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CASE REPORT

A case of successful ablation of accessory right anterior-septal pathway (parahisian) through the non-coronary cusp: case report

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Background. *Usually, accessory pathways are easy to map and ablate, however, ablation of some APs become challenging. For instance, ablation in parahisian region requires an assess to right atrium.*

Case summary. *In this case, we describe rarely used and effective method of accessory pathway ablation. We present case of a 12 years-old girl with WPW syndrome. Radiofrequency ablation near the tricuspid annulus had no effect, and tachycardia was eliminated through the non-coronary cusp. Complains such as palpitations and weakness disappeared after the procedure.*

Discussion. *Radiofrequency ablation of accessory pathway that is located in the anterior-septal area might be performed through the non-coronary cusp. This method of ablation is used when the ablation through the tricuspid annulus was ineffective.*

Keywords: *supraventricular tachycardia. Accessory pathway. Noncoronary cusp. Radiofrequency ablation. Case report.*

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Introduction

Radiofrequency ablation (RFA) is radical treatment method of accessory pathways (APs) [1–2]. Ablating of accessory pathways through the non-coronary cusp have been presented in several case reports [3–5]. In our report we present patient with right anterior-septal accessory pathway that is eliminated through the non-coronary cusp. Through the anatomical point of view, the procedure was performed successfully due to non-coronary cusp bordering with right anterior-septal area.

Case presentation

12-years-old Uzbek female patient was admitted to hospital with complaints to tachycardia attacks that begin suddenly and stop after intravenous injection of verapamil. Duration of attacks were approximately 15–20 minutes. Physical and laboratory examinations results were normal. 12 lead ECG and echocardiography results did not reveal any pathology. At the hospital the she was diagnosed with supraventricular tachycardia (SVT). ECG results confirmed the diagnosis of SVT (figure1) and electrophysiological study was recommended. After exclusion of all contraindications for the procedure, electrophysiological study of the heart started.

First, the operation area (puncture area) was processed with betadine and alcohol. Further, under local anesthesia of Sol. Novocaini 0.5 % — 40.0 ml according to the Seldinger technique, the right femoral vein was punctured with needle, 2 electrodes were inserted into the heart cavity using an introducer into the cardiac sinus and right ventricular (RV) positions.

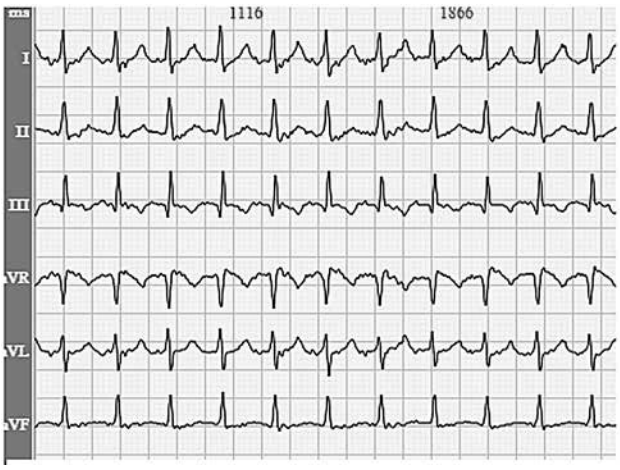

Figure 1. Supraventricular tachycardia

An invasive electrophysiological investigation (EFI) was performed. During the retrograde stimulation an early activation of the atrium in areas CS9–10 was determined, decrement was absent. During antegrade stimulation, a paroxysm of orthodromic tachycardia was induced with a cycle of 270 ms.Wolf-Parkinson-White (WPW) syndrome was verified (figure 2).

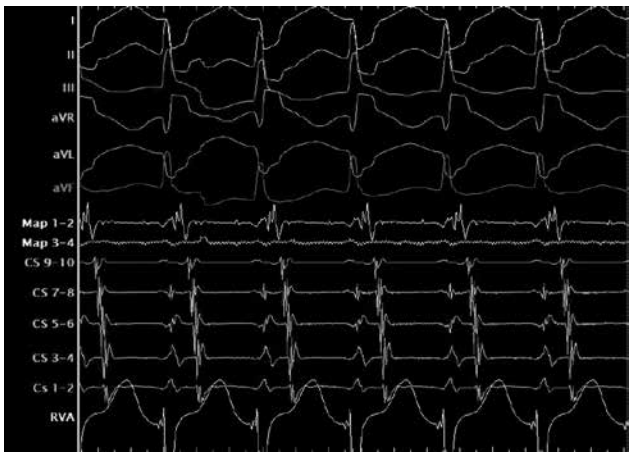

Figure 2. A paroxysm of orthodromic tachycardia, with a cycle of 270 ms. Earliest activation at CS 9-10

Figure 3. Fluoroscopic image of electrodes. LAO 30. Ablating electrode installed in the projection of the AP at the level of the right fibrous ring and diagnostic electrode is in the coronary sinus

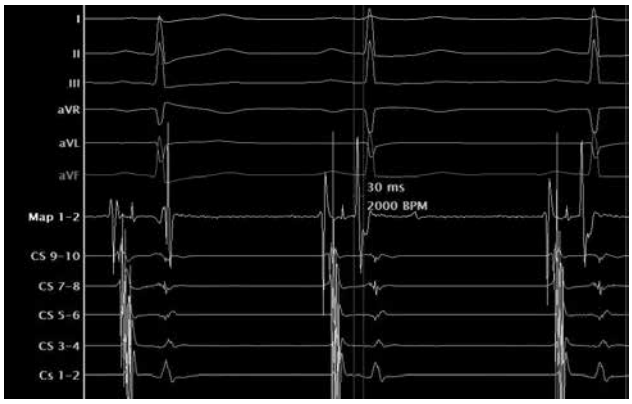

Figure 4. Decreasing H-V interval and P-Q interval. One of the signs of the non-effective ablation of AP

Next step was entering of mapping-ablation electrode in the cavity of the heart. A subsequent mapping revealed parahisian bundle of Kent. Under fluoroscopic and electrophysiological control ablating electrode was installed in the projection of the AP at the level of the fibrous ring of the tricuspid valve (fugure 3). The AP area was ablated with radio frequency (RF) energy (55 C, 40 W), but without any effect (figure 4).

It was decided to continue mapping on the left side. Right femoral artery was punctured, and mapping electrode was inserted into the left ventricular (LV) cavity with the help of the introducer (figure 5). Sol. Heparini 3000 ED was injected. The shortest VA interval was registered in the region of the non-coronary cusp (pre-excitation 30MS). Under fluoroscopic and electrophysiological control ablating electrode was installed in the projection of the AP.

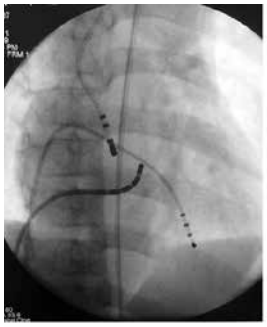

Figure 5. Fluoroscopic image. RAO 30. Ablating electrode is in the LV cavity. First diagnostic electrode is in the CS. Second is in the cavity of RV

The field of AP was ablated with RF energy (50–60 C, 40–45 W). At the 3rd second of impact, the orthodromic tachycardia stopped due to blockade at the level of AP.

Dynamic observation for 30 minutes: transmission of impulses through the AV node was maintained. Control EPS: Atrioventricular conduction — through AV node. Wenkebach point — 190 impulses per min. RRPAV-node= 330 мs/120 per min.

ERP AV-node= 270ms/120 per min. Retrograde conduction — through the AV node.Wenkebach point — 140 imp per minute. RRP AV-Nr=440 ms / 100 per min. ERP AV-Nr=380 ms / 120 per min. Programmed (up to three extrastimuli), frequent, superfrequent (up to 150 per min), ECS tachycardia paroxysms were not induced and VA-dissociation was detected. (figure 6). Electrodes extracted. Pressure bandage was placed at femoral vessels.

Discussion

Nowadays radiofrequency catheter ablation is the most common method of radical treatment of APs and other arrhythmias. Ablating APs that are located near the AV-node is technically difficult. During the ablation of this area with radiofrequency energy, surgeon can damage AV-node that may lead to serious heart rhythm disturbances. That's why there are a lot of modifications, created by professional electrophysiologists. Ablating of the anterior-septal AP through the non-coronary cusp is one of successful modern modifications. There are some advantages

Figure 6. V-A dissociation. One of the signs of AP ablation

of this method. At first, as we said earlier, ablating area is far from AV-node and it helps to work safely. Furthermore, ablating APs that are located on the right anterior-septal area is more effective than treating through right atrium.

However, there are some disadvantages of this method. For instance, for entering non-coronary cusp surgeon have to puncture artery that enhances risk of thrombosis.

Conclusion

Ablation of APs that are located in the right anterior-septal area through the non-coronary cusp is more effective compared with the right atrium.

Conflict of interests: None declared.

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