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Flecainide versus Electrical Cardio Version in Patients with a Recent-Onset Atrial Fibrillation

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Abstract

Introduction: Flecainide is a Class IA drug according the European Guidelines for conversion of recent-onset atrial fibrillation in patients without structural heart disease. Electrical Cardio version is the first line in many centers in all over the world in this population. Up to the present no study has been conducted comparing Flecainide with Electrical Cardio version (EC) for conversion of recent-onset atrial fibrillation.

The goal of our study was to compare the conversion rate of recent-onset AF, hospital stay length and adverse events in hemodynamically stable patients without structural heart disease treated with flecainide or EC.

Methods: 50 hemodynamically stable patients with recent onset AF without structural heart disease were included. 30 patients received oral loading dose of flecainide 300 mg and other 20 patients EC. Clinical and laboratory variables were recorded.

Results: Baseline characteristics were similar in both groups. The conversion rate was 70% in the flecainide group and 100 % in the EC group ($p<0.01$). Hospital stay length was 432 minutes and 263 minutes in EC ($p<0.05$).There were no adverse events in both groups.

Conclusion: The conversion rate of recent-onset AF was lower and hospital stay length was shorter in EC group compared with flecainide group with significantly statistical differences. In both groups were no adverse events.

Keywords: Atrial fibrillation; Flecainide; Electrical cardio version

Introduction

Several studies have demonstrated the efficacy of flecainide for conversion of recent-onset atrial fibrillation (AF) to sinus rhythm. Randomized controlled studies demonstrated conversion to sinus rhythm within 8 hours in about 70% of patients treated with either agent [1,2]. An oral single dose of flecainide is widely used for conversion of recent-onset AF in hemodynamically stable patients without structural heart disease. The European guidelines consider that flecainide is a class IA agent for this population [3]. Electrical Cardioversion is the first line in many centers in all over the world in this population [4-8]. Up to the present no study has been conducted comparing Flecainide with Electrical Cardio version (EC) for conversion of recent-onset atrial fibrillation. The goal of our study was to compare the conversion rate of recent-onset AF, hospital stay length and adverse events in hemodynamically stable patients without structural heart disease treated with flecainide or EC.

Methods

This is an observational retrospective study which includes 50 patients from July 1, 2011 to October 30, 2012, hemodynamically stable with symptomatic recent onset AF (lasting less than 48hours) without structural heart disease. EC was performed in 20 patients and other 30 patients received an oral loading dose of flecainide 300 mg. The EC protocol started with 100 joules, if patients persisted with AF the protocol continued with 200 joules and then with 360 joules if have been necessary. All EC were performed under sedation with intravenous propofol and with a fasting for a minimum of 3 hours. If patients persisted with AF after pharmacological Cardio version, the electrical Cardio version was done at 8 hours after flecainide as the same protocol for EC.

Inclusion criteria

Patients > 18 years, with AF lasting less than 48 hours and documented by electrocardiogram, weight between 45 and 136 kg, systolic blood pressure > 90 mm Hg and < 160 mm Hg and diastolic blood pressure < 95 mmHg.

Exclusion criteria

Pregnancy, atrial flutter, sinus node disease, QRS duration longer than 140 ms in non-paced beats, QT interval > 440 ms, heart failure or acute coronary syndrome. Clinical, laboratory and electrocardiographic variables were recorded. All the patients had continuous electrocardiographic monitoring. Color Doppler Echocardiographies with measurement of structural and functional parameters were performed to all the patients.

Primary outcome measure

The conversion rate and hospital stay length and adverse events in both groups.

Adverse events

Death, sustained hypotension (systolic blood pressure ≤ 90 mmHg), bradycardia < 40 beats per minute, QT interval > 440 ms, ventricular arrhythmia (≥triplets), or any other event that required or prolonged hospitalization were considered adverse events. Other events not meeting the criteria of seriousness, taste disorders, cough, nausea or dizziness were not considered serious adverse events. The patients will receive anticoagulation therapy after discharge according the recommendation of CHA2DS2-VASc score, but without antiarrhythmics drugs.

Statistical Analysis

All calculations were performed using Statistix 8.0 software package.

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Continuous variables were expressed as median with the corresponding interquartile range (p25-p75) and were compared using the Mann Whitney test. Rates were expressed as percentages and were compared using the chi square test with Fisher's correction, if applicable. This investigation was in accordance with the Declaration of Helsinki.

Results

Fifty patients were included; median age was 65 years and 70% were men. No significant differences were found between the baseline characteristics and previous events of atrial fibrillation, invasive procedures and medication in the two groups (Table 1 and 2). Conversion rate was 70% in the flecainide group and 100% in EC group ($p<0.01$). Hospital stay length was416 minutes (IQR, 337-741) in the flecainide group versus 263 minutes (IQR, 120-276) in EC group ($p<0.05$). No adverse events were reported.

Discussion

Several studies have demonstrated the efficacy of flecainide for conversion of recent onset AF to sinus rhythm. A randomized, controlled study demonstrated a success rate of conversion to sinus rhythm of 69% within the first 8 h after administration, which was significantly more efficacious than placebo. At the same time there are studies which showed that oral single dose of flecainide had the same time to conversion to sinus rhythm as intravenous flecainide, this is the reason why many centers use this strategy for conversion of recent-onset atrial fibrillation in emergency service. The effects of flecainide are delayed as the drug undergoes extensive first-pass metabolism by the liver through hydroxylation and conjugation pathways. Therefore, less than 5% of patients achieve conversion within the first hour, while 55% achieve conversion within 4 h after administration [1-3]. Many centers use the electrical cardioversion as the first line to treat this population [4-8]. Although the efficacy of flecainide, there are studies which showed that a new drug whose name is Vernakalant was faster and had a shorter hospital stay compared with flecainide [9-11].

Variable	Flecainide	EC
Male gender, %	60	70
Age, years	63 (52-66)	67 (54-69)
BMI, kg/m2	26 (22-29)	27 (25-28)
SBP, mm Hg	130 (118-140)	127 (120-131)
DBP, mm Hg	72 (66-82)	75 (67-81)
Cardiovascular risk factors		
Diabetes, %	20	30
Hypertension, %	40	50
Current or former smokers, %	60	70
Dyslipidemia, %	60	70
Thyroid disorders, %	10	20
Rate ventricular response per min	144 (142-159)	157(152-163)

Note: BMI: Body mass index; SBP: Systolic blood pressure; DBP: Diastolic blood pressure

Table 1: Baseline characteristics.

Variable	Flecainide	EC
Previous AF, %	20	30
Previous AF ablation, %	10	20
Previous treatment		
Beta blockers, %	20	30
Calcium channel blockers, %	0	10
Propafenone/Flecainide, %	10	0
Amiodarone, %	0	10
Anticoagulation, %	0	10
CHA2DS2-VASc score %		
0	30	20
1	40	40
2	10	30
3	20	10
4	0	0
5	0	0

Note: AF: Atrial Fibrillation

Table 2: History of AF and medication.

Up to the present there are no studies which were compared flecainide versus EC. Our study is the first clinical investigations which compared these two protocols and showed that the conversion rate and hospital stay length were shorter in EC group compared with flecainide group with significantly statistical differences. With these results we consider that EC should be the best strategy for conversion of recent-onset atrial fibrillation compared with flecainide and with similar drugs as propafenone. Although we believe that we need clinical randomized trials to extrapolate these results to the daily practice.

Study Limitations

Not to be a randomized trial is the most important limitation of this study. The sample size may underestimate the differences between the groups.

Conclusion

The conversion rate of recent-onset AF was lower and hospital stay length was shorter in EC group compared with flecainide group with significantly statistical differences. In both groups were no adverse events.

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