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CLINICAL PROFILE AND RISK FACTOR EVALUATION IN POSTMENOPAUSAL WOMEN WITH STEMI

General Medicine

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ABSTRACT

Introduction: Recognising even slight variations in the development or progression of cardiovascular disease, utilisation of established medicines, and response to therapy is critical. Hence present study was put-forth to know the clinical profile and risk factors of STEMI in post-menopausal women. **Material & Methods:** This is a cross sectional study conducted at intensive cardiac care unit at GSL general hospital from 1st January 2021 to 30th June 2022 in 75 patients. The study population included female patients who attained menopause and admitted with the clinical features and ECG findings suggestive of STEMI. **Results:** In the present study, out of 76 study subjects, 40(52.6%) were Obese, 25(32.9%) were Overweight,11 (14.5%) is normal.50(65.8%) subjects had abnormal 2D echo findings, while 26(34.2%) subjects had normal echo findings. **Conclusion:** Systemic hypertension and diabetes increase the risk of CAD mortality and morbidity. Low HDL and high LDL were also noted as CAD risk factors.

KEYWORDS

Coronary Artery Disease, Post-menopausal Women, Diabetes, Hypertension.

INTRODUCTION:

Coronary artery disease (CAD) is the leading cause of death worldwide [1]. Inspite of huge advances in current understanding of CAD and its management, very few studies were available which focussed on acute myocardial infarction (AMI) in women[2] ST-segment elevation myocardial infarction (STEMI) in women has large impact on patient's ability to work, psychology, and adds on to socioeconomic and health burdens. It also, affects the dependents of these women which eventually decreases the national productivity [2] The cut-off point for defining young women with respect to acute MI is ≤ 45 years [3], which is ≤ 65 years when defining family history of premature CAD [4] [5].

The global INTERHEART Study, a major cohort study of over 52,000 people with myocardial infarction, was the first to show that this estimated 8-to 10-year discrepancy in age of onset between men and women exists globally, across varied socioeconomic, climatic, and cultural situations[6]. Recognising even slight variations in the development or progression of cardiovascular disease, utilisation of established medicines, and response to therapy is critical. Hence present study was put-forth to know the clinical profile and risk factors of STEMI in post-menopausal women.

AIM:

Clinical profile and risk factor evaluation of ST segment elevation myocardial infarction (STEMI) in postmenopausal women.

OBJECTIVES

- To Assess the clinical profile of STEMI in postmenopausal women
- To Assess the important risk factors of STEMI in postmenopausal women
- To Assess the biochemical profile of STEMI in postmenopausal women

MATERIALS & METHODS:

This is a cross sectional study conducted at intensive cardiac care unit at GSL general hospital from 1st January 2021 to 30th June 2022 in 75 patients. The study population included female patients who attained menopause and admitted with the clinical features and ECG findings suggestive of STEMI, while female patients with stable angina, unstable angina, NSTEMI and with ST elevation without both symptoms and enzyme elevation were excluded from the study.

A detailed history and clinical examination was carried out in every study subject according to a pre structured questionnaire. All vital parameters along with comorbidities were recorded. Height, weight, Body mass index of all subjects were taken. Study subjects were examined by experienced cardiologist, and underwent following investigations like complete blood picture, renal function tests, fasting lipid profile along with coronary angiogram.

All study subjects underwent thrombolytic therapy or per cutaneous coronary intervention as per needed. Written informed consent was obtained from every study subject and institutional ethics review committee approval was obtained prior to commencing the study.

All statistical analysis was compiled by SPSS software trial version 20.0 and MS Excel- 2010. Descriptive data was presented as mean ± standard deviation, percentages, tabulated and graphically represented. P value <0.05 was considered as statistically significant.

RESULTS:

In the present study, out of 76 study subjects, 40(52.6%) were Obese, 25(32.9%) were Overweight,11 (14.5%) is normal.

50(65.8%) subjects had abnormal 2D echo findings, while 26(34.2%) subjects had normal echo findings.

In the present study, hemoglobin within normal limits (11.6-15gm/dl) was seen in 32(42.10%) study subjects, Low hemoglobin (<11.6gm/dl) was seen among 44(57.90%) study subjects. Normal platelet count (1.5-4.5cumm/l) was seen among 56(73.70%), Low platelet count (<1.5cumm/l) was seen among 14(18.40%), High platelet count (>4.5cumm/l) was seen among 6(7.90%), Out of this Hemoglobin had significant association with number of vessels involved in coronary angiogram while the rest had no significant association.

In the present study, Normal Creatinine (0.6-mg/dl) was seen among 60(78.90%) study subjects, Low Creatinine (<0.6mg/dl) was seen among 3(3.90%) study subjects, High Creatinine (>1.4 mg/dl) was seen among 13(17.10) study subjects, Normal Blood urea count (20-45mg/dl) was seen among 69(90.80%), High Blood urea (>45 mg/dl) was seen among 7(9.20%), Low Blood urea (<20 mg/dl) was not seen among study subjects 0(0%) Out of this Serum creatinine had significant association with number of vessels involved in coronary angiogram while the rest had no significant association.

In the present study, Normal blood sugar (70-110mg/dl) was seen among 30(39.50%) study subjects, Low blood sugar (<70mg/dl) was seen among 9(11.80%) study subjects, High blood sugar (>110mg/dl) was seen among 37(48.70%) study subjects, Normal Post Prandial Blood sugar (140mg/dl) was seen among 24(31.60%), high post prandial blood sugar (140mg/dl) was seen among 52(68.40). There is no significant association with number of vessels involved in coronary angiogram.

In the present study, Normal Total Cholesterol (150-250) was seen among 68(89.50%) study subjects, Low Total Cholesterol (<150) was seen among 1(1.30%) study subjects, High Total Cholesterol (>250) was seen among 7(9.20%) study subjects, Normal Triglyceride (60-150) was seen among 6(7.90%), Low Triglyceride (>60) was seen among 0(0%). High Triglyceride (>150) was seen among 70(92.10%). Normal High-Density Lipoprotein (35-60) was seen among 27(35.50%), Lower High-Density Lipoprotein (<35) was seen among 17(22.40%), Higher High-Density Lipoprotein (>60) was seen among 32(42.10%). Normal Low-Density Lipoprotein (<130) was seen among 17(22.40%), Higher low-density Lipoprotein (>130) was seen among 59(77.60%). There is significant association between Total cholesterol, HDL, LDL, VLDL with HDL and LDL being most significant with number of vessels involved in coronary angiogram.

In the present study Out of 76 study population, 26 (34.2%) showed no regional wall abnormality, 13(17.1%) showed Global hypokinesia of LV, 11(14.5%) showed Anterior wall hypokinesia, 9(11.8%) showed Anteroseptal hypokinesia, 8(10.5%) showed Inferior wall hypokinesia, 4(5.3%) showed Posterior wall hypokinesia, 3(3.9%) showed Anterolateral wall hypokinesia.

In the present study, as age increases, the number of vessels with abnormal coronary angiogram also increased and is statistically significant ($p<0.01$)

In the present study, Chest pain was seen in 48(63.20%) study subjects, Sweating was seen in 14(18.40%), Dyspnea was seen in 41(53.90%), Palpitations in 23(30.30%), Syncopal attacks in 6(7.90%), Vomiting's in 15(19.70%) Out of these Dyspnea and chest pain had significant association with number of vessels involved in coronary angiogram while rest had no significant association.

In the present study, Hypertension was seen in 41(53.90%) of study subjects, Diabetes was seen in 41(53.90%), chronic kidney disease was seen in 4(5.30%), Hypothyroid was seen in 11(14.50%), Obesity was seen in 43(56.60%) Of these Diabetes, Hypertension and Obesity had significant association with number of vessels involved in coronary angiogram while the rest had no significant association.

In the present study, 41(53.90%) were smokers, 34(44.70 %) were Alcoholics, 6(7.90%) was Tobacco chewers. Out of these Smoking had significant association with number of vessels involved in coronary angiogram while the rest had no significant association.

In the present study, 40(52.60%) were Obese, 25(32.90 %) are Overweight ,11(14.50%) is Normal.

In the present study, pallor was seen in 25(32.9%) study subjects, Icterus was seen in 1(1.3%), clubbing was seen in13(17.10%), lymphadenopathy was seen in1(1.30%) Of these Pallor and clubbing had significant association with number of vessels involved in coronary angiogram while the rest had no significant association.

Table 1: Descriptive statistics of Socio Demographic Profile, general parameters, Hemogram, Serum Electrolyte, and Lipid Profile among study population.

Descriptive statistics	Mean	SD	Minimum	Maximum
Socio- Demographic				
Age	59.91	11.249	41	86
BMI	30.1838	4.64397	19.22	39.26
General Parameters				
FBS(mg/dl)	111.25	38.364	60	198
PPBS (mg/dl)	201.43	67.02	110	380
Systolic Blood Pressure (mm/Hg)	126.58	12.812	90	150
Diastolic Blood Pressure e(mm/Hg)	79.34	10.242	50	100
Pulse Rate (Beats/minute)	88.87	14.861	60	145
HbA1C	7.051	1.8614	4.3	11.2
Hemogram				
Haemoglobin (gm/dl)	10.642	1.8409	7	14
Total Count (cells/ cumm)	8023.68	2111.61	3400	13600
Platelets (Lakhs/cum)	2.65	1.1031	1	5.2
Creatinine (mg/dl)	1.046	0.4422	0.3	2.7
Urea(mg/dl)	33.46	13.385	21	106
Serum Electrolytes				
Sodium (mEq/dl)	138.33	15.38	17	154
Potassium (mEq/dl)	4.182	0.6799	0.4	5.4
Lipid Profile				
Total Cholesterol (mg/dl)	212.88	25.009	130	260
LDL (mg/dl)	145.12	25.568	90	190
HDL (mg/dl)	54.01	20.434	8	85
TGL (mg/dl)	195.49	36.547	146	340

Table 2: Distribution of Location of wall motion abnormality in the study population

Location of wall motion abnormality	Frequency	Percent
Normal	26	34.2
Globus	13	17.1
Anterior wall	11	14.5
Anteroseptal	9	11.8
Inferior	8	10.5
Posterior	4	5.3
Anterolateral	5	6.5
Total	76	100

Table 3: Association of Body Mass Index with coronary angiogram

BMI	No. of vessels involved in Coronary Angiogram						Chi-Square	P-value
	Normal	SVD	DVD	TVD	SF	Total		
Normal	2(2.60 %)	5(6.6 0%)	4(5. 30)%	0(0%)	0(0%)	11(14. 50%)	13.91	0.06
Overweig ht	5(6.60 %)	5(6.6 0%)	8 (10. 50%)	4(5.30 %)	3(3.90 %)	25(32. 90%)		
Obese	12(15. 80%)	9(11. 80%)	3 (3. 90)%	11(14. 50%)	5(6.60 %)	40(52. 60%)		
Total	19(25 %)	19(25 %)	15(19 .70%)	15(19. 70%)	8(10.5 0%)	76(10 0%)		

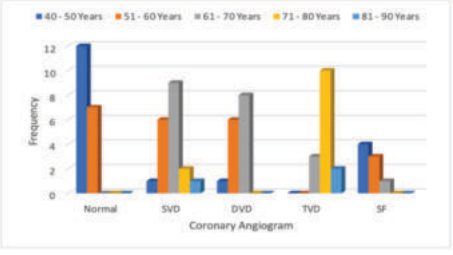

Chart 1: Association of Age group with coronary angiogram

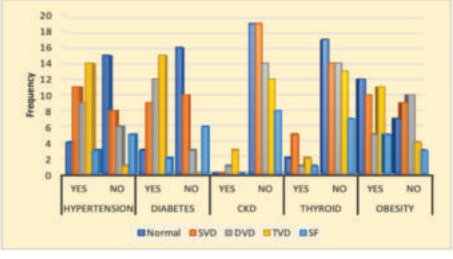

Chart 2: Association between Comorbidities with coronary angiogram

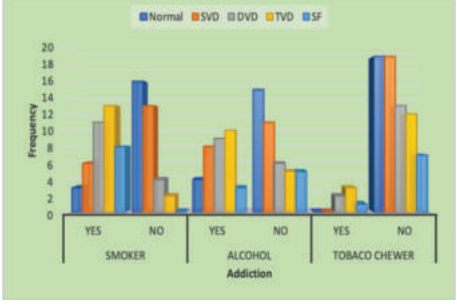

Chart 3: Correlation of addictions with number of vessels involved in coronary Angiogram

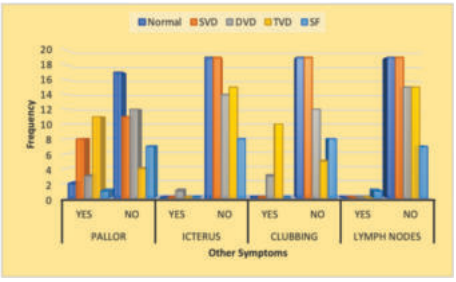

Chart 4: Association of general symptoms with coronary angiogram

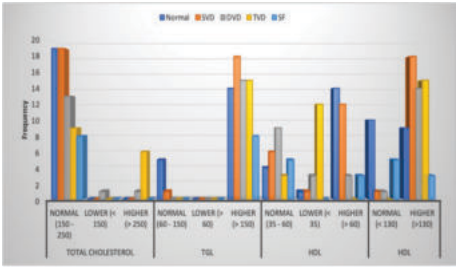

Chart 5: Association of lipid profile with number of vessels involved in coronary angiogram

DISCUSSION:

Although coronary artery disease manifests earlier in less developed countries, the 8-to-10-year age difference in time of onset between men and women is universal. Despite this delay in onset, women's mortality from coronary heart disease is increasing faster than men in both the developed and developing worlds.

Smoking reduces circulating estrogen and leads to early onset of menopause with alteration of lipid parameters. In the present study, Smoking was found to be the most common (53.9%) addiction and a similar trend is seen in studies by Hemingway H et al. [7](55.1%), Daly C et al. [8] (54.8%), and Baigent C et al. [9](54.3%).

Obesity is associated with increased plasma leptin levels and cause atherosclerosis and acute coronary syndromes. Obesity is reported to be the leading cause for STEMI in studies published by Rosngren A et al. [10] (53.9%), Diamond GA et al. [11] (52.9%) and Mehta LS et al. [12] (53.4%). Whereas, overweight was reported to be the leading (59.8%) cause by Johnson BD et al [13]. Obesity and overweight were the most prevalent risk variables in the majority of studies, similar to the current study. Observations made in this study revealed that people with mild and moderate obesity presented with more severe CAD compared to subjects with normal BMI. Statistically there was no significant difference between BMI and angiogram findings in similar to many studies[1415].

A statistically significant association was observed between age and coronary angiogram in the present study. In studies by Jacobs AK et al. [16] , Rich JW et al. [17] , Krauss RM et al. [18] more diffuse disease is seen with increasing age.

In the current study, HTN was the leading comorbidity (53.9%). TVD is the leading angiography finding in those with hypertension compared to non-hypertensives. The difference was statistically significant in hypertension, diabetes, CKD and obesity. significant correlations were also reported by Sheth T et al. [14] and Steingart RM et al. [15] with hypertension as common risk factor and TVD as common angiography finding.

CAD is more common among the study subjects with increased serum creatinine and urea levels. Chronic kidney diseases (CKD) was reported to be the leading cause for CAD. The correlation between CKD and CAD was reported to be highly significant in the published studies like that of Hompson S et al. [19] , Mulè G et al.[20]

In this study, the lipid parameters such as TG, LDL and TC had positive correlation with severe CAD. Whereas HDL had negative correlation. In the literature, it was also reported that rise in blood lipids is the leading cause of CAD. The present study, results are correlating with Shabana et al. [21]. study, Lemos J et al. [22] study, Aziz KU et al. [23]study, Lawler PR et al. [24]study.

CONCLUSION:

Most common age of presentation was above 60 years and the risk of myocardial infarction increases proportionately with increasing age. Diabetes is clearly associated with risk of developing myocardial infarction as well as obesity and hypertension in postmenopausal female population. Most of the patients with myocardial infarction had dyslipidaemia. The presentation of CAD in young women is increasing in this study. Occupational stress, family stress and psychosocial factors are important risk factors for MI in young. Obesity and metabolic syndrome were noted as risk factors in this study. Systemic hypertension and diabetes increase the risk of CAD mortality and morbidity. In this study low HDL and high LDL were noted as CAD risk factors.

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