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CARDIOMIOPATIA REVERSIBILE INDOTTA DA TACHICARDIA SOPRAVENTRICOLARE CRONICA. DESCRIZIONE DI UN CASO

Riassunto. **Viene descritto un caso di tachicardia giunzionale reciprocante persistente con segni di cardiomiopatia congestizia. Subito dopo il ripristino del ritmo sinusale, in seguito a terapia farmacologica, la funzione cardiaca ritornava normale. La disfunzione del ventricolo sinistro potrebbe dipendere da alterazioni del metabolismo cardiaco indotte dalla lunga durata della tachicardia.**
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Key words: **Tachicardia sopraventricolare cronica; Cardiomiopatia congestizia.**

Introduction

It has been reported that the permanent form of junctional reciprocating tachycardia can be responsible for congestive heart failure[1-4].

This report describes 1 case of incessant junctional reciprocating tachycardia in which clinical and instrumental signs of congestive cardiomyopathy coexisted. When the arrhythmia could be terminated by antiarrhythmic drugs and sinus rhythm persisted, a regression of cardiomyopathy was evident.

Case report

The patient was a 22 year old man, who had in his infancy episodes of supraventricular tachycardia. During the previous 4 years he presented palpitations, dyspnea and at intervals, loss of consciousness on exertion. The patient had no evidence of valvular heart disease, hypertension, alcohol abuse nor any systemic illness known to be associated with cardiomyopathy. The pulse was tachycardic (heart rate 110/min).

On ECG the morphology of the QRS complex was normal, the P wave (P') was negative in II, III and aVF. The interval between the QRS complex and the subsequent P' wave (RP') was longer than the interval between the P' wave and the subsequent QRS complex (P'R).

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It could be observed by Holter monitoring that the tachycardia was nearly incessant during the diurnal hours while it became less frequent during the night. The arrhythmia could be terminated temporarily by vagal maneuvers. The tachycardia began without an increase in the PR interval and was preceded by a critical reduction of sinus cycle length. Moreover at the beginning of tachycardia the interval between the QRS complex and the subsequent P' wave increased over the first few cycles. The P' wave of the first beat of the tachycardia was identical to the following P' waves, when the tachycardia ended with a P' wave, this was preceded by an increase of P'R interval (Fig 1). The AV conduction was constantly 1:1.

During the electrophysiologic testing the PA, AH and HV intervals were respectively 20, 110 and 55 ms. During programmed atrial stimulation performed in spontaneous rhythm, it was possible to induce episodes of tachycardia with characteristics identical to those of episodes which originated spontaneously (Fig 2). The induction was possible only when the AH interval of the extrastimulus was equal or longer than 190 ms.

On echocardiogram, a diffuse hypokinesis of left ventricle was present; the diastolic and systolic diameters were respectively 6.8 and 5.4 cm (Fig 3).

On gated angiocardioscintigraphy, ejection fraction of left ventricle was 47%.

After some insuccessful attempts with various antiarrhythmic drugs (quinidine-like drugs, amiodarone, propafenone, sotalol), it was possible to stop permanently the tachycardia by oral daily administration of combination of verapamil (480 mg) and digoxin (0.5 mg). The maintenance of sinus rhythm was confirmed by

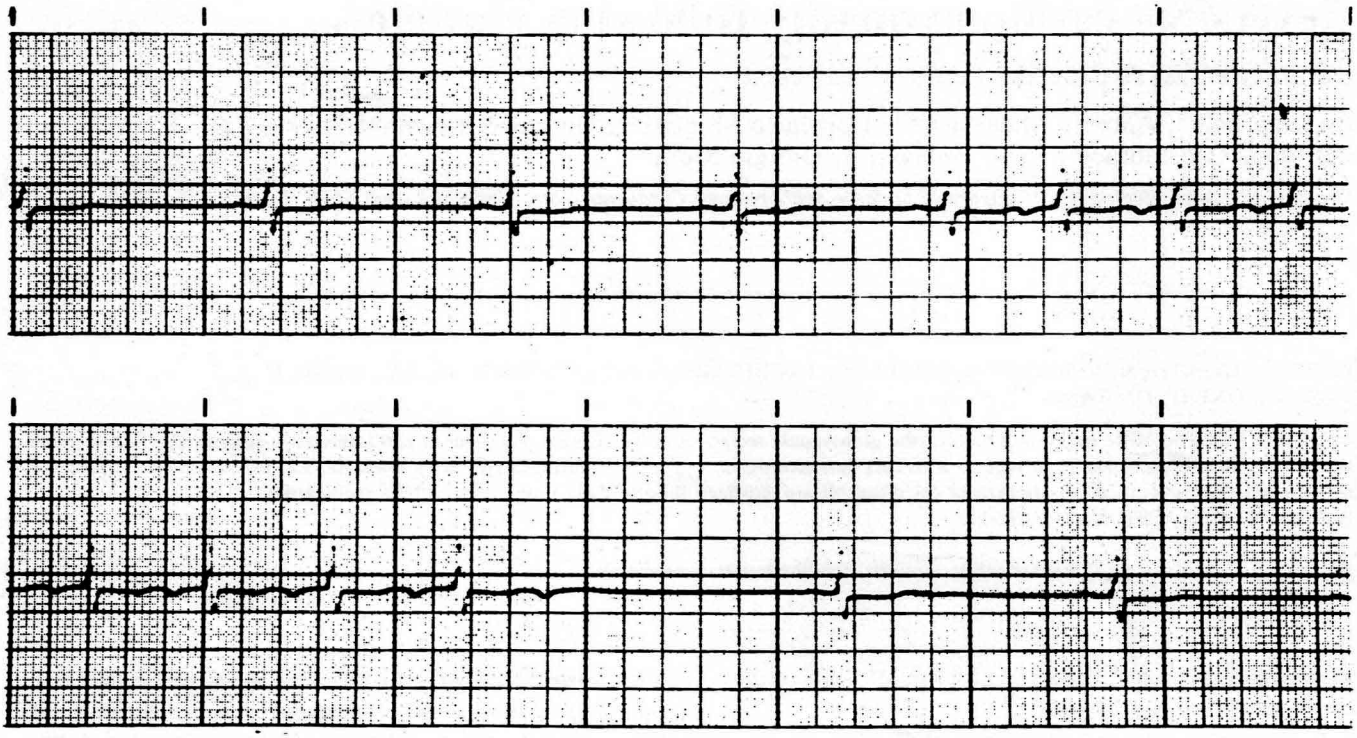

Figure 1. - ECG showing a decrease in sinus cycle length before the beginning of tachycardia, an increase of the RP' interval over the first few cycles and the cessation of the tachycardia with a P' wave preceded by a slight increase of the P'R interval.

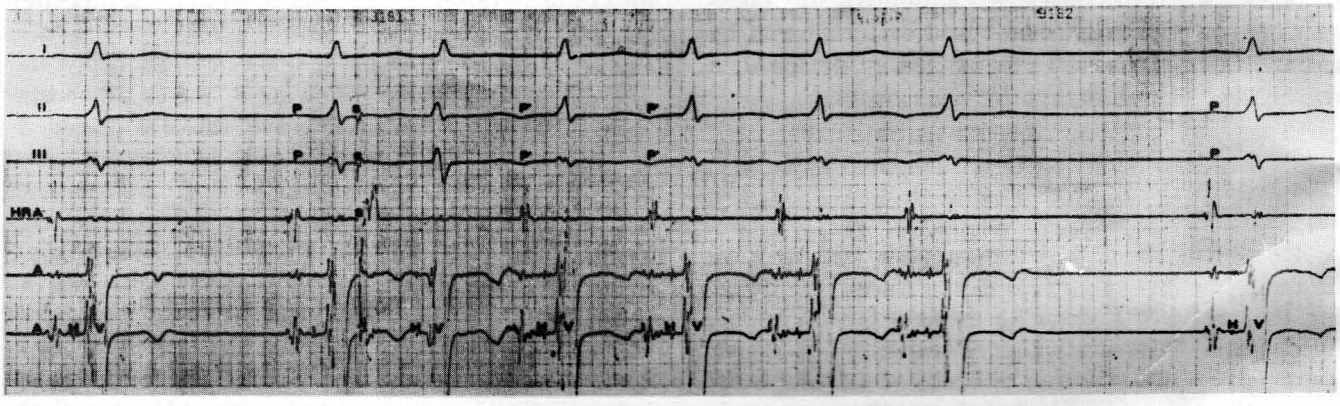

Figure 2. - Electrophysiologic testing. Induction of reciprocating tachycardia by atrial extrastimulus. The tachycardia has the same characteristics of the spontaneous one. The VA interval was longer than the AV interval and heart rate was 107/min. HRA: atrial electrogram obtained near the atrioventricular node.

various Holter monitorings. The restoration of sinus rhythm was followed, after about 7 days, by a normalization of left ventricular diameters on echocardiography (diastolic diameter = 5.3 cm, sistolic diameter = 3.6 cm) and by an increase of ejection fraction on radioisotopic angiocardiography (54%).

Discussion

The absence of increase of PR interval at the beginning of the tachycardia, the constant P' wave morphology during the tachycardia, the initial increase of the interval between the QRS complex and the subse-

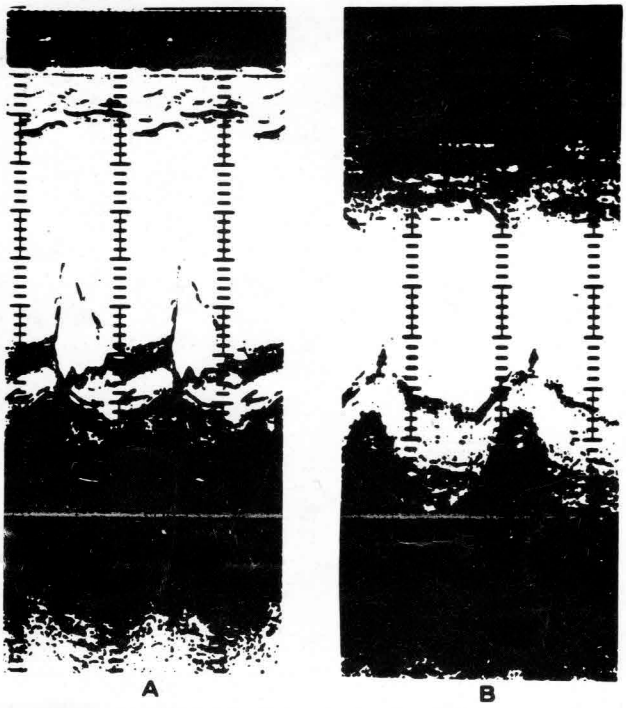

Figure 3. - M-Mode echocardiogram during tachycardia (A) and during sinus rhythm (B). Normalization of the ventricular dimensions and improvement of the wall motion after restoration of the sinus rhythm is observed.
A: diastolic and systolic diameters are 6.8 cm and 5.4 cm respectively.
B: diastolic and systolic diameters are 5.3 cm and 3.6 cm respectively.

quent P' wave over the first few cycles (suggestive of decremental properties of ventriculoatrial conduction), the costant 1: 1 AV conduction suggest an incessant form of junctional reciprocating tachycardia. This can be included in the group of "long RP' tachycardias"[5] which are persistent and generally refractory to medical therapy.

The rapid normalization of cardiac function allows us to conclude that the observed signs of cardiomyopathy were caused by the arrhythmia. The increase of the ejection fraction on radioisotopic angiocardiography and the ventricular diameters normalization on echocardiography were significant according to the reproducibility limits of these methods[6-8]. The duration of tachycardia, instead of its frequence, seems to be of crucial importance. In this regard it should be considered that neither supraventricular paroxystic tachycardia[9] nor brief period of atrial pacing[10] are able to induce signs of heart failure in normal subjects. On the contrary, heart failure has been observed in dogs after a long period of rapid pacing[11]. In such conditions the dysfunction of the left ventricle has been related to the depletion of myocardial stores of creatine, creatine phosphate and adenosine triphosphate. The reversibility of cardiac failure in patients with persistent tachycardia could depend, as previously indicated[11], by re-establishment of such high-energy substrates.

Summary

We report a case of persistent junctional reciprocating tachycardia with signs of congestive cardiomyopathy. The disappearance of tachycardia after successful medical therapy produced a concomitant complete regression of signs of cardiac failure. The left ventricular dysfunction could depend upon reversible changes of cardiac metabolism due to the length of tachycardia.

Key words: Chronic supraventricular tachycardia; Congestive cardiomyopathy.

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