ABLATION OF A LEFT-SIDED WPW IN A PATIENT WITH PERSISTENT LEFT SUPERIOR VENA CAVA

АБЛАЦИЈА НА ЛЕВОСТРАН ДОПОЛНИТЕЛЕН ПАТ КАЈ ПАЦИЕНТ СО WPW СИНДРОМ И ЛЕВА ПЕРЗИСТЕНТНА VENA CAVA SUPERIOR

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Abstract

Anomalies of the venous system may impose serious limitations to the treatment of arrhythmias by means of ablation therapy. We describe a patient who had WPW syndrome with frequent supraventricular tachycardias in whom an ablation was performed. The patient was found to have a persistent left superior vena cava and a left-sided manifest accessory pathway. Persistent left superior vena cava is the most common congenital thoracic venous anomaly with a prevalence of 0.3-0.5% in the general population and is found more frequently in patients with accessory pathways than in patients with AV nodal reentrant tachycardia. Mapping and ablation of an accessory pathway follows the same general electrophysiology principles applicable to patients without anomalous venous return.

Key words: Wolff-Parkinson-White, accessory pathway, left persistent superior vena cava

Апстракт

Аномалиите на венскиот систем на срцето можат сериозно да влијаат на третманот на срцевите аритмии особено кај аблационата терапија. Ние прикажуваме случај со WPW синдром со чести предкоморни тахикардии кај кој беше направена аблација на дополнителниот пат. Кај пациентот се дијагностицира лева перзистентна вена кава супериор и левостран манифестен дополнителен пат. Лева перзистентна вена кава супериор претставува најчеста конгенитална аномалија на венскиот систем на срцето со преваленција 0,3-0,5% од популацијата и е многу почеста кај пациенти кај кои се дијагностицира атриовентрикуларен дополнителен пат во споредба со оние кај кои постои атриовентрикуларна јазолна кружна

тахикардија. Електрофизиолошкото мапирање и аблацијата на дополнителниот пат беше идентично во споредба со оние пациенти кај кои не постојат аномалии на венскиот систем на срцето.

Клучни зборови: Волф-Паркинсон-Вајт синдром, дополнителен пат на срцето, лева перзистентна вена кава супериор

Introduction

Persistent left superior vena cava (PLSVC) is an uncommon vascular anomaly; however, it is the most common congenital thoracic venous anomaly with a prevalence of 0.3-0.5% in the general population [1]. It results when the left superior cardinal vein caudal to the innominate vein fails to regress. It is most commonly observed in isolation but can be associated with other cardiovascular abnormalities including atrial septal defect, bicuspid aortic valve, coarctation of aorta, coronary sinus ostial atresia, and cor triatriatum [2].

Case report

A 46-year-old man was referred for catheter ablation of short QRS tachycardia for recurrent presyncopal spells. Normal valve and left ventricular function were assessed with echocardiography. The following catheters were inserted through the femoral veins (three from right femoral vein and one from left femoral vein): quadripolar catheters were placed in the right ventricular apex, His bundle and high right atrium; a decapolar catheter (Biosense Webster G curve) was placed easily in the CS. Baseline underlying electrophysiology parameters were as follows: AH=110 msec; HV=33 msec. The accessory pathway has antegrade and retrograde conduction. The pathway effective refractory period was 300 ms at 600 ms pacing drive train from the right ventricular apex. Atrioventricular reentrant tachycardia was induced with programmed stimulation from CS 5,6 at 600/500/320 msec, TCL 380 msec (155 bpm), eccentric retrograde

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atrial activation with CS 1,2 earliest point of activation. The accessory pathway was found as left lateral.

Discussion

The presence of PLSVC can render access to the right side of heart challenging via the left subclavian approach. Major coronary sinus abnormalities were found more frequently in patients with accessory pathways than in patients with AV nodal reentrant tachycardia [3].

The presence of an accessory pathway in the event of PLSVC could be explained by a common embryonic development (Figure 1). Failure of the left superior cardinal vein to regress, i.e. the ligament of Marshall, results in PLSVC (Figure 2). In the same fashion, accessory pathways may result from failure of resorption of the myocardial syncytium at the annulus fibrosis of the atrioventricular valves during fetal development [4,5].

Fig. 1. Embryonic development of Persistent Left Vena Cava Superior

We prepared trans-septal puncture and placed ablation catheter on mitral valve with AV fusion on ablation catheter and the unipolar electrocardiograms showed rapid and deep QS, and there was a possible accessory pathway potential (Figure 3). One application of RF (temperature =58°; power=58 watts; temperature control mode) at this

site abolished pathway within six seconds. No delta wave on ECG (Figure 4 and 5). Four more applications of RF (safety burns) were done, each lasted for 30 seconds. Twenty minutes later there was VA dissociation at 520 msec and ECG without delta wave.

Fig. 2. Persistent Left Vena Cava Superior confirmed by subsequent venography

Fig. 3. Intracardiac ECG of WPW with Left accessory pathway

Fig. 4. Intracardiac ECG of VA dissociation at 520 msec after ablation of Left accessory pathway

Fig. 5. End of procedure. No delta wave, concentric activation of atrial signal at CS catheter

Conclusion

PLSVC is the most frequent congenital thoracic vein abnormality. PLSVC is suspected where there is dilation of the CS in the absence of a cause for elevated right atrial pressure. Mapping and ablation of an accessory pathway in patients with PLSVC follows the same

general electrophysiology principles applicable to patients without anomalous venous return.

Conflict of interest statement. None declared.

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