**Original article**

**Study of effect of amiodarone in CABG**

**1Vipul Metta , 2Mohammed Abid Geelani, 3Sayyed Ehtesham Hussain Naqvi, 4Rakesh Sharma,**

**5Sneha Daniel**

1Department OF Cardiothoracic surgery, G.B.Pant institute of postgraduate medical education and research(GIPMER), New Delhi India

2Department OF Cardiothoracic surgery, G.B.Pant institute of postgraduate medical education and research(GIPMER), New Delhi India

3Department OF Cardiothoracic surgery, G.B.Pant institute of postgraduate medical education and research(GIPMER), New Delhi India

4Department OF Cardiothoracic surgery, G.B.Pant institute of postgraduate medical education and research(GIPMER), New Delhi India

5Department OF Cardiothoracic surgery, G.B.Pant institute of postgraduate medical education and research(GIPMER), New Delhi India

Correspondence: Dr Vipul Metta

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**Abstract:**

Atrial fibrillation is the most common postoperative complication adding significantly to the morbidity rate and cost of coronary artery bypass surgery (CABG). AF is a superventricular tachyarrhythmia diagnosed through irregular atrial activities and disappearance of atria mechanical function. In electrocardiogram (EGG), AF appears as quick vibrating waves replaced by P-waves and often accompanied by quick and irregular ventricular response. AF may occur in isolation or along with other arrhythmias. Incidence of atrial fibrillation after CABG is between 20% and 40%.. This arrhythmia is often benign and transient, but can cause hemodynamic disorders, thromboembolic complications, longer time of hospital stay and serious complications including cerebral apoplexy, and increase in the length of hospitalization.. Digoxin, calcium blockers, magnesium, glucose-insulin, potassium solution, and various cardioplegia are ineffective at preventing atrial fibrillation after CABG.Amiodarone is a multifaceted antiarrhythmic with a proven record of effectiveness in the treatment of atrial arrhythmias in a variety of clinical settings.Daud et al showed a significant reduction in postoperative atrial fibrillation with oral amiodarone in patients undergoing either CABG or valvular surgery . In this current study we evaluated the effects of amiodarone in preventing intra and post op arrhythmias and compared it to subjects not receiving amiodarone preoperatively.

**Keywords:** Amiodarone , CABG

**Introduction:**

Atrial fibrillation is the most common postoperative complication adding significantly to the morbidity rate and cost of coronary artery bypass surgery (CABG). AF is a superventricular tachyarrhythmia diagnosed through irregular atrial activities and disappearance of atria mechanical function. In electrocardiogram (EGG), AF appears as quick vibrating waves replaced by P-waves and often accompanied by quick and irregular ventricular response. AF may occur in isolation or along with other arrhythmias. Incidence of atrial fibrillation after CABG is between 20% and 40%.1,6 . This arrhythmia is often benign and transient, but can cause hemodynamic disorders, thromboembolic complications, longer time of hospital stay and serious complications including cerebral apoplexy, and increase in the length of hospitalization.2 . Digoxin, calcium blockers, magnesium, glucose-insulin, potassium solution, and various cardioplegia are ineffective at preventing atrial fibrillation after CABG.3

Amiodarone is a multifaceted antiarrhythmic with a proven record of effectiveness in the treatment of atrial arrhythmias in a variety of clinical settings4.Daud et al showed a significant reduction in postoperative atrial fibrillation with oral amiodarone in patients undergoing either CABG or valvular surgery5

In this current study we evaluated the effects of amiodarone in preventing intra and post op arrhythmias and compared it to subjects not receiving amiodarone preoperatively.

**Aim**

To study the effect of perioperative oral amiodarone in CAD patients and comparing the outcomes in patients on amiodarone and not on amiodarone

**Materials and methods**:

* This is a retrospective observational study comprising of 200 patients operated in our department in years 2021 and 2022.
* All the patients had coronary artery triple vessel disease and were admitted atleast 1 week prior to planned procedure. In our department some consultants preferred prophylactic amiodarone for prevention of arrhythmias and other did not
* We identified 200 patients , 100 of these patients received preoperative tablet amiodarone 100 mg tds for 3 days and bd for 3 days and od dose thereafter till surgery
* Remaining 100 subjects did not receive any amiodarone preoperatively
* All patients received metoprolol 50 mg tds since the first day of evaluation in opd maintaining heart rate of around 60 -80/min ‘
* Inclusion criteria :

Patients between 30 to 70 years of age were included

Patients with triple vessel disease with and without left main disease were included

Patients with prior previous cardiac surgery /PTCA/ Pacemaker implantation/ conduction anomalies were excluded

Diabetic patients with Hba1c <8 were included

Patients with associated valvular heart disease were excluded

Patients with COPD / Pulmoinary TB/ CVA were excluded

Patients with emergency surgery, ruptured papillary muscle, severe mitral regurgitation, postinfarction ventricular septal defect, NYHA class III or IV congestive heart failure, history of AF, hyperthyroidism, inflammatory diseases except coronary artery disease, infection, a left atrium (LA) size ≥70 mm, electrolyte imbalance, patients with <40 heart beats per minute were excluded

* All patients underwent preoperative routine investigations with ecg and Chest xray evaluation
* All cases were operated by offpump beating heart method and were converted to on pump if needed
* IABP insertion was done in patients with low cardiac output post CABG

Patients were shifted to step down ICU post surgery. They were shifted to ward when their hemodynamic and respiratory parameters become stable over next 3 days. Routine electrocardiography monitoring was continued during the operation and in the ward till discharge. All episodes of AF were recordfed with 12-lead electrocardiographs.

Hospital mortality was defined as death for any reason occurring within 30 days after the operation.

Serum creatinine more than 1.5 was considered as renal impairment. Neurological complications defined as any episode of seizure or transient/permanent neurological deficit that developed after surgery.

Mortality, preoperative acute myocardial infarction, IABP usage, renal failure, use of inotropic agent, ICU and hospital stay, bleeding, revision rates, MACCE were determined

Patients were followed up at 6 months postop period and ECG was done

**Results:**

Our study comprises of 100 patients in group receiving cordarone and 100 patients in those not receiving cordarone

93 of the patients receiving cordarone were in sinus rhythm,7 patients were in AF

91 patients not receiving cordarone were in sinus rhythm, 9 patients were in AF

**Table 1: Patients with sinus rhythm and AF rhythm**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | **Rhythm** | | | |
| **Sinus** | | **AF** | |
| **Count** | **Column N %** | **Count** | **Column N %** |
| **Group** | **Cordarone** | 93 | 50.5% | 7 | 43.8% |
| **Non-Cordarone** | 91 | 49.5% | 9 | 56.3% |

10 patients (0.5%) among 200 had to be converted to on pump due to drop in pressure and fibrillation

3 patients (33%) were receiving cordarone and 7 patients (76%) not receiving cordarone

13 patients (0.65%)among 200 required IABP support

4 patients (30%)were receiving cordarone and 9 patients (69%) were not receiving cordarone

**Table 2: Patients with IABP requirement, Patients with conversion to on-pump**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | **Conversion to On-Pump** | | | |
| **Yes** | | **No** | |
| **Count** | **Column N %** | **Count** | **Column N %** |
| **Group** | **Cordarone** | 3 | 33.3% | 97 | 51% |
| **Non-Cordarone** | 7 | 76.7% | 93 | 48.9% |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | **Requirement of IABP** | | | |
| **Yes** | | **No** | |
| **Count** | **Column N %** | **Count** | **Column N %** |
| **Group** | **Cordarone** | 4 | 30.7% | 96 | 51.3% |
| **Non-Cordarone** | 9 | 69.3% | 91 | 48.6% |

143 patients among 200 had an episode of previous MI

Out of 143 patients who had MI 8 patients had to be converted to onpump

57 did not have a previous history of MI

6 patients required IABP and all of them had a history of MI

**Table 3: Patients with a history of mi requiring iabp**

|  |  |  |  |
| --- | --- | --- | --- |
|  | | **Requirement of IABP** | |
| **Yes** | **No** |
| **Count** | **Count** |
| **History of MI** | **Yes** | 6 | 137 |
| **No** | 0 | 57 |

**Table 4: Patients with a history of mi requiring conversion to on-pump**

|  |  |  |  |
| --- | --- | --- | --- |
|  | | **Conversion to On Pump** | |
| **Yes** | **No** |
| **Count** | **Count** |
| **History of MI** | **Yes** | 8 | 135 |
| **No** | 0 | 57 |

Our study shows there is no significance of cordarone use in conversion to on pump, duration of icu stay or postopinotropic and IABPrequirement

**PATIENTS WITH “AF” IN CORDARONE AND NON CORDARONE GROUP:**

1. Conversion to On-pump

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | Conversion to On- Pump | | Total | Chi-Square | p-value |
| Yes | No |
| Group | Cordarone | 3 | 4 | 7 | 0.152 | 0.069 |
| Non-Cordarone | 5 | 6 | 11 |
| Total | | 8 | 10 | 18 |

1. requiring prolonged inotropic support

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | Prolonged Inotropic support | | Total | Chi-Square | p-value |
| Yes | No |
| Group | Cordarone | 3 | 4 | 7 | 0.152 | 0.696 |
| Non-Cordarone | 3 | 6 | 9 |
| Total | | 6 | 10 | 16 |

1. prolonged i.e., >5 days ICU stay

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | ICU Stay | | Total | Chi-Square | p-value |
| </=5 days | >5 days |
| Group | Cordarone | 3 | 4 | 7 | 0.254 | 0.614 |
| Non-Cordarone | 5 | 4 | 9 |
| Total | | 8 | 8 | 16 |

1. Requirement of IABP

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | Requirement of IABP | | Total | Chi-Square | p-value |
| Yes | No |
| Group | Cordarone | 1 | 6 | 7 | 0.163 | 0.687 |
| Non-Cordarone | 2 | 7 | 9 |
| Total | | 3 | 13 | 16 |

**PATIENTS WITH SINUS RHYTHM IN CORDARONE AND NON CORDARONE GROUP:**

1. Conversion to On-pump

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | Conversion to On- Pump | | Total | Chi-Square | p-value |
| Yes | No |
| Group | Cordarone | 0 | 93 | 93 | 0.000 | 0.988 |
| Non-Cordarone | 1 | 90 | 91 |
| Total | | 2 | 182 | 184 |

1. requiring prolonged inotropic support

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | Prolonged Inotropic support | | Total | Chi-Square | p-value |
| Yes | No |
| Group | Cordarone | 4 | 89 | 93 | 0.001 | 0.975 |
| Non-Cordarone | 4 | 87 | 91 |
| Total | | 8 | 176 | 184 |

1. prolonged i.e., >5 days ICU stay

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | ICU Stay | | Total | Chi-Square | p-value |
| </=5 days | >5 days |
| Group | Cordarone | 88 | 5 | 93 | 0.001 | 0.972 |
| Non-Cordarone | 86 | 5 | 91 |
| Total | | 174 | 10 | 184 |

1. Requirement of IABP

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | Requirement of IABP | | Total | Chi-Square | p-value |
| Yes | No |
| Group | Cordarone | 2 | 91 | 93 | 0.317 | 0.573 |
| Non-Cordarone | 4 | 90 | 94 |
| Total | | 6 | 181 | 187 |

**Table: R**elation of Cordarone intake and ICU stay

Out of 200 patients 10 patients(5%) were in AF in immediate postop period and 190 (95%) were in sinus rhythm

Out of 10 patients 2 patients 19 % were receiving cordarone and 8 patients 81% were not receiving cordarone

At 6 months all patients receiving cordarone were in sinus rhythm whereas 4.5 % of patinets were in AF

Rhythm in postop

|  |  |  |  |
| --- | --- | --- | --- |
| group | AF | Sinus | total |
| cordarone | 2 | 98 | 100 |
| Non cordarone | 8 | 92 | 100 |

Rhythm at 6 months postop

|  |  |  |  |
| --- | --- | --- | --- |
| group | AF | Sinus | total |
| cordarone | 0 | 100 | 100 |
| Non cordarone | 9 | 91 | 100 |

**Conclusion**

Amiodarone is a multifaceted antiarrhythmic with a proven record of effectiveness in the treatment of atrial arrhythmias in a variety of clinical settings4

In our study there was no significant effect of cordarone on conversion to on pump, duration of postop stay, IABP and inotropic support

More patients in non cordarone group were converted to on pump CABG than those in cordarone group but larger study groups are required to comment on its significance

Patients receiving cordarone had fewer rhythm disturbances intraop

In immediate postop period and at 6 months patients reveiving cordarone were having sinus rhythm with fewer rhythm disturbances compared to non cordarone group patients

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