination in 1989. He had been on various drug combinations including flecainide, sotalol, mexiletine, bisoprolol, and digoxin, without lasting benefit. Arrhythmia related symptoms such as pain, chest discomfort, dizziness, and perspiration led to several hospitalisations. Holter ECG showed heart rate ranged between 35 and 86 beats/min, and 1000 supraventricular extrasystoles in 24 hours were recorded. Myocarditis, hypertrophic cardiomyopathy, and right heart enlargement were excluded. Thyroid function was normal. Based on surface ECG recordings, atrial parasystolic trigeminy was suggested as the major arrhythmia responsible for clinical symptoms. The clinical severity of the arrhythmogenic activity had led to profound functional impairment resulting in continuous unemployment. Therefore, we considered radiofrequency catheter ablation a feasible and definite treatment in this rare form of atrial tachycardia.

Procedure

Medication (sotalol 160 mg bid) was discontinued 48 hours before electrophysiological examination. Endocardial mapping and radiofrequency catheter ablation was accomplished using a steerable ablation catheter (Marinr; Medtronic, Düsseldorf, Germany). The relation between each mapping point and a reference point (high right atrium) was recorded to determine the site of earliest atrial activation. The P wave morphology of each paced site was compared to that of the ectopic atrial beats (figs 1 and 2). The earliest atrial activation was recorded at the upper tricuspid annulus lateral to the AV node/His bundle region. Radiofrequency energy was delivered at that site and resulted in immediate cessation of trigeminal arrhythmia. Ten high frequency

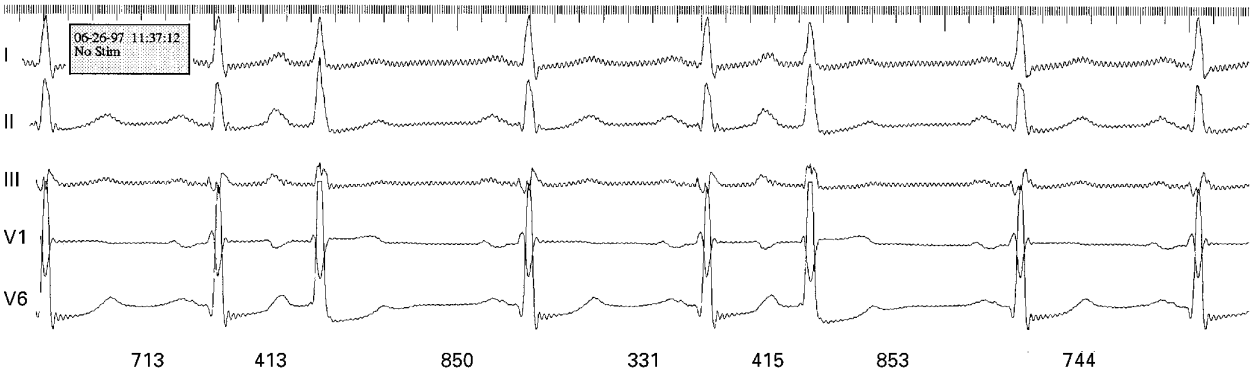

Figure 1 Surface ECG, paper speed 50 mm/s showing permanent atrial parasystolic trigeminy. The intervals between extrasystoles and coupling intervals are shown under the baseline in milliseconds.

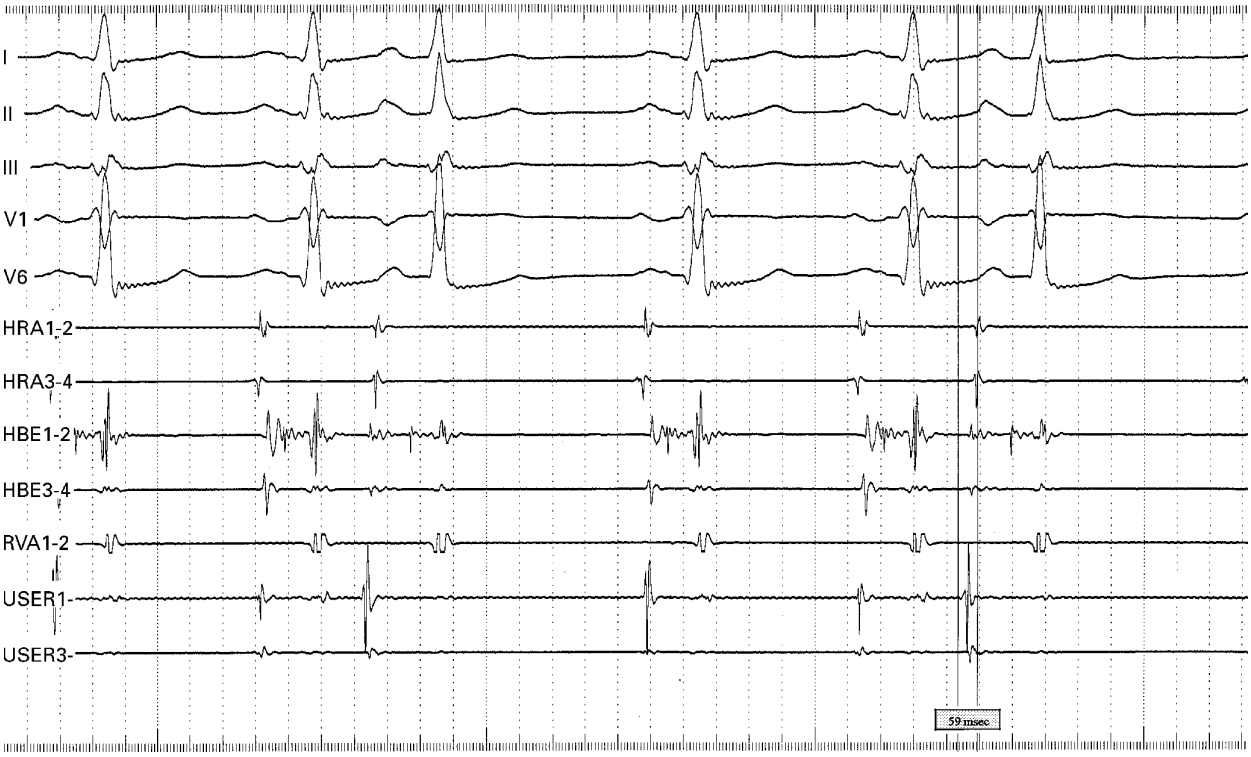

Figure 2 Surface and intracardiac ECG, paper speed 75 mm/s. Note the earliest atrial activation (59 ms) registered on the ablation catheter (user 1) compared to the reference catheter in the high right atrium (HRA). The earliest atrial activation was used to localise the site of origin of the ectopic focus.

applications were performed with an average energy of 34 W, an average temperature of 55°C (43–79°C), and an impedance of 103 Ω (78–112 Ω). The ectopic atrial activity did not recur during the following three days (continuous Holter monitoring) and the patient was symptom free after seven months of follow up.

Discussion

Atrial trigeminy is a fairly rare type of arrhythmia that may afflict both children and adults. Ectopic atrial tachycardia is conventionally treated pharmacologically. Reports of positive responses to a variety of antiarrhythmic agents such as flecainide, sotalol, verapamil, and adenosine have been reported.[1–3] The limited overall response to drugs in current use suggests that other therapeutic possibilities may gain an important role—for example, surgical treatment.[4] Nevertheless, problems have occurred during and after surgical management. Garson *et al* noted frequent recurrences of arrhythmia in patients operated on for ectopic atrial tachycardia.[5]

Radiofrequency catheter ablation as a non-surgical technique for the cure of atrial tachycardia is successful and has low complication rates.[6 7] Van Hare *et al* reported the results of 100 patients with atrial tachycardia, three of whom had ectopic atrial tachycardia.[6] Different arrhythmia mechanisms probably exist among the arrhythmias classified as ectopic atrial tachycardia, but the similarity to sinus rhythm among some may have practical significance. Like sinus rhythm, the rate of ectopic atrial tachycardia may increase or decrease in response to alterations in autonomic activity. Those two rhythms may also have a common origin.[8] Although ectopic atrial tachycardia is an uncommon form of supraventricular arrhythmia, most patients who develop this arrhythmia are young, symptomatic, and may be prone to the development of tachycardia induced cardiomyopathy.[9] In our case of a young patient, focal atrial arrhythmia caused many symptoms. Because of the successful ablation of that ectopic focus, application of radiofrequency catheter ablation is recommended in similar patients with drug refractory ectopic atrial tachycardia presenting with clinical symptoms.

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