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Atrial tachycardia during pregnancy: Postnatal treatment

Short title: Atrial tachycardia during pregnancy

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A 32-year-old woman presented to the Emergency Department with heart palpitations and increased fatigue. She was at 26 weeks gestation. An electrocardiogram revealed a narrow complex tachycardia, at an approximate rate of 150 beats per minute, with visible P waves (Figure 1A). The patient's preliminary laboratory results showed no abnormalities and no structural changes were seen in echocardiography. There were no signs of fetal distress. An attempt was made to terminate the tachycardia with vagal maneuvers, however it was ineffective and intravenous adenosine was administered. The arrhythmia failed to convert to sinus rhythm after the first dose of 6 mg, however the second dose of 12 mg adenosine was successful (Figure 1B). She was discharged home in good condition with a recommendation for 25 mg of metoprolol daily. In later weeks of pregnancy and the perinatal period, the patient did not report any similar symptoms and no further tachycardia was documented. Patient's child was born at term with no complications. Unfortunately, the arrhythmia returned in the postpartum period. An electrophysiological study with low fluoroscopy technique was performed to determine the substrate of the arrhythmia, which induced atrial tachycardia at 352 ms cycle length. Using the CARTO electroanatomical mapping system, potential and activation

maps were made of the right atrium, which revealed earliest activation site in the anterolateral tricuspid annulus (Figure 1C). A series of radiofrequency ablation applications were performed, resulting in termination of the tachycardia. The patient made a full recovery and was discharged home. During a 10-month follow-up period two arrhythmia episodes were reported, each lasting approximately a couple of seconds.

Hospitalizations due to arrhythmia are not common and it is estimated that out of 100 000 hospitalizations in pregnant women, 68–166 are caused by arrhythmia. The most common cases seen are mild arrhythmias, such as atrial fibrillation and paroxysmal supraventricular tachycardia, which account for approximately 14% [1]. Gestational arrhythmias usually affect mothers giving birth between the ages of 41 and 50, and the incidence of atrial tachycardia and AVNRT increases with age. The patient's history, i.e. previous episodes of SVT or structural heart disease, also indicates a higher risk of SVT during pregnancy. Dangerous cardiac arrhythmias during pregnancy include supraventricular and ventricular tachycardia with hemodynamic symptoms. Patient care requires a multidisciplinary approach by cardiology, pediatric electrophysiology, anesthesiology and neonatology specialists [2–4].

If a patient is experiencing attacks of supraventricular tachycardia before pregnancy and is planning to get pregnant, the best option is to perform an ablation before the planned pregnancy. During pregnancy, standard catheter ablation using fluoroscopy is not recommended. The first treatment option in hemodynamically stable patients with symptomatic or prolonged SVT confirmed by electrocardiography should be vagal maneuvers and further administration of adenosine if these prove ineffective [5].

In the case of the patient described above, the source of the arrhythmia was a focus at the lateral wall of the tricuspid annulus without low amplitude potentials in bipolar map. Symptoms first appeared in the second trimester of pregnancy, which leads to suspicion of the gestational etiology of the arrhythmogenic focus.

Article information

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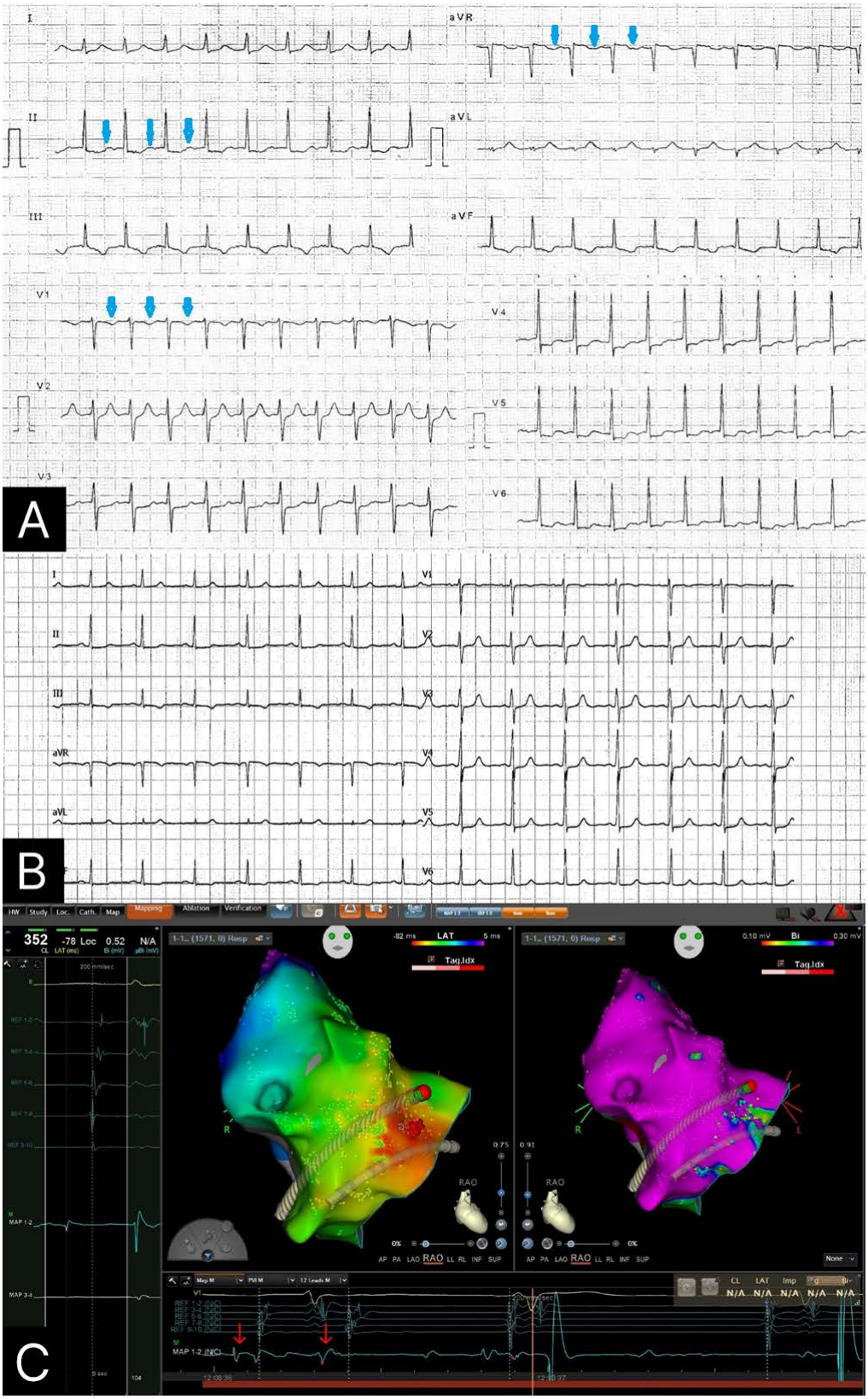

Figure 1. A. Electrocardiogram of atrial tachycardia — visible P waves in lead V1, II and aVR (blue arrows). **B.** Electrocardiogram of sinus rhythm after the administration of adenosine. **C.** High density activation ablation map (LAT) and bipolar map of the tricuspid annulus in left anterior oblique (LAO) and right (RAO) projection. The red arrows point to the earliest

activation and the location of tachycardia cessation. The mapping catheter electrocardiogram under the maps presents two last beats (pointed with red arrows) of the tachycardia and its cessation during application with the following sinus rhythm