RADIOFREQUENCY CATHETER ABLATION OF TYPE 1 ATRIAL FLUTTER

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Abstract - It has been well-established that common atrial flutter is due to intraatrial macroreentry and its reentry circuit locates in the right atrium. This reentry circuit has been characterized to involve an area of slow conduction identifiable electrophysiologically at the low posteroseptal right atrium and anatomical narrow isthmus surrounded by the inferior vena cava, coronary sinus ostium and tricuspid valve annulus. We performed radiofrequency catheter ablation for common atrial flutter using anatomical approach in one patient. In this report, we discuss the efficacy of catheter ablative therapy and its results in our patient.

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Key Words: Atrial flutter, catheter ablation

INTRODUCTION

In both clockwise and counterclockwise atrial flutter, the narrowest passage way is the right atrial isthmus (1-6). The aim of ablation in this area is to make a complete lesion from tricuspid valve to the inferior vena cava or eustachian ridge. Several groups of investigators have shown that ablative lesions causing block across this isthmus can terminate atrial flutter without serious complications.

On the basis of previous studies, radiofrequency (RF) catheter ablation can be considered an alternative for patients with atrial flutter in whom medical therapy is undesired, unsuccessful, or poorly tolerated (7-13). The procedure has a high initial success rate and a low complication rate. This case report is presented to describe our first experience in one patient with type 1 atrial flutter who underwent RF catheter ablation.

MATERIALS AND METHODS

The patients was a 23 year old man with frequent symptomatic episodes of common atrial flutter for a period of 3 years. All antiarrhythmic drugs had failed to suppress these episodes. There was no structural heart disease.

Electrophysiologic Study (EPS)

EPS was performed in the fasting state under mild seadation. Four 6 Fr quadripolar electrode catheters were introduced through the femoral and subclavian veins, and located in the high right atrium, Bunndle of His region, RV apex and coronary sinus.

Another 7 Fr deflectable quadripolar electrode with 4-mm TIP was introduced through the femoral vein for mapping and ablation. Intracardiac electrocardiogram was monitored and recorded with EP lab (medarz-200 with only 3 intracardial recordings). We used anatomical approach. The target was the isthmus of atrial flutter reentry circuit between the IVC-TV isthmus. Ablation catheter was moved stepwisely from ventricular side to atrial side in a perpendicular line to create transverse linear lesion at the IVC-TV isthmus.

Ablation procedure

Radiofrequency energy was applied during atrial flutter with standard 4-mm TIP electrode (Mansfield, Webster) for 120 second at 20 w (Fig. 1).

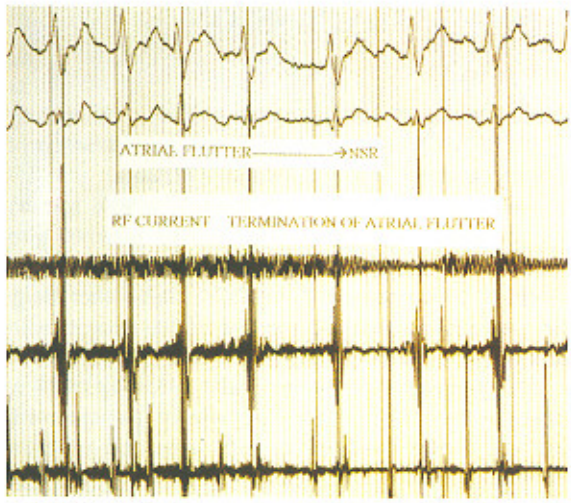

Fig. 1. Atrial flutter converted to sinus rhythm during RF current

Verification of block-line formation at the isthmus in addition to termination and noninducibility of common atrial flutter was judged to be the end point (Fig. 2).

Follow-up

The patient was followed-up off medication of antiarrhythmic agents in the clinic by his physician one year after catheter ablation with 12-Lead ECG and 24 hour holter monitoring.

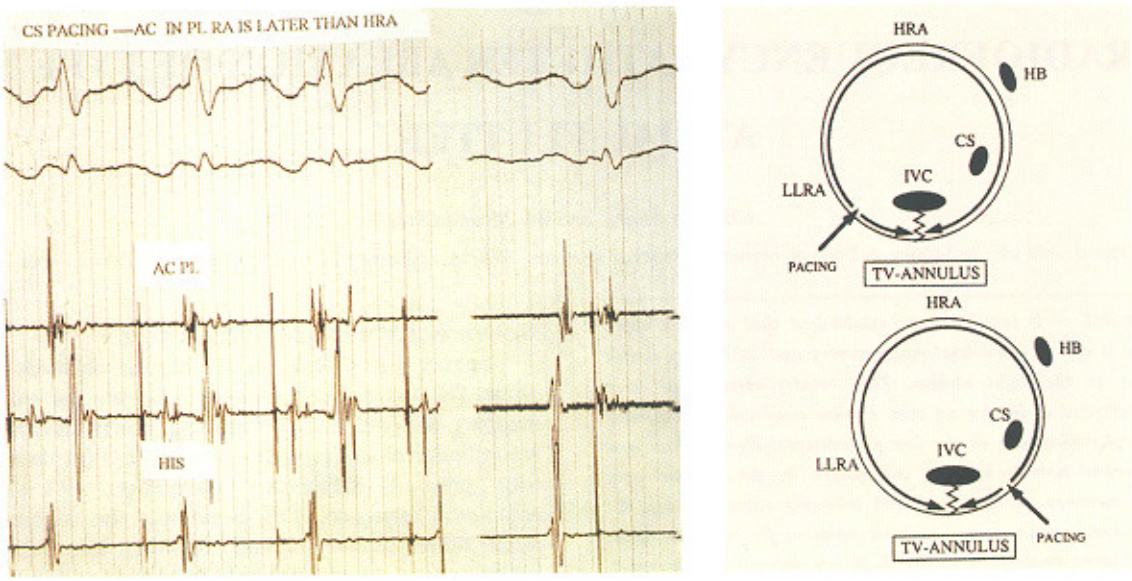

Fig. 2. Verification of block-line formation at the ablated IVC-TV isthmus. After interruption of atrial flutter, pacing through coronary sinus catheter was performed.
During pacing from the coronary sinus catheter the right atrium was activated counter clockwisely and conduction time from the pacing site to lateral right atrium was prolonged.
This verified block-line formation at the IVC-TV isthmus.

DISCUSSION

Schwartzman and associates (14) successfully treated 35 patients with ablation. At mean follow up of 10 months, arrhythmia recurred in 3 patients.

Fischer and colleagues (15) reported a 90% success rate for radiofrequency ablation in 80 patients with typical atrial flutter. At mean follow up of 20 ± 8 months, the recurrence rate was 17%. In another study (16), ablation was successful in 191 of 200 patients with atrial flutter (95%).

The recurrence rate after a mean follow-up of 24 ± 9 months was 15% . The majority of patients with recurrent flutter were cured with a second or third treatment session.

Cosio and colleagues (17) analyzed the results in 250 patients with atrial flutter who received radiofrequency ablation at various medical centers. Success rates across all centers ranged from 81% to 100% and recurrence rate from 9% to 46%.

In our first experience catheter ablation was successful and the patient remained symptom-free 12 months after the procedure. In conclusion Catheter ablatin is an effective and safe therapeutic procedure in atrial flutter. The interesting point of this report was catheter ablation with EP lab with only 3 intracardiac recording.

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