Successful Radiofrequency Ablation of Atrial Flutter Causing Hemodynamic Instability in a Patient with Recent Myocardial Infarction

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Abstract: Atrial flutter (AFL) is a common arrhythmia which may decrease cardiac output and may cause embolic events. Direct current (DC) cardioversion, medical cardioversion and radiofrequency (RF) ablation are therapeutic options, but overall RF ablation therapy has the longest event free period. Although development of AFL after myocardial infarction is quite common it may spontaneously recover or result in atrial fibrillation. Herein we report a patient with medical and electrical cardioversion resistant AFL which developed in the early post-myocardial infarction period causing hemodynamic instability, who was successfully treated with RF catheter ablation.

Keywords: Atrial flutter, myocardial infarction, radiofrequency ablation.

INTRODUCTION

AFL is a common arrhythmia, and when it is generally treated like atrial fibrillation (AF), it has different features [1]. Rheumatic heart disease, myocardial infarction, pericardial diseases, cardiac tumors, hypertrophic cardiomyopathy, congenital heart disease, cardiac surgery, thyrotoxicosis and alcohol intoxication are known etiological factors. Only 1.7% of AFL is lone AFL [1, 2].

Herein we describe a patient with AFL developed in the early post-myocardial infarction period causing hemodynamic instability who was successfully treated with RF catheter ablation.

CASE PRESENTATION

A 61 year old male patient complaining of sudden onset chest pain of one hour was admitted to our emergency department. Electrocardiography (ECG) showed ST segment elevation in anterior precordial leads with reciprocal depressions in inferior leads consistent with acute anterior myocardial infarction. Primary percutaneous coronary intervention was performed and left anterior descending artery was stented with 3.0x22mm sirolimus eluting stent. Prior to discharge transthoracic echocardiography showed hypokinesia in anterior wall with an ejection fraction of 40%. His ECG was sinus rhythm. The patient was discharged uneventfully with medical therapy including clopidogrel 75 mg, acetyl salicylic acid 300mg, metoprolol 50 mg, ramipril 5mg, sproanolactone 25mg and atorvastatin 80mg. He was admitted to our clinic 10 days due to discharge with dyspnea and palpitation. He had bibasilar crepitant ralles and tachycardia on physical examination. ECG showed supraventricular tachycardia at a rate of 160 beats/min. Despite intravenous diuretics, amiodarone and oral beta blocker therapy, the patient condition deteriorated therefore electrical cardioversion was performed with biphasic shocks at 50 Jules, 75 Jules, 100 Jules and 150 Jules but sinus rhythm did not restore. As the normal sinus rhythm and hemodynamic could not be restored therefore electrophysiological study was performed to the patient. Diagnostic catheters were placed to coronary sinus and right ventricle. Long sheath was used for further stabilization of radiofrequency ablation catheter. Typical clockwise AFL line was revealed and cavo-tricuspid isthmus radiofrequency ablation was performed and sinus rhythm was successfully restored (Figs. 1 and 2). After successful RF ablation hemodynamic stability the patient was discharged uneventfully. Patient was found to be asymptomatic and at sinus rhythm during follow up visits of 1, 3, 6 months. To our knowledge, there is no similar case reported in the literature as yet, in which the RF ablation of AFL was performed in the early post myocardial infarction period in a hemodynamically decompensated patient.

DISCUSSION

AFL is characterized with fast and regular atrial depolarization. It may decrease cardiac output and may cause systemic embolization. It was classified by Wells as type-1 (typical) having 240-340 atrial depolarization/minute and type-2 (atypical) having 340-440 atrial depolarization/minute [2, 3]. Lately, it was classified according to anatomical and electrophysiological properties into two classes as macro-entrant (type-1) and idiopathic (type-2) [4]. Type-1 atrial flutter is further divided into two subgroups according to the direction of depolarization current in the macroentry circle as clockwise and counterclockwise. Restoration and continuity of sinus rhythm, rate control and prevention of...
systemic embolization constitute its management. Restoration of sinus rhythm may be achieved via DC cardioversion, medical cardioversion and RF catheter ablation. RF catheter ablation is the first line treatment option for long-term accomplishment of sinus rhythm [5]. Sinus rhythm is restored through the linear RF ablation of cavotricuspid annulus in patients with isthmus dependent type-1 atrial flutter [6].

The frequency of AFL was reported 3.2% in post myocardial infarction period [7]. Because AFL was evaluated and managed with atrial fibrillation in post myocardial infarction period studies, its assessment is still unclear. To our knowledge, there is no similar case reported in the literature yet, which successfully treated with RF catheter ablation in the early post myocardial infarction period.

CONCLUSION

In conclusion, catheter ablation of AFL may be an important therapeutic option for patients resistance to conventional measures to restore sinus rhythm in early postmyocardial infarction period.

CONFLICT OF INTEREST

The authors confirm that this article content has no conflicts of interest.

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