

ROLE OF INTRAVENOUS AMIODARONE IN ACUTE ONSET ATRIAL FIBRILLATION

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Contribution

RS conceived, designed and wrote manuscript. MF, KA and SBK did data collection and manuscript writing. ZAA did review and final approval of manuscript. All authors contributed equally.

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ABSTRACT

Objective: The aim of the study was to evaluate the role of intravenous amiodarone in acute onset atrial fibrillation in patients with structurally normal hearts.

Methodology: This cross sectional was conducted in Cardiology Department, Hayatabad Medical Complex Peshawar from 1st April 2005 to 31st March 2006. All adult patients with acute onset atrial fibrillation and with no rheumatic or congenital valvular heart disease were included in the study. Role of intravenous amiodarone was defined as whether it caused sinus rhythm conversion or ventricular rate control. Transthoracic echocardiography was performed to exclude any structural heart disease. Haemodynamically stable patients with atrial fibrillation of less than 48 hours were treated with intravenous amiodarone. Decision regarding sinus rhythm conversion or otherwise was done at 24 hours. Patients with no response were to switch over to other option like electrical cardioversion.

Results: A total of 75 patients with acute onset atrial fibrillation were studied. There were 62 male with male to female ratio 4.7: 1. Majority of the patients i.e 42 (57.34%) were of age 55 years or above. Common clinical presentation was palpitation (100%), while 62(82.66%) patients had chest pain and 62(82.66%) had dyspnoea. Commonly observed risk factors were hypertension in 63 patients (84%), coronary artery disease in 48 patients (65.33%) and diabetes mellitus in 12 patients (16%). Sinus rhythm conversion was observed in 58 patients (77.33%) while 17 patients (22.66%) were noted to have achieved only rate control.

Conclusion: Amiodarone is effective in sinus rhythm conversion in acute onset atrial fibrillation in haemodynamically stable patients with no structural cardiac abnormality.

Key Words: Atrial fibrillation, Amiodarone, Rhythm

INTRODUCTION

Atrial fibrillation is the most common arrhythmia and it accounts for about one third of hospitalization for arrhythmia.¹ It involves the upper chambers (atria) of the heart and the ventricular response is grossly irregularly irregular.² Paroxysm of atrial fibrillation often precedes the onset of sustained atrial fibrillation. Its incidence increases with age.³ It occurs in rheumatic heart disease, atrial septal defect, hypertension, mitral valve prolapse and rarely runs in families.⁴ The patients can present with palpitation, general feeling of discomfort, diuresis or can present as heart failure and pulmonary oedema or stroke. Atrial fibrillation can lead to atrial electrical and mechanical remodeling leading to tachycardia induced cardiomyopathy.⁵ Patients with atrial fibrillation are more prone to develop thromboembolism especially with history of heart failure, left ventricular dysfunction and left atrial dilatation.⁶

In management the first consideration is to determine whether the patient is clinically stable, to ascertain any precipitating cause and duration of arrhythmia. It also includes to achieve rhythm/rate control, prevention of recurrent fibrillation and prevention of secondary complications, most often thromboembolism.⁷ Cardioversion can be chemical or electrical. Chemical cardioversion is safe in the short term and those who are cardioverted have better prognosis.⁸

For patients with single initial episode of atrial fibrillation with no significant haemodynamic problem, no specific therapy is required because repeat episode may not occur for years. In contrast patient who manifests recurrences may be candidate for chronic antiarrhythmic therapy. Antiarrhythmic drugs can be used to control the ventricular response to restore sinus rhythm.⁹ The only drug that appear to be both effective and safe for patients with heart failure and atrial fibrillation is amiodarone.¹⁰ Amiodarone is associated with both cardiac e.g, severe sinus bradycardia or arrest or atrioventricular block and non-cardiac (e.g thyroid abnormalities, pulmonary fibrosis) adverse effects but low dose appears to be effective and well tolerated. Prophylactic anticoagulant therapy should be considered for all patients. In people with chronic non-valvular atrial fibrillation, warfarin reduced the risk of stroke by about two thirds.¹¹ The maintenance of sinus rhythm can lead to decrease symptoms, improve haemodynamics and possibly a decrease in the atrial remodeling that causes increased susceptibility of future episodes of atrial fibrillation. In addition there may be a reduction in the risk of thromboembolism events.¹²

Atrial fibrillation is also common in our society in patients with structurally normal hearts with treatable conditions like hypertension, ischemic heart disease, hyperthyroidism etc. The treatment of atrial fibrillation and its associated complications increases the use of healthcare resource and

contributes to the ever growing cost of healthcare particularly associated with hospitalization.¹³ Amiodarone is used worldwide for treatment of various tachyarrhythmias.

The aim of the study was to evaluate the role of intravenous amiodarone in acute onset atrial fibrillation in patients with structurally normal hearts.

METHODOLOGY

This was a cross sectional study conducted in Cardiac care unit, Cardiology Department Hayatabad Medical Complex Peshawar from 1st April 2005 to 31st March 2006. Convenient sampling technique was used for patients selection. All adult patients regardless of gender with acute onset atrial fibrillation and with no rheumatic or congenital valvular heart disease were included in the study. Patients with atrial fibrillation of more than 48 hrs and with structural/valvular heart disease were excluded from the study. Acute onset atrial fibrillation was defined as atrial fibrillation of less than 48 hrs duration. Structurally normal heart was defined as having no rheumatic, congenital heart disease and degenerative heart disease. Role of intravenous amiodarone was defined as whether it caused sinus rhythm conversion or ventricular rate control.

Patients with clinically suspected atrial fibrillation were admitted to cardiac care unit and atrial fibrillation confirmed by 12 lead electrocardiogram. Those fulfilling inclusion criteria and consenting were included in the study. Detailed medical history and clinical examination was carried out. Bedside transthoracic echocardiography was performed to exclude any structural heart disease. Haemodynamically stable patients with atrial fibrillation of less than 48 hours were treated with intravenous amiodarone. Amiodarone was administered for 24 hours duration. First a loading dose of 150mg (15mg/min) in 5% Dextrose water in infusion chamber in 10 minutes, followed by 360mg (1mg/min) in 6 hours followed by 540mg (.05mg/min) in 18 hours. Decision regarding sinus rhythm conversion or otherwise was done at 24 hours. Before administering amiodarone therapy, samples were taken for full blood count, urea, sugar, creatinine, electrolytes and thyroid function tests.

All patients were monitored during therapy with half hourly pulse and blood pressure records and six hourly regularly assessed electrocardiogram. Those patients who were going to develop complications like bradycardia or haemodynamic instability were planned to stop therapy and to go for electrical cardioversion. Patients with no response were to switch over to other option like electrical cardioversion. Those, where therapy was successful were discharged mostly on the following day with precautions to report to cardiac care unit with development of any cardiac complaint like bradycardia/recurrence of atrial fibrillation etc.

The collected data was arranged and analyzed through descriptive statistics tools by making frequency tables and calculating respective percentages and averages using SPSS (v.10) version 10.

RESULTS

A total of 75 patients with acute onset atrial fibrillation were studied. There were 62 male and 13 female patients with male to female ratio 4.7: 1. Patients with age 55years or above were 42 (57.34%) and below 55 years were 33

(42.66%). Common clinical presentations are shown in (Table 1). All patients presented with palpitation (100%), while 62(82.66%) patients had chest pain and 62(82.66%) patients had dyspnoea. Commonly observed risk factors were hypertension in 63 patients (84%), coronary artery disease in 48 patients (65.33%) and diabetes mellitus in 12 patients (16%)(Table 2). Sinus rhythm conversion was observed in 58 patients (77.33%) while 17 patients (22.66%) were noted to have achieved only rate control.

Table 1: Common Clinical Presentations of Study Population (n=75)

S. No	Presentation	Number (n)	Percentage(%)
1	Palpitations	75	100%
2	Chest Pain	62	82.66%
3	Dyspnoea	62	82.66%

Table 2: Common Risk Factors of Study Population (n=75)

S. No	Risk factor	Number (n)	Percentage(%)
1	Hypertension	63	84%
2	Coronary artery disease	48	65%
3	Diabetes mellitus	12	16%

DISCUSSION

Therapeutic goals for atrial fibrillation include ventricular rate control, stroke prevention, conversion to normal sinus rhythm and maintenance of normal sinus rhythm. The optimal strategy of rate versus rhythm control for acute management of patients with atrial fibrillation is a continuous debate.¹⁴ However, selected patients may require acute treatment with antiarrhythmic agents for conversion of symptomatic atrial fibrillation episodes to normal sinus rhythm. For conversion of atrial fibrillation to normal sinus rhythm, amiodarone is effective and relatively rapid acting and is recommended by some authorities as a first line drug.

This study shows a predominant male pattern, older age population and a clinical risk factor profile which goes hand in hand with atrial fibrillation. In majority of our patients (77.33%) sinus rhythm conversion was achieved. This has been observed by many authors, like Kreiss et al have reported modest efficacy of amiodarone in acute conversion of atrial fibrillation in comparison to placebo.¹⁵ Similarly E Glave et al have reported efficacy rate of almost 50 - 60% of amiodarone in rhythm control of acute onset atrial fibrillation in comparison to placebo group.¹⁶ Cotter et al have reported conversion rate of 92% ($p > 0.0017$) in amiodarone group compare to the placebo group.¹⁷ In a meta analysis by Chevalier Philippe et al amiodarone was found to be superior to placebo (RR1.44, $p < 0.001$)^{4,9}

LIMITATIONS

This study concludes that amiodarone is effective in achieving sinus rhythm in acute onset atrial fibrillation in haemodynamically stable patients with no structural heart

abnormality. However, as this was a descriptive study, therefore we recommend a well designed control study to evaluate the efficacy of amiodarone in acute onset atrial fibrillation in comparison to no intervention (or placebo) and class-1C drugs, so to monitor its short and long term efficacy.

CONCLUSION

Amiodarone is effective in sinus rhythm conversion in acute onset atrial fibrillation in haemodynamically stable patients with no structural cardiac abnormality.

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