ORIGINAL RESEARCH PAPER

Medical Science

A PROSPECTIVE OBSERVATIONAL STUDY ON TREATMENT OF ATRIAL FIBRILLATION WITH OR WITHOUT BETA-BLOCKERS.

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ABSTRACT

Background: Atrial fibrillation is a common heart rhythm disorder characterized by irregular and rapid electrical impulses in the atria. It can lead to symptoms like palpitations, dizziness, and shortness of breath. Managing Atrial fibrillation is crucial to prevent complications such as stroke and heart failure. Beta blockers play a vital role in atrial fibrillation management by slowing down the heart rate and reducing the frequency of irregular heartbeats. Non-beta blockers, such as calcium channel blockers and other antiarrhythmic medications, are used in atrial fibrillation to control heart rate and restore normal rhythm. **Research Gap:** The disagreement between beta blockers and non-beta blockers for the treatment of atrial fibrillation stems from differences in their mechanisms of action and potential side effects. The research gap between beta blockers and non-beta blockers in the treatment of atrial fibrillation lies in the need for more comparative studies to assess their efficacy and safety profiles. **Methodology:** A prospective cohort analysis was conducted using medical records of patients diagnosed with Atrial fibrillation at a tertiary care center. The cohort comprised 61 patients on beta blockers and 39 patients on non-beta blocker treatments. **Results And Conclusion:** The cohort analysis revealed that the beta blocker group demonstrated a significantly lower rate of hospital readmissions compared to the non-beta blocker group (p < 0.05). Moreover, patients on beta blockers exhibited a greater improvement in cardiac function parameters, compared to non-beta blocker treatments (p < 0.05). **Future Prospects:** Therefore, more investigations are essential to guide personalized and optimized treatment strategies for atrial fibrillation patients.

INTRODUCTION

Atrial fibrillation(AF) is an irregular and often rapid heart rate that can increase risk of strokes, heart failure and other heart related complications. The heart rate in AF may range from 100-175 beats per minute.[1] AF is the common arrhythmia diagnosed in clinical practice. Type of treatment is recommended is based on the heart rhythm and symptoms.[3] It includes both pharmacological and non-pharmacological treatment.[2] Medications includes: anti-arrhythmic drugs, betablockers, calcium channel blockers, digoxin, anti-coagulants.[4,5]

Currently treatment with β-blockers are recommended for patients with heart failure (HF) irrespective of rhythm disorders.[6,7] In patients with AF, strict versus lenient rate control with β-blocker treatment were equally effective.[8] Notwithstanding their use for rate control, it is an open question whether β-blocker usage is associated with prognostic benefits in AF patients with HF. Also, treatment with β-blockers has been shown effective in controlling the ventricular rate.

METHODOLOGY

A prospective observational study was conducted in the department of Cardiology at Apollo hospitals in Jubilee Hills, Hyderabad, involving 100 patients diagnosed with atrial fibrillation and comorbidities. The study was done from 1st September 2021 to 1st March 2022. The data was collected after obtaining approval from institutional ethics committee and consent from the patients in department of Cardiology at Apollo hospitals, Jubilee Hills, Hyderabad from medication charts and medical records. The study aimed to assess the effectiveness of beta blockers in patients with atrial fibrillation. The management of atrial fibrillation with and without beta blockers was observed by the results. Data privacy was strictly enforced, and publishing only took place with the institution's and the ethics committee's approval. It was necessary to compute the mean and standard deviation for statistical analysis.

RESULTS AND DISCUSSION

1. Distribution Of Patients According To Gender:

In this study, 100 subjects are involved out of which 60% are Males and 40% are Females.
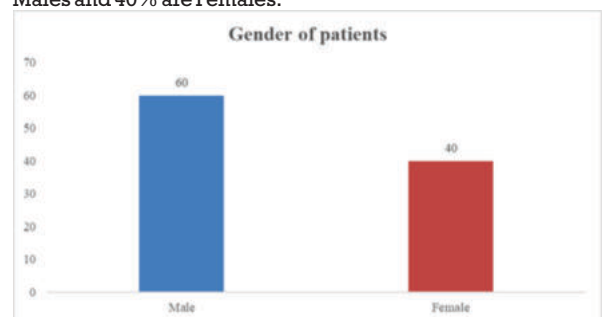

Fig. 1: Distribution Of Patients According To Gender.

Table-1: Distribution Of Patients According To Gender.

Gender	No. of patients	Percentage
Male	60	60%
Female	40	40%
Total	100	

2. Distribution Of Patients According To Age:

In this study, 100 patients are involved in which participants were grouped into different age groups based on their age. Class interval taken is 10. Maximum number of patients was found to be between age group 71-80 (29%) and minimum number of patients was found to be between 31-40 (10%).

Table 2: Distribution Of Patients According To Age.

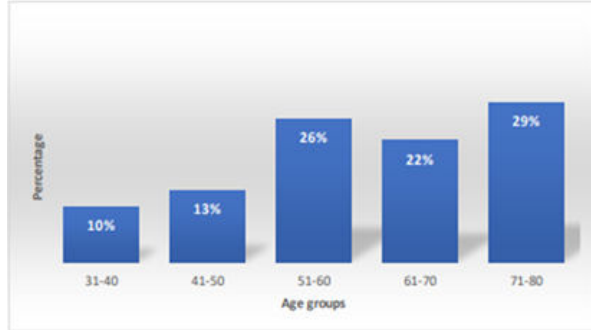| Age group	No. of Patients	Percentage
31-40	10	10%
41-50	13	13%
51-60	26	26%
61-70	22	22%
71-80	29	29%

Fig. 2: Distribution Of Patients According To Age.

Statistical Analysis Of Age.
Table 2.1 Statistical Analysis Of Age.

N	Min value	Max. value	Mean	Std Deviation	Range
100	40	80	18	7.3	16

3. Distribution Of Patients According To BMI

All the 100 patients enrolled in the study are classified based on their BMI into different categories like underweight (<18.5 kg/m2), normal weight (18.5 to 24.9 kg/m2), over weight (25-29-9 kg/m2), obese class-1 (30-34.9 kg/m2) and obese class-2 (35-39.5 kg/m2). Majority of the patients were under BMI category over weight (41%) followed by normal weight (37%) and minimum no. of patients were under obese class-2 (4%).

Table 3: Distribution Of Patients According To BMI

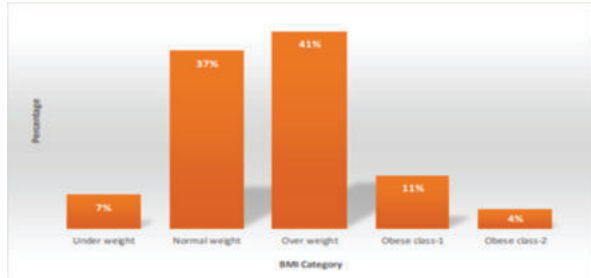| Category	No. of patients	Percentage
Under weight (<18.5 kg/m2)	7	7%
Normal weight (18.5 to 24.9 kg/m2)	37	37%
Over weight (25-29-9 kg/m2)	41	41%
Obese class-1 (30-34.9 kg/m2)	11	11%
Obese class-2 (35-39.5 kg/m2)	04	04%

Fig. 3: Distribution Of Patients According To BMI

Statistical Analysis Of BMI
Table 3.1 Statistical Analysis Of BMI

N	Mean	Standard Deviation	Range
100	20	15.7	37

4. Distribution Of Patients Prescribed With Or Without Beta Blockers:

Out of 100 patients enrolled in the study 61% were given beta blockers and 39% were given non beta blockers.

Table 4: Distribution Of Patients Prescribed With Or Without Beta Blockers

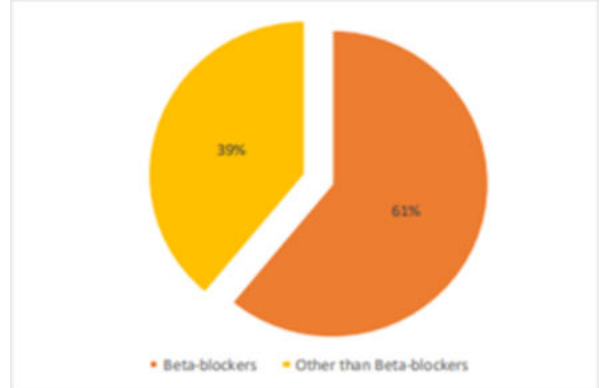| Category	No. of patients	Percentage
Beta-blockers	61	61%
Other than Beta- blockers	39	39%

Fig. 4: Distribution Of Patients Prescribed With Or Without Beta Blockers

5. Various Drugs Prescribed As Beta Blockers:

In this study we observed that Metoprolol was most commonly prescribed beta blockers.

Table 5: Various Drugs Prescribed As Beta Blockers

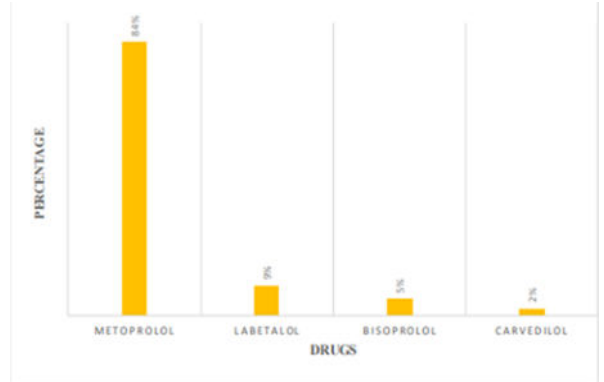| Drug	No. of patients	Percentage
Metoprolol	51	84%
Labetalol	6	9%
Bisoprolol	3	5%
Carvedilol	1	2%

Fig. 5: Various Drugs Prescribed As Beta Blockers

6. Various drugs prescribed other than beta blockers:

In this study we observed that Amiodarone was prescribed mostly other than beta blockers (25%).

Table 6: Various Drugs Prescribed Other Than Beta Blockers

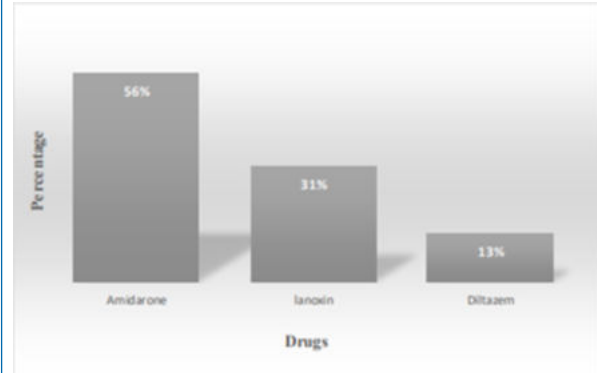| Drug	No. of patients	Percentage
Amiodarone	22	56%
Lanoxin	12	31%
Diltiazem	5	13%

Fig. 6: Various Drugs Prescribed Other Than Beta Blockers

7. Heart rate control before and after treatment: In our study, we have compared the heart rate control of patients before and after treatment who were prescribed with beta blockers and non-beta blockers. We have found that after giving treatment patient has significantly improved their heart rate when prescribed with beta blockers rather than non beta blockers (High value of mean indicates better response with beta blockers).

Table 7: Heart Rate Control Before And After Treatment

	Heart rate/min Mean (SD)	
	Beta-blockers	Non-Beta blockers
Before Treatment	89.2±24.4	85.1±30
After Treatment	87.39±19.16	83.38±18.4

DISCUSSION

In the treatment of coronary artery disease (CAD), beta blockers are typically favored over digoxin as the primary therapeutic option. Beta blockers function by inhibiting the actions of adrenaline and noradrenaline on beta receptors located in the cardiac region, thereby leading to a decrease in heart rate, blood pressure, and myocardial oxygen consumption. By engaging in such actions, individuals contribute to the amelioration of symptoms, the mitigation of angina episodes, and the reduction of the likelihood of experiencing heart attacks. Beta blockers have been the subject of extensive research and have demonstrated a multitude of advantages in the treatment of coronary artery disease (CAD).

Digoxin may be prescribed in patients with coronary artery disease (CAD), albeit infrequently and under specific conditions. In instances where a patient with coronary artery disease (CAD) exhibits heart failure symptoms that remain inadequately managed despite the administration of optimal dosages of beta blockers or other heart failure medications, the inclusion of digoxin may be contemplated as a supplementary therapeutic approach. Digoxin has the potential to enhance cardiac function and mitigate symptoms in these instances.

Contraindications or intolerance to beta blockers may manifest in certain instances, whereby patients may exhibit contraindications or encounter side effects that are deemed intolerable. Potential conditions that may be observed include severe asthma, heart block, bradycardia, or excessive fatigue. In such circumstances, diltiazem may serve as a viable alternative for the management of heart rate and the alleviation of symptoms related to coronary artery disease (CAD).

CONCLUSION

From our study we observed that, beta blockers were most commonly prescribed in the treatment of atrial fibrillation beta blockers were effective in maintaining sinus rhythm of heart and it also controls the ventricular rate during atrial fibrillation. So, beta blockers should be considered as first line agents in management of patients with beta blockers.

Most commonly prescribed beta blocker was Metoprolol. It is the first line drug given atrial fibrillation. It controls or lowers the rapid heart rate. It is once daily cardio selective beta blocker. We have found that after giving treatment, patients have significantly improved their heart rate when prescribed with beta blockers rather than non-beta blockers High value of mean indicates better response with beta blockers.

It's important to note that the choice of medication should be individualized and based on the patient's specific clinical profile, overall health, and response to previous treatments. The decision is typically made by a healthcare professional, such as a cardiologist, who takes into account the patient's medical history, diagnostic test results, and overall treatment goals.

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