

Electrical Cardioversion of Atrial Flutter in Dialysis Patient

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Introduction

The term atrial flutter (AF) describes an electrocardiographic pattern of atrial tachycardia ≥ 240 /min, with a uniform and regular continuous wave-form. This arrhythmia could be lifethreatening because of these rapid rates. Patients with AF usually have a regular heart beat but Flutter can be paroxysmal and poorly tolerated. Common causes of atrial flutter include hypertension and heart diseases (coronary artery diseases, mitral valve stenosis) [1-3].

The relationships between flutter and atrial fibrillation are complex. Both arrhythmias frequently occur at various times in the same patient and epidemiological studies have demonstrated a tendency for patients who initially only present flutter to develop fibrillation after several years [1-4].

Although its exact incidence is not known, atrial flutter is much less common than atrial fibrillation (AFb). The prevalence of AFb is strongly age dependent, affecting approximately 8% of individuals in their ninth decade of life [4]. Estimates of the prevalence of AFb among maintained hemodialysis patients (MHP) patients varied from 10.9 to 27 % depending on the population studied [5, 6]. Mortality of MHP with AFb is much greater than among MHP without atrial arrhythmia [6,7]. Given the increasing number of MHP, a clear

understanding of the burden of such condition may help to reduce the magnitude of the gaps in evidence-based treatment.

We report an AF occurring in a young MHP successfully treated by electrical cardioversion after three months of treatment with anticoagulants drugs.

Case Report

A 32-year-old male with nephroangiosclerosis was seen in cardiology unit for symptomatic palpitation. His was on maintenance hemodialysis (three sessions per week) for 5 years and still very hypertensive despite optimization of dry weight and antihypertensive drugs (irbesartan 300 mg, amlodipine 10 mg in non-dialysis day).

Dialysis sessions were well done during the four weeks before tachycardia occurs. The mean Kt/v (by online monitoring clearance) was 1.15 and the patient's native fistula showed no malfunction. He was also followed for psychiatric disorder and chronic C hepatitis. Several electrocardiograms showed a typical AF with variable conduction (Figure 1). Chest radiography did not find any signs of pulmonary overload.

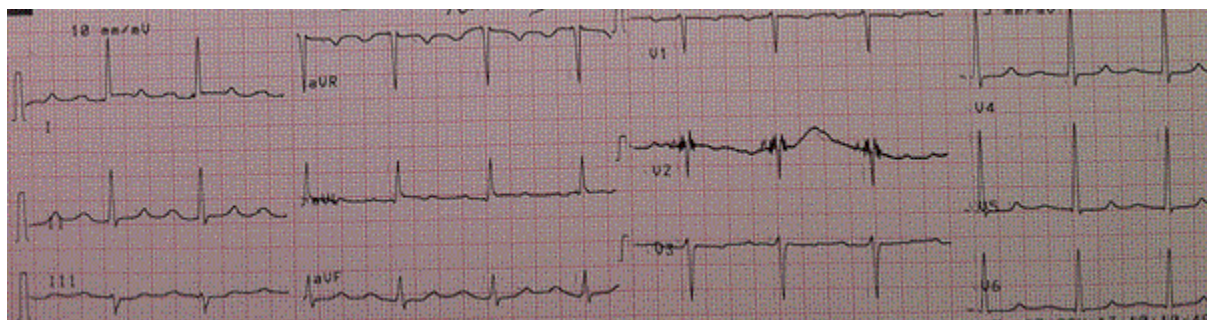


Figure 1: After ECG

The transthoracic echocardiography showed a restrictive cardiomyopathy with dual atrial dilatation (SOG 37cm² SOD 23 cm²). Normal left ventricle weight, global hypokinesia with deteriorate systolic function (LVEF = 23%), normal mitral and aortic valves.

Laboratory finding : hémoglobine : 10,2 g/dl, uréa : 1,2 g/l, créatinine :32 mg/l, Natrémie : 136 mmol/L, Kaliémie : 4,1 mmol/l, total calcium : 92 mg/L, phosphate : 45mg/l, No biological sign of hyperthyroidism (T4 = 15 pmol/L, TSH = 2,1mUI/L)

Adequate anticoagulation has been established by Acenocoumarol (sintrom 4mg): ½ cp per day to achieve a target INR between 2 and 3 during two months followed by electrical cardioversion performed by an external biphasic defibrillator that success to reduce the AF to permanent normal sinus rhythm (Figure 2).

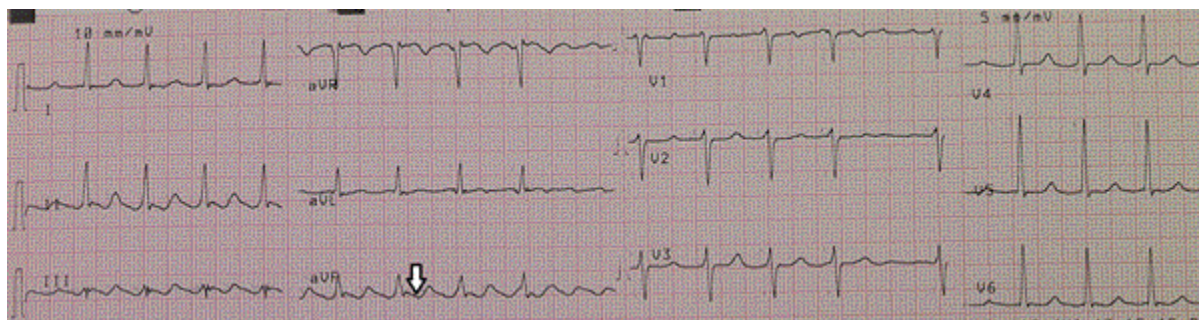


Figure 2: Before ECG

Discussion

The pathophysiology of atrial flutter are similar to those of atrial fibrillation, including hypertension, coronary disease, valvulopathy, chronic obstructive pulmonary disease, myocardopathy, and 15%-20% of apparently healthy hearts, but with 80% of individuals male. Dilatated right atrium is associated with flutter, Electrophysiological studies of flutter have demonstrated conduction delays similar to ones detected in fibrillation, which would tend to confirm the presence of a common electrophysiological substratum [1-6].

The prevalence of atrial fibrillation, reported in the United States Renal Data System (USRDS), in patients who have end stage renal disease (ESRD), is 13% in patients on hemodialysis and 7% in patients undergoing peritoneal dialysis [6,7]. Several reports of MHP detected episodes of atrial fibrillation in 13 to 27% of the patients [6,7]. The prevalence of atrial fibrillation in patients with ESRD seems to be 10- to 20-fold higher, depending on age, than in the general population [7,8].

The risk - benefit ratio of antiarrhythmic and anticoagulation therapy in MHP is not the same as that among those with normal kidney function [9].

Electrical cardioversion of atrial flutter has a success rate close to 100%. The incidence of recurrence of flutter after electrocardioversion is lower than in fibrillation. This treatment is safe and probably cost effective than Pharmacological cardioversion which could have more side effects in MHP [10,11].

Atrial arrhythmia is a serious disease among MHP with important burden and impact on outcomes. Electrical cardioversion of atrial flutter has to be explored as a viable alternative to medical therapy especially in MHP. No randomized trials have been done to truly understand and treat this dangerous comorbidity.

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