Study of Acute Myocardial Infarction in Post Menopausal Women with Special Reference to Dyslipidemia

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Abstract

Introduction: Coronary artery disease is a leading cause of mortality among postmenopausal women in our country. It has been recognized that women are protected from CAD prior to the menopause. Statistics have showed that 4% of more deaths are arising from cardiovascular disease among 70 years of age. The most common cause of CVD is the development of atherosclerosis. This condition is multifactorial in origin, but dyslipidemia has been identified as a major risk factor. Dyslipidemia is one of the important modifiable risk factor in CHD. *Objectives:* To study the prevalence of dyslipidemia and type of lipid abnormalities in postmenopausal women with acute myocardial infarction. *Methods:* Around 50 postmenopausal women above the age of 45 years admitted in ICCU for acute MI under Khaja Banda Nawaz Teaching and General Hospital have been studied over a period of 3years. The patients below the age of 45 years and those who had associated diabetes mellitus, hypertension, 3smoking; congenital hyperlipidemias have been excluded from the study. After a detailed history and thorough clinical examination routine investigations were done. Other investigations like ECG, serum cardiac markers such as CPK-MB, LDH, SGOT and 2-D Echo was done to diagnose MI. A special attention was paid to lipid profile to study the dyslipidemia pattern. *Results:* Out of 50 patients, 54% were between 51-60 years of age.68% were above 10 years of postmenopausal women. Chest pain was the predominant symptom in 90% of cases followed by profuse sweating and restlessness.30% of patients were admitted within 6 hours after the onset of symptoms and 40% of patients admitted 6-12 hours after the onset of symptoms. 62% had STEMI as presentation in ECG. Dyslipidemia was observed in 38 patients, of themincreased LDL levels and triglyceridemia was predominantly observed. Hypercholesterolemia was observed in 60% of patients in study group. LVF was the most common complication. The mortality rate was 20%. *Conclusion:* Dyslipidemia was observed in most of thepostmenopausal women, in that increased LDL levels and triglyceridemia was the most predominant one. The mortality rate was high with dyslipidemia group to normal lipids group of patients. So life style modifications and early initiation of statin therapy in postmenopausal women would increase the cardiovascular benefits.

Keywords: Postmenopausal Women; Dyslipidemia; Coronary Heart Disease.

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Introduction

Coronary heart disease (CHD) is one of the major causes of death in United states [1] for both men and postmenopausal women in western world [2]. A study conducted in India suggests that prevalence of CHD is about 10% [3]. Coronary heart disease in women is under diagnosed, under treated and under researched. It remains the leading cause of death in men and women worldwide. The deaths due to coronary heart disease exceed the number of deaths from all types of cancers. In the United Kingdom, CHD causes almost 1, 14,000 deaths a year and one in six occurs in women

[4]. In the UK and Europe, one woman dies every six minutes and in the United States, one in every minute because of heart disease. Moreover, in Europe, cardiovascular disease kills a higher percentage of women (55%) than men (43%) [5]. Yet CHD is still considered a disease of men.

A study conducted in India suggests that prevalence of CHD is about 10% [3]. From 1960 to 1995, the prevalence of CAD in adults has increased from 3% to 10% in urban Indians and from 2% to 4% in rural Indians, with women having rates similar to men [6]. 40% of all coronary events in women are fatal, 67% of all sudden deaths occur in women in those without a history of coronary artery disease. The CAD mortality in women increases by 40 fold, by the age of 80 years compared with the age group 34-44 years. This incidence is almost identical with the men. Women are about 10 years older than men at first manifestation of CAD, although they have a similar plaque burden[7]. Women lose this 10 year advantage if they smoke, have diabetes or had a pre mature menopause.

Although many factors can influence an individual's risk for coronary artery disease, some factors are unique to women, including reproductive status. Menopause is associated with significant elevations in serum cholesterol levels and a threefold increase in the risk of coronary artery disease. It has been suggested that these changes results from a reduction in the level of estrogen [8].The postmenopausal increase in the risk of CAD is related to a higher incidence of hypertension, diabetes, dyslipidemia and obesity [9].

The profile of AMI in women has not been studied in depth in our country. Information on the extent of CAD in postmenopausal women has gained considerable interest, however no data are available in India [10]. Studies of AMI based primarily on men and conclusions drawn from these studies may not be applicable to women [11]. Women with overt coronary artery disease have multiple risk factors, atypical presentations [12], have worse prognosis than do men. They have increased morbidity and mortality, even surgical and non-surgical revascularization procedures are also less successful compared to men. Because of the average life expectancy extends 20-30 years after menopause, the medical and economic impacts of these changes are significant [13].

Materials and Methods

Around 50 postmenopausal women having acute myocardial infarction admitted in ICCU under Khaja Banda Nawaz Teaching and General Hospital have been studied over a period of 36 months. The patients above the age of 45 years and who attained menopause were included in the study[According to the definition menopause means cessation of ovarian function resulting in permanent amenorrhea and those who had no menstrual cycles for more than one year]. The patients below the age of 45 years and those who had associated diabetes mellitus, hypertension, smoking and congenital hyperlipidemias have been excluded from the study. After a detailed history and thorough clinical examination, routine investigations were done including ECG, serum CPK-MB level, LDH, RBS, Lipid profile, Chest X-ray and 2D-echo. Special attention was paid to dyslipidemia.

Results

The 50 postmenopausal women who had presented with acute MI have been taken for the study. The age of distribution varied from 45 -80 years. The mean age was 58 years. The peak incidence of MI occurred between the age group 51-60 years around 54%[Table 1]. The duration of postmenopausal period varied among them. 38% of the patients presented with in 10 years of duration of postmenopausal period, 30% presented between 10-19 years,22% presented between 20-29 years and 10% of the patients presented more than 30 years of postmenopausal period [Table 2]. The most common presentation was chest pain(90%) followed by profuse sweating(62%), nausea/vomiting (30%), anxiety/nervousness (38%), abdominal discomfort(36%), radiation to left shoulder/arm(30%), palpitation (36%) and breathlessness (26%)[Table 3]. Some of the patients had peripheral markers of coronary artery disease. 8% of patients had arcus senilis, 8% had ear lobule crease and 10% of patients had xanthelesma.

The STEMI was the most common type of MI (62%), 38% of patients presented with NSTEMI [Table 4]. The 2D Echo showed global hypokinesia in 40% of patients, left ventricular dyskinesia in 20% of patients, papillary muscle dysfunction in 10% of patients and 2D Echo was normal in 30% of patients. The 30% of patients presented with in 6hours of onset of symptoms, 42% presented between 6-12 hours, 24% presented between 13-24hours and 4% patients presented more than 24 hours of onset of symptoms.

Out of 50 postmenopausal patients, 76% had dyslipidemia and 24% had lipid levels with in normal limits. Of these 76%patients, the mean cholesterol

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levels were 244.72± 2.3mg/dl, themean LDL levels were 139.16±1.4mg/dl, the mean HDL levels were 35.96±1.1mg/dl and the mean Triglycerides levels were>162±2.0mg/dl according to the National Cholesterol Education Programme guidelines. The TG/HDL ratio was >3 [Table 5]. Only 36 patients had complications. Out of 36 patients, 4 had atrial fibrillation, 6 had complete heart block, 2 had left bundle branch block, 2 had right bundle branch block, 8 had left ventricular failure, 8 had ventricular premature beats, 3 had supraventricular tachycardia and 3 had ventricular tachycardia. The LVF was the most common complication followed by VPBs and AF. The complications were more common with

Table 1: Age distribution

Age in years	No. of Patients	Percentage (%)
45-50	10	20
51-60	27	54
61-70	10	20
71-80	03	06
Total	50	100

Table 2: Duration of postmenopausal period

Duration of Postmenopausal Period in Years	No. of Patients	Percentage
<10	19	38
10 – 19	15	30
20- 29	11	22
30 & above	05	10
TOTAL	50	100

Table 3: Clinical symptoms

Clinical Symptoms	No. of Patients	Percentage
Chest pain	45	90
Profuse sweating	31	62
Nausea/vomiting	19	38
Anxiety/nervousness	19	38
Breathlessness	13	26
Abdominal discomfort	18	36
Palpitation	18	36
Radiation to left shoulder/arm	15	30

Table 4: Type of Myocardial infarction[ECG based]

Type of MI	No. of Patients	Percentage
ST Elevation MI	31	62
Non ST Elevation MI	19	38
TOTAL	50	100

Table 5: Lipid Profile of postmenopausal MI patients

Lipid profile	Mean value of 38 patients	Percentage	Mean Value of 12 patients	Percentage
Total Cholesterol	244.72	76	167.20	24
LDL	139.16	76	98.0	24
HDL	35.96	76	43.60	24
TG	204.12	76	102.34	24
TG/HDL Ratio	5.6	76	2.3	24

Table 6: Complications of MI

Complications	No. of Patients	Percentage
Atrial fibrillation	2	10.5
Complete Heart block	3	15.8
Left bundle branch block	1	5.3
Right bundle branch block	1	5.3
Left ventricular failure	6	31.6
Ventricular premature beats	4	21.1
Supraventricular Tachycardia	1	5.2
Ventricular Tachycardia	1	5.2
TOTAL	19	100.0

patients who had dyslipidemia [Table 6]

Out of 50 patients, 40 patients improved with medical line of management and 10 patients expired. The mortality rate was high among patients who had dyslipidemia (07 Patients).

Discussion

This study was conducted on 50 postmenopausal women with acute MI, admitted in ICCU, under KBN Teaching and General Hospital, Kalaburagi. The total number of patients admitted with acute myocardial infarction duringthe study period was 196. Out of 196, 62were women which constitute 31.6% of the cases of acute MI. Among 62 women, 50 were post-menopausal which constitute 80.65% and 12 were pre-menopausal [19.35%]. Yavagal et al [11] in their study, the postmenopausal women constituted 80% and 84%. This shows that there is a sharp increase in acute myocardial infarction after menopause.

Among 50 postmenopausal women, the maximum number of patients were between the age groups 51-60 years that was about 54%. Yavagal et al in their study reported maximum incidence in the age group 51-60years (35.4%) [11] Whereas Malacrida et al observed maximum incidence in the age group 60-69 years [14] and study done by Jocson MT showed age distribution around 60 years [15]. The chest pain was the most common clinical presentation (90%) followed bysweating (62%), anxiety/nervousness (38%), breathlessness (26%), nausea/vomiting (38%). In the study of Kudenchuk et al the chest pain was seen in 99.6% of patients followed by sweating in 70% of patients [16]. 30% of the patients presented to the hospital within 6hours of onset of symptoms and 72% within 12 hours of onset.

The elevated levels of LDL-C and triglycerides and low levels of HDL-C are independent risk factors for atherosclerotic disease. The relative risk associated with each lipoprotein abnormality differs between the sexes [17]. As age increases LDL cholesterol level increases. Women generally have HDL-C levels 10mg/dl higher than men. The National Cholesterol Education Panel, Adult Treatment Panel suggests that HDL-C lesser than 50mg/dl should be considered a coronary heart disease risk factor in women [18]. The 1% reduction in total cholesterol resulted in a 2% decrease in CHD risk [19]. In a meta-analysis of 17 population based prospective studies, evaluating the association between elevated TG and CHD risk, elevated TG were associated with an approximately 30% increase risk for men an1d 75% increased risk in

women [20].

In the present study, dyslipidemia was observed in 76% of patients. In that triglyceridemia was the predominant dyslipidemia along with elevated LDL-C and serum total cholesterol level. The HDL-C levels were reduced and TG/HDL ratio was >3. The other studies like Cikim AS, done in Turkey [21] and studies by Jocson MT showed dyslipidemia in postmenopausal women [15]. Similar observations were found in the studies of Maki KC [22] and Neil J [23]. 8% of them had Arcus senilis and 10% had xanthelashma as peripheral markers of cardiovascular disease.

Out of 50 patient, STEMI was the most common presentation (62%) and 38% had NSTEMI. Similar findings were observed with Yavagal et al and Neill J [23]. Left ventricular failure was the most common complication, which was present in 12% of cases and 8% had VPCs, 6% had complete heart block. 2D Echo showed left ventricular dyskinesia in 24% of patients which correlates with the studies of Murali et al [24]. 8% had papillary muscle dysfunction resulting in mitral regurgitation. Yavagal et al and Bhat et al reported papillary muscle dysfunction in 10.8% and 29.4% respectively. The mortality rate was 20% in the present study. In the studies of Yavagal et al and Fiebach et al [25], the mortality rate was 20% and 14%.

Conclusion

The cardiovascular disease is a leading cause of death in women which increases after menopause. Dyslipidemia is highly prevalent among women, with menopause still more worsening occurs with lipid profile. The 50 postmenopausal women who presented with acute MI were between the age groups 51-60 years. 38% of the patients presented with in 10 years of postmenopausal period and 30% between 10-19 years. Chest pain was the most common presentation followed by sweating and 42% of patients got admitted within 6-12 years of onset of symptoms. Dyslipidemia was present in most of the patients among which hypercholesterolemia, increased LDL levels and triglyceridemia were predominantly observed. STEMI was the most common type of MI and LVF was the predominant complication. The mortality rate was 20%. Current cardiovascular disease prevention guidelines for women recommended lifestyle modification as the initial treatment for women with dyslipidemia. The early and more aggressive lipid lowering with high dose statin

therapy provides incremental cardiovascular benefit as compared with low dose or moderate dose statin therapy.

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