Analysis Of Cardiac Arrhythmias In Patients With Ischaemic Heart Disease Admitted To Coronary Care Unit*

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Summary:

Three hundred and fifty patients were admitted to Coronary Care Unit Mayo Hospital, Lahore between June 1986 to May 1987. 218(62.8%) patients developed arrhythmias. 158(72.4%) were males and 60(27.6%) were females. Tachyarrhythmias were mostly ventricular in origin (18%). Out of 218 patients 47(21.5%) died. 126(58%) patients were haemodynamically stable while 92(42%) patients developed left ventricular failure. 64.5% of the total females and 61.7% of the total males developed arrhythmias. Arrhythmias and deaths occurred more frequently with anterior Q wave infarction. 18.9% of the male patients and 28.3% of the female patients with arrhythmias died. 78% of patients who died had one or more risk factors. 14% of the patients below 50 years old died while 29% of the patients above 50 years old with arrhythmias died. We conclude that female gender, presence of one or more risk factors and anterior Q wave infarction is associated with increased mortality in patients who developed arrhythmias in coronary care unit.

Introduction:

During 1962 C.C.Us. were established in different parts of the world for the first time. The aim of the CCUs were to resuscitate the patients immediately with ventricular fibrillation following myocardial infarction, under the care of specially trained medical and nursing staff. After some time attention was given towards prevention of arrhythmias and other immediate post myocardial infarction complications. Complete bed rest with bed-side monitoring facilities, regular check up of the physical signs, immediate response to warning arrhythmias, providing reassurance to patients and keeping a vigilant eye on the patient's condition by the trained staff were the main purposes behind the establishment of the CCUs. During this short history of CCUs, they have gained considerable importance for the management of patients with coronary artery disease, arrhythmias and cardiogenic shock.

Coronary artery disease whose incidence is decreasing in the developed countries is now increasing in the developing countries like Pakistan[1-4]. More and more patients are admitted in coronary care units with ischaemic heart disease which may be due to change in life style, i.e., more sedentary habits, increased intake of high cholesterol diet and having coronary risk factors like diabetes mellitus, hypertension, smoking and stressful life style.

Selection of the patients for admission include those patients with acute myocardial infarction, unstable angina, post infarct angina or patients with life threatening arrhythmias or patients suspected of acute coronary artery disease.

The aim of this prospective study was to observe the incidence of different arrhythmias in different age groups and in different types of infarction. Many studies have focused on this particular field[5-12]

Patients and Method:

All patients who were admitted between June 1986 to May 1987 to Coronary Care Unit Mayo Hospital, Lahore were included in this study. After admission these patients were monitored for at least 72 hours with central monitoring facilities and any arrhythmia which developed was recorded. Serial ECGs and serum electrolytes were done routinely. Serum enzymes and other laboratory investigations were carried out when clinically indicated.

TABLE 1

	Total	Male	Female
Total No. of patients	350	257	93
Patients with arrhythmias	218	158	60
Tachyarrhythmias	145	109	36
Bradarrhythmias	73	49	24
Died due to arrhythmia	47	30	17
Total died	53	34	19
Below 50 expired	9	5	4
Above 50 expired	44	29	15

Ventricular premature contractions more than 6/min were considered significant. If recorded after 72 hours patient was monitored again or monitoring was continued. Follow up was done until discharge or death.

Criteria for admission was either acute myocardial infarction (W.H.O. criteria) or Unstable angina (pre infarct or post infarct). The patients were admitted either through physician referral or were shifted from emergency ward or other medical wards.

Patients were discharged from the unit when they were pain free for 72 hours at rest and were ambulated. All the records were computerized and data was analyzed.

Data Analysis:

Data was analyzed according to location of infarction, age, type of arrhythmias. Following results were obtained according to location of the infarction. Out of 19 patients with anterolateral infarction 14(73.7%) patients developed arrhythmias, (13 males and 1 female) 4 patients died. Out of 56 patients with anteroseptal infarction 38 (67.9%) developed arrhythmias, (29 males and 1 female) 5 patients died. Out of 21 patients with anterior wall infarction 19(90.5%) developed arrhythmias, (29 males and 3 females) 8 patients died. Out of 116 patients with inferior wall infarction 83(71.6%) developed arrhythmias, (60 males and 23 females) 20 patients died. 21 patients out of 30 patients with multiple infarctions developed arrhythmias, (12 males and 9 females) 7 died. Out of 13 patients with lateral wall infarction 8(61.5%) developed arrhythmias, (5 males and 3 females) 2 patients died. Out of 21 patients with non Q MI 5(23.8%) patients developed arrhythmias. All were females. None of these patients died. 28(39.4%) of 71 patients with unstable angina developed arrhythmias, 21 were males and 7 patients were females. None of these patients died.

Considering age group the following results were obtained: 9 patients were 27 to 40 years old. 18(46.1%) patients developed arrhythmias (15 males and 3 females). 78 patients between 41 to 50 years old were admitted. 47(60.3%) patients had arrhythmias, (37 males and 10 females). Between 51 to 60 years 96 patients were admitted. 58(60.4%) patients developed arrhythmias (48 males and 10 females). Out of 93 patients admitted between 61 to 70 years old 73(78.4%) patients developed arrhythmias (47 males and 26 females). Between 71 to 80 years 41 patients were admitted 19(46.4%) patients developed arrhythmias (8 males and 11 females). Above 80 years 3 patients were admitted. All were male patients and all developed arrhythmias.

TABLE 2

Incidence of arrhythmias according to Age Group

Age Group	Total No. of patients	Patients with arrhythmias
Below 40	39	18 (46.1%)
41-50	78	47 (60.2%)
51-60	96	58 (60.4%)
61-70	93	73 (78.4%)
71-80	41	19 (46.%)
Above 80	03	03 (100%)

Two patients between 27-40 years old, 6 patients between 41-50 years, 12 patients between 51-60 years, 14 patients between 61-70 years, 10 patients between 71-80 years and above 81 years all patients died.

Considering type of arrhythmias the following results were obtained.

TABLE 3

Incidence of arrhythmias according to Type of Infarction

Type of Infarction	Total patients	Pats. with Arrhs.
Anterolateral	19	14(73.6%)
Anteroseptal	56	38(67.8%)
Inferior wall	116	83(71.5%)
Lateral wall	13	8(61.5%)
Non Q MI	21	5(23.8%)
Unstable angina	71	28(35.9%)
Anterior wall	21	19(90.44%)
More than one site	30	21(70%)

145(66.5%) patients had tachyarrhythmias and 73(33.5%) patients had bradyarrhythmias. 46(21.1%) patients had supraventricular tachycardia. 54(24.8%) patients had frequent VPCs. 40(18.4%) patients had ventricular tachycardia. 3(1.4%) patients had Junctional tachycardia. 2 patients developed primary VF.

Considering conduction defects the following results were obtained.

Seventythree patients developed conduction defects. 12 patients had A-V block (Ist degree or second degree heart block), 14 patients had complete heart block, 10 patients developed RBBB, 7 patients developed LBBB, 4 patients developed LAHB, 3 patients developed RBBB alternating with LBBB, 3 patients had RBBB and LAHB and 2 patients had LPHB. 7 patients developed sinus bradycardia. 2 patients had sino atrial block.

Calculating risk factors following risk factor profile was obtained.

Out of 218 patients 167(76.6%) patients had one or more risk factors (hypertension, diabetes mellitus or smoking). 51(23.4%) patients had no risk factor. 109(50%) patients had diabetes, 92(42.2%) were hypertensive and 87(40%) were smokers. 24 patients out of 167 patients had all the risk factors. 39 patients had two risk factors. 77 patients had only one risk factor.

Out of 47 patients who died 10 patients had no risk factor while 37 patients had one or more risk factors. 58% of the patients who developed arrhythmias were haemodynamically stable. 42% patients had left ventricular failure.

72% patients with arrhythmias who died had acute infarction, i.e., without previous history of ischaemic heart disease while 28% patients died had ischaemic heart disease diagnosed previously. 45% patients with VT, 6% with SVT, 13% with complete heart block and 9% with Ist or second degree A-V block died.

39(68.4%) females and 98(64.9%) males with acute infarction developed arrhythmias, while 21(58%) female and 60(57%) male patients were previously diagnosed as having coronary artery disease. 65(56%) patients below 50 and 153(68.6%) patients above 50 developed arrhythmias. 8(12.3%) patients below 50 years and 39(25.4%) patients above 50 years old with arrhythmias died.

Discussion:

This prospective study was done to look at the incidence of arrhythmias and its outcome in our department. In 350 consecutive patients admitted, we found that overall incidence of arrhythmias was 62.8%. Tachyarrhythmias were more common than bradyarrhythmias. 66.5% verses 33.5%. Frequent ventricular premature beats was the most common arrhythmias noted in 24.8% next commonest arrhythmia was supraventricular tachycardia (21%). Incidence of arrhythmias increased with age, 65 out of 117 (56%) patients below 50 years and 153 patients above 50 out of 233(66%) developed arrhythmias. Presence of one or more standard risk factors increased the incidence of arrhythmias. Patients with anterior Q wave myocardial infarction also had more arrhythmias than patients with other infarction. Arrhythmias occurred with equal frequency in male and female patients. Prior history of ischaemic heart disease had no effect on

the incidence of arrhythmias. Overall mortality in patients who developed arrhythmias was 22%. Age, sex, location of myocardial infarction and presence of risk factors had a significant effect on mortality. 12% of patients below 50 while 25% of patients above 50 years of age died. 28% of females as compared to 19% of males died.

42% of patients with anterior Q wave myocardial infarction died. 76% of patients who died had one or more risk factors, however it is not clear that arrhythmias was the cause of death or just a marker for increased mortality.

We conclude that arrhythmias in acute myocardial infarction and unstable angina were more common with increasing age, presence of one or more risk factors and anterior Q wave myocardial infarction while the mortality in patients who developed arrhythmias was significantly more in females, old age presence of one or more risk factors and anterior Q wave myocardial infarction. Therefore these patients should be monitored more closely.

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