Efficacy of Ibutilide for Terminating Recent Onset Atrial Fibrillation- A Single Centre Study

Maddela Soumya[1], Sk.Khasim[1],Kasturi Ravinder Reddy[2], Arramraju Srinivas Kumar[3], Mudgalkar Nikhil[4], Baviskar A.

1. Resident, Department of Medicine, Prathima Institute of Medical Sciences, Nagnur Road,Karimnagar, Telangana

2. Professor and Head of Department of Medicine, Consultant Cardiologist, Prathima Institute of Medical Sciences, Nagnur Road, Karimnagar, Telangana

3. Consultant Cardiologists , Director Of cardiac sciences, Apollo Hospitals, Hyderabad

4. Professor Of Department Of Anaesthesia, Prathima Institute of Medical Sciences, Nagnur Road,Karimnagar, Telangana

5. Assistant Professor, Department of Cardiac surgery, Institute of Medical Sciences, Nagnur Road,Karimnagar, Telangana

Corresponding Author: Dr. Kasturi Ravinder Reddy, Department of Medicine,Prathima Insitute of Medical Sciences, Nagnur Road,Karimnagar, Telangana

Email : rrkasturi@gmail.com

ABSTRACT

Introduction:

Ibutilide is a class 3 antiarrythmic agent that is used infrequently. There are few studies on its usage, especially among Indians.

Materials & Methods: A retrospective study was conducted on patients in a tertiary care unit who had recently developed atrial fibrillation and were given the normal dose of ibutilide. During the study period, data was gathered from medical records.

Results: During the study period, ibutilide was given to a total of 40 patients who met the inclusion criteria. The majority of the participants were under 60 years old and had only been in atrial fibrillation for less than 24 hours. In 70% of cases, atrial fibrillation could be successfully terminated with only a small risk of adverse events.

Conclusion: Ibutilide is a safe and effective treatment for people who have recent onset atrial fibrillation.

INTRODUCTION

Atrial fibrillation, may be a supra ventricular tachyarrhythmia characterized electro-cardiographically by replacement of consistent P waves by rapid, irregular, fibrillatory waves that change in size, shape, and timing. Atrial fibrillationis associated with an irregular, frequently rapid, ventricular response when atrio-ventricular node conduction is intact[1,2].

Atrial fibrillation affects up to 4% of those over 60 years of age and may be an independent risk factor for death with relative risk of mortality is 1.5 for men and 1.9 for women. Atrial fibrillation (AF) is an arrhythmia commonly encounteredwithin the emergency department. Atrial fibrillation is rare in the first twenty years of life, but when it does occur is usually associated with congenital heart disease.[3,4,5]

DC Cardioversion is not 100% effective in terminating atrial fibrillation and at high outputs, electrical cardioversion may have temporarily damaging effects on myocardium.[6]

Ibutilide, a pure class-3 USFDA approved anti-arrhythmic agent. Other class III antiarrhythmic drugs increase the risk of prolongation of the QT interval, which can predispose the patient to torsades de pointes. The risk of torsades de pointes with ibutilide is approximately 7–8% with 2–3% being sustained.Ibutilide primarily used for conversion of atrial fibrillation,atrial flutter into normal sinus rhythmation and is a good alternative to electrical cardioversion. Ibutilide has a conversion rate of upto 75% to 80% in recent onset atrial fibrillation.[7,8,9]

There are very few studies about ibutilide as a medical defibrillator especially in Indian population so we propose to assess the impact of ibutilide as medical defibrillator in atrial fibrillation.

Materials and Methods:

The study was conducted within the Department of Internal Medicine, Prathima Institute of Medical Sciences hospital which is a tertiary care centre in Karimnagar. We performed a retrospective analysis of all patients who had received ibutilide for atrial fibrillation between june 2020 to March 2021.

All the patients who were presenting with atrial fibrillation to emergency department or department of General Medicine during the study period were included in study. We did purposive sampling and a total of 40 patients who were satisfying the inclusion criteria were enrolled into study..

Those patients who had Recent onset atrial fibrillation, Persistent atrial fibrillation, Patients on standalone therapy, Patients already on oral Amiodarone, Left atrial size <4.5 centimeters,Patients who are willing to give an informed

written consent were included in study. Those patients who are Not satisfying inclusion criteria, Patients with long standing persistent atrial fibrillation, Patients with permanent atrial fibrillation, Left atrial size >4.5cms.People that aren't willing to participate within the study were excluded from study.

All the patients who met the inclusion criteria were taken into the study. A pre-designed, pre-tested and pre-coded proforma was used for recording all the findings and the questions were partially closed ended. After getting Ethical clearance from the Institutional Ethical Committee, study was conducted. The investigations done are Electrocardiography, 2D Echocardiography, Chest radiography, Full blood count, International normalised ratio, Urea and electrolytes, Arterial blood gases, Cardiac enzymes, Liver function test, Blood glucose, Thyroid function test, Renal function test,Ultrasonography abdomen.

After the investigation, ibutilide was administered with dosage 1mg if the weight of the patient is 60kg or more, if the weight is less than 60kgs, 0.1mg/kg body weightand findings were recorded.

Data Entry and Analysis:

The data were entered in Microsoft Excel 2010 version and data was analyzed using Microsoft Excel 2010 and Epi Info seven.two.zero. Descriptive and inferential statistical analysis were utilized in the present study. Results on continuous measurements were conferred on Mean±SD (Min-Max) and results were presented in Number (%). Significance was assessed at 5% level of significance. Student t-test isemployed to compare inter group variation for continuous variables.

OBSERVATIONS AND RESULTS

Table 1 showing age distribution:

Age in years	Frequency	Percent
30-39	4	10.00%
40-49	14	35%
50-59	13	32.5%
60-69	8	20%
>70	1	2.5%
Total	40	100.00%
Mean ± Standard deviation	51.8±10.57 years	

Among the study population, 35% belonged to the age group of 40-49 years, followed by 50-59 years (32.5%). 20% belonged to age group of 60-69 years, 10% belonged to 30-39

years and 2.5% belonged to age >70 years. The mean age of study population was 51.8±10.57 years.

Table 2 showing duration of atrial fibrillation among study population:

Duration of Atrial Fibrillation	Frequency	Percent
<12 hours	14	35%
12-24 hours	9	22.5%
25-48 hours	5	12.5%
2 days – 7 days	12	30%
Total	40	100.00%

Among the study population, 35% had atrial fibrillation for <12 hours. In around 30% it lasted for 2 days to 7 days. The duration was 12-24 hours in 22.5% and 25-48 hours in 12.5%.

Table 3 showing the conversion to sinus rhythm:

CONVERSION TO SR	Frequency	Percent
Yes	28	70%
No	12	30%
Total	40	100.00%

Among the study population, the sinus rhythm was restored in 70% of the patients, with conversion rate of 70%

Table4 showing the adverse drug reactions:

Adverse drug reactions	Frequency	Percent
Minor (Headache, Nausea)	8	20.00%
Torsades de pointes	1	02.5%
None	31	77.5%
Total	40	100.00%

Among the study population, minor adverse drug reactions were noted among 20% Torsades de pointes observed in 1 patient reverted with DC shock.

DISCUSSION:

Atrial fibrillation is that the commonest arrhythmia in patients visiting primary medicalcare practice.Many patients with atrial fibrillation experience relief of symptoms with control of the heart rate, some patients requires restoration of sinus rhythm. External direct current (DC) cardioversion is that the best means of converting atrial fibrillation into normal sinus rhythm. Pharmacologic cardioversion, although less effective, offers an alternate to direct current (DC)cardioversion. Several advances were made in antiarrhythmic medications, including the event of development of ibutilide, a class III anti-arrhythmic drug indicated for acute cardioversion of the atrial fibrillation.

In certain patients, ibutilide can be used as the first-line treatment for atrial fibrillation or flutter as a type of chemical cardioversion. The guiding principle for anticoagulation before and after conversion is the same as for electrical cardioversion, and it should be strictly followed to minimise the risk of stroke significantly.[10,11,12]

Our findings are consistent with those of other related studies, such as one by Nair et al[13], which found 75% efficacy for the conversion of recent-onset atrial fibrillation. Ibutilide has a number of advantages, one of which is its effectiveness when used in conjunction with other antiarrythmic drugs. The low risk of toxicity associated with this drug makes it ideal for use in rural areas.

Conclusion:

Ibutilde converted 70% of recent onset atrial fibrillation in sinus rhythm.The majority of them were females over the age of 50, with atrial fibrillation lasting up to 48 hours (2 days). In the majority of patients, the time it took to convert to sinus rhythm was less than an hour.With a conversion rate of 70%, sinus

rhythm was restored in 70% of the patients. Torsades de pointes were reversed in one patient with DC shock.Ibutilide is a safe drug with mild side effects.

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