

A re-entry tachycardia triggered by the spontaneous interruption of an atrial tachycardia

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The common atrioventricular nodal re-entry tachycardia is the most common form of paroxysmal supraventricular tachycardia. It starts frequently with a supraventricular ectopic beat that, on finding the fast pathway in refractory period, travels in the slow pathway as to appear as a prolongation of the PR interval on the ECG. In this study, we show a singular case of a common atrioventricular nodal re-entry tachycardia triggered by the spontaneous interruption of an atrial tachycardia.

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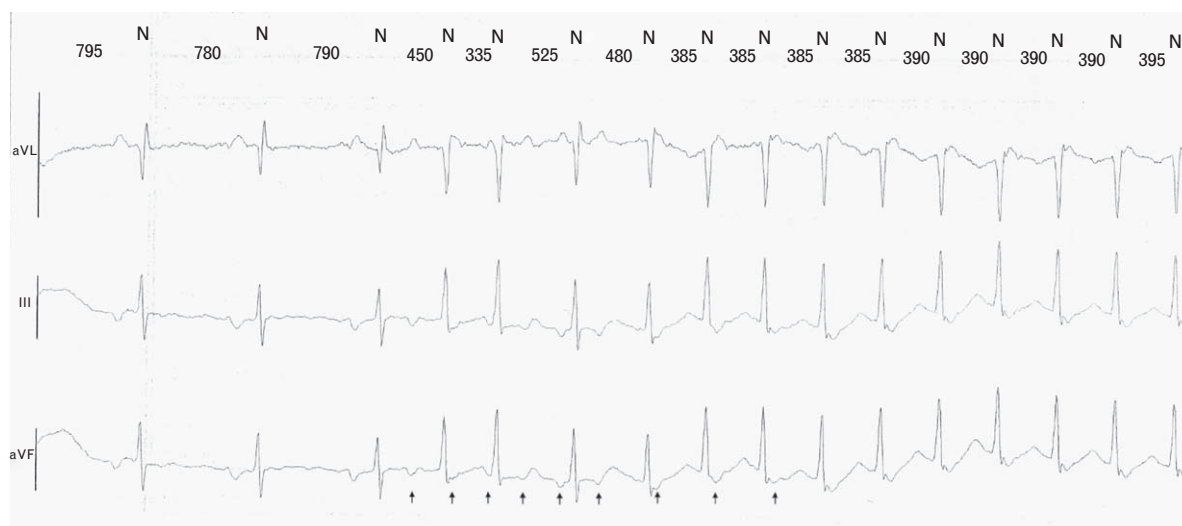
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A 77-year-old patient, affected by heart failure, undergoes a 24-h Holter ECG monitoring for palpitations. The Holter ECG shows a sustained paroxysmal supraventricular tachycardia (SVT) (see Fig. 1). It starts with a premature atrial contraction followed by other five identical P waves with regular PP intervals at atrial rate of about 250 beats per minute. The RR intervals are irregular and the atrioventricular ratio is variable. The interval between the sixth and the seventh P wave of tachycardia is longer (PP interval 385 ms) than previous

PP intervals; hence PP and RR intervals become regular and atrioventricular ratio becomes 1:1 to the end of tachycardia.

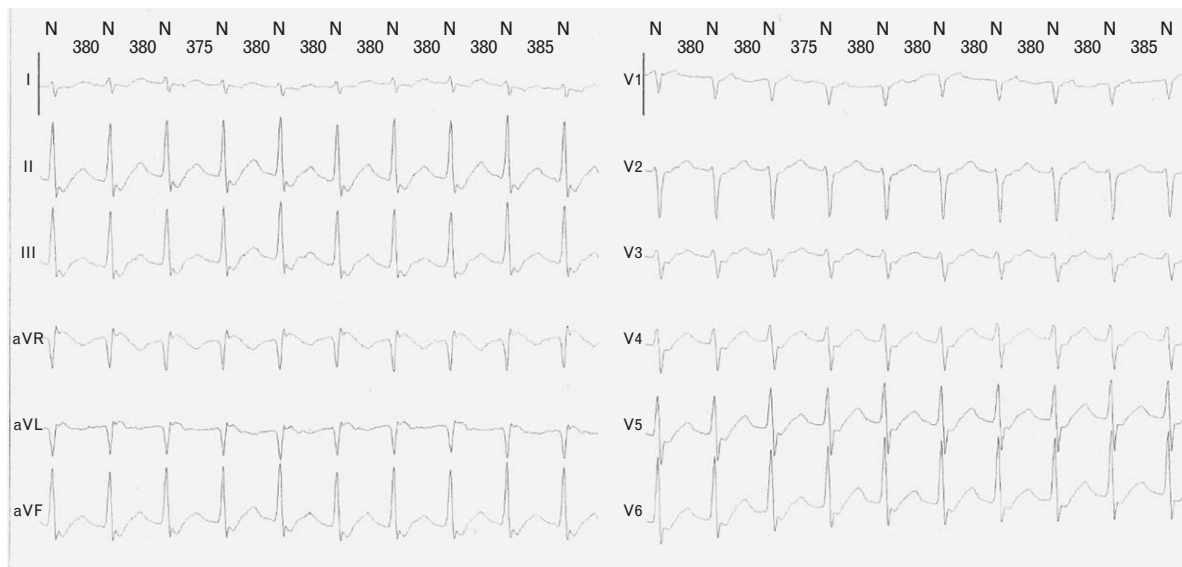
It is plausible that not just one, but two mechanisms are involved in this paroxysmal SVT. The initial six P waves represent a short atrial flutter/tachycardia with variable atrioventricular conduction, but the following tachycardia is a re-entry tachycardia. Since P waves are negative on the inferior leads and RP interval is 70 ms (see Fig. 2), this

Fig. 1



Beginning of paroxysmal supraventricular tachycardia. The indicators show the P waves (see text for discussion).

Fig. 2



Re-entry tachycardia (see text for discussion).

second tachycardia seems to be a common atrioventricular nodal re-entry tachycardia (AVNRT).¹

The common AVNRT is the most common form of paroxysmal SVT.¹ It starts frequently with a supraventricular ectopic beat that, on finding the fast pathway in refractory period, travels in the slow pathway causing a prolongation of the PR interval on the ECG.² In our case, when the atrial tachycardia stops, the atrial impulse seems to find the fast pathway in refractory period and so it reaches the ventricles through the slow pathway. Subsequently, when the fast pathway becomes excitable again, a retrograde conduction to the atria occurs through it; in this way, the AVNRT begins.

The PP interval between the sixth and the seventh P wave (that is the PP interval of beginning of the second tachycardia) has the same length of following PP

intervals; this supports our diagnostic hypothesis. In fact, the length of a PP interval represents the whole conduction time of the nodal re-entry circuit, and it should remain constant from the beginning to the end of a common AVNRT, as well as the RR intervals.

The common AVNRT is a paroxysmal SVT that begins frequently with a supraventricular ectopic beat. In this study, we showed a singular case of a common AVNRT tachycardia triggered by the spontaneous interruption of an atrial tachycardia.

References

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