My heart dances

Marcus Mutschelknauss, Hans Rickli, Peter Ammann Cardiology, Kantonsspital St. Gallen

Case presentation

A 33-year old woman was admitted for persistent palpitations over the past six years. The patient had no history of syncope, pre-syncope or family history of sudden cardiac death.

On admission the heart rate was approx. 160 bpm and blood pressure was 115/77 mm Hg. The remaining

results from physical examination and laboratory tests were unremarkable. Echocardiography showed no evidence of relevant structural heart disease.

A 12-lead recumbent ECG obtained on admission is shown in figure 1.

Figure 2 shows the 12-lead ECG recorded after assuming upright posture. The patient complained of palpitations during the ECG recording.



Figure 1

12-lead ECG in recumbent position.

Correspondence: Dr. med. Peter Ammann Cardiology Kantonsspital St. Gallen Rorschacherstrasse 95 CH-9000 St. Gallen Peter.Ammann@kssg.ch



Figure 2

12-lead ECG in upright position.

Question

What is the underlying rhythm in our patient in supine/standing position?

Discussion

This case illustrates atrial tachycardia (AT) originating from the crista terminalis. Initially the ECG at rest was interpreted as a normal sinus rhythm with AV block I. But in fact, as close observation of the T-wave shows, there is a second P-wave hidden in the T-wave, suggesting AT with 2:1 AV conduction.

Vagally induced 2:1 conduction in the supine position changed to 1:1 conduction in the upright position.

As shown in our patient, any fluctuation of sympathovagal balance (postural changes) produced palpitations due to 1:1 conduction of atrial tachycardia.

AT are either focal or macrorentrant. The predominant area of origin of right atrial tachycardia is the area along the crista terminalis. If AT arises from the superior portion of the crista terminalis, P-wave morphology may be similar to sinus P-wave. There is extensive literature on P-wave morphology and the site of atrial focus [1, 2]. Different P-wave algorithms have been proposed for localisation of the site of AT. In our patient AT was localised in the right atrium, as predicted by a negative P-wave in lead V1. Positive P-waves in the inferior leads suggested superior origin from the crista terminalis. Differentiating the origin of the AT prior to ablation is necessary in order to plan for transseptal puncture for left atrial access if needed.

Successful mapping and radiofrequency ablation of focal right atrial tachycardia was performed in our patient, and the follow-up to date has been uneventful.

References

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