ORIGINAL ARTICLE

A STUDY OF CLINICAL PROFILE OF ISCHEMIC HEART DISEASE AMONG SOUTH INDIAN WOMEN IN A TERTIARY CARE CENTRE

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ABSTRACT: INTRODUCTION: Our study was done to study in detail the clinical profile of cases admitted with ischemic heart diseases in women at ICCU VIMS Bellary. Objectives: are.[1] To study the clinical profile of ischemic heart diseases in women.[2] To identify the influence of well-defined risk factors in women with ischemic heart diseases.[3] To identify if there are any risk factors specific to women with ischemic heart diseases. **MATERIAL AND METHODS:** Ours is a clinical, prospective, observational and open study. The study subjects were women admitted in Intensive Coronary Care Unit of Vijayanagara institute of medical sciences hospital, Bellary with signs and symptoms suggestive of ischemic heart diseases. After obtaining a detailed history and clinical examination the patients were subjected to relevant investigations. The complete data was collected in specially designed case recording form and transferred into a Master chart which is then subjected to statistical analysis. **RESULTS AND DISCUSSION:** We studied 100 cases of ischemic heart diseases in women, out of which 82 patients presented with Acute MI, 14 patients with Unstable angina and 4 patients with stable angina, most of which were observed in post-menopausal women. Prognosis was good in patients who received intensive care within 6 hours of onset of symptoms. Chest pain was the most common symptom of presentation. **CONCLUSION:** Our study had highlighted the fact that ischemic heart disease no longer remains gender neutral and has been found to be a principle killer in women and they suffer from IHD on account of preventable diseases like hypertension, diabetes mellitus, obesity.
KEYWORDS: Ischemic heart disease; Hypertension; Acute MI; Unstable angina.

INTRODUCTION: CAD in women continues to be a major public health problem with almost half a million deaths per year attributed to CAD in women. Most women are unaware that coronary artery disease (CAD) kills more women than the next seven causes of death combined. Since 1984, it has claimed lives of more women than men in the United States annually, and the gap continues to grow.[1] However, the increase in smoking/tobacco chewing in younger women raises concern about an increase burden of disease, particularly of cardiovascular disease in years to come.[2]

The onset of clinical manifestations of CAD in women lags behind men by about 10 years and by as much as 20 years for more ominous events. But CAD is not solely a problem for elderly women. The question of why women younger than 65 years are more than twice as likely to die from MI as comparably aged men is intriguing. Recent surveys reveal that most women do not appreciate their risk of developing CHD, and therefore, they may not recognize that certain lifestyle behaviours and physiological factors increase the risk of developing CAD[1].It is estimated that 31% of women will die from CAD; yet, about 70% of university educated women consider their risk of CAD to be < 1%[3].

The incidence of myocardial infarction (MI) and of angina as manifestations of coronary artery disease (CAD) are similar for both genders, but angina is reported to occur nearly as twice as

ORIGINAL ARTICLE

often as MI in women. This difference may be an artifact of the absence of hard criteria for the definition of "angina" (In contrast to specific criteria for the diagnosis of MI) and higher incidence of false positive stress tests in women with atypical chest pain.

It is now well known that coronary artery disease (CAD) tends to occur earlier in life in Indians than in other ethnic groups. It is believed to be more severe and extensive, and to follow a malignant course. Studies of Indian immigrants in various parts of the world have documented this increased predisposition to cardiovascular disease in comparison with the native population in these regions. Cross-sectional studies in India have also documented a prevalence of CAD which is several-fold higher than that in developed country. Projections based on the Global Burden of Disease study estimate that by the year 2020, the burden of atherothrombotic cardiovascular disease (CVD) in India will surpass that in any other region in the world. The mortality attributable to CVD in India is expected to rise by 103% in men and by 90% in women from 1985 to 2015. This predilection to CAD is attributed to a clustering of various traditional and non-traditional risk factors which are believed to constitute the atherogenic phenotype characteristic of Indians.[4]

MATERIALS AND METHODS: The study was conducted for one year between January 2008 to December 2008. 100 consecutive adult female patients admitted under Intensive Coronary Care Unit of medical college and hospital, with signs and symptoms suggestive of ischemic heart diseases were selected for this prospective and observational study. The data were collected in a specially designed case recording form and subjected to statistical analysis. Before submitting the patients for investigation and treatment, informed/written consent was obtained from the patient or legal guardian in the local vernacular language. Ethical committee approval was taken for the study. Inclusion Criteria: Patients with history of Chest pain suggestive of Ischemic heart diseases and/or Electrocardiogram suggestive of ischemic heart disease. Exclusion criteria: patients with valvular heart diseases, cardiomyopathy and those who were on digitalis.

The data used for the study was the history taken from the patients and their previous medical records. Physical examination of the patient included height, weight, Abdominal circumference. BMI was calculated using the formula weight (kg)/[height (m)].[2] Patients with BMI>30kg/m^2 were considered as obese. Blood pressure measurement is done with mercury sphygmomanometer at the time of admission and Hypertension was classified based on the Joint national committee on prevention, detection, evaluation, and treatment of high blood pressure (JNC 7). Laboratory investigations included Random blood sugar, fasting blood sugar, 2‑h post‑prandial blood Sugar, fasting lipid profile (Total Cholesterol, LDL cholesterol, HDL cholesterol and triglyceride Level), and troponin T and electrocardiography (ECG). Patients were defined as diabetic when they are using oral hypoglycemic agents or insulin and based on their blood sugar levels i.e. Fasting blood sugars>126 mg/dl or postprandial blood sugars>200 mg/dl and Dyslipidemia was defined based on the fasting lipid profile.

RESULTS AND ANALYSIS: Total 100 patients under consideration with mean age of 58.9 years ranging from 40 years to 89 years. Maximum incidence of ischemic heart diseases occurred in the age group of 50-59 years followed by in the age group of 60-69 years (Table 1).

64% was seen in urban population, compared to 36% cases in rural population. Hyperlipidemia, Hypertension, Obesity and Diabetes mellitus were the most common risk factors in the present study (Table 2).

ORIGINAL ARTICLE

Chest pain was the most common symptom at the time of presentation (Table 3).

Majority of patients admitted were in Killip's class I and II (Table 4).

52 % of patients were admitted within 12 hours of onset of symptoms. Out of which 22% of patients reached the hospital within 6 hours of onset of symptoms. 62% were admitted within 24hrs of onset of symptoms.

Analysis of the history, serial electrocardiogram and cardiac enzymes showed that there were 4 patients of chronic stable angina, 14 patients of unstable angina and 82 patients had Acute Myocardial infarction. AWMI was more common than IWMI. Right ventricular MI is commonly associated with inferior wall MI (Table 5).

Left ventricular failure was the most common complication followed by cardiogenic shock, Heart blocks and Ventricular tachycardia (Figure 1).

Highest mortality following IHD was seen in patients with cardiogenic shock followed by those with Ventricular tachycardia (Figure 2).

In the present study of women with Ischemic heart disease we had 16 patients (16%) menstruating and 84 patients (84%) had attained menopause.

Maximum number of deaths occurred in 6th decade (Table 6).

Maximum number of deaths occurred in AWMI (Figure 3).

Mortality was highest in patients with Killip's class IV followed by those with Killip's class III (Table 7).

Maximum number of deaths occurred within 24 hours of admission (Table 8).

Age Interval Years	Number of Cases	Percentage
40-49	25	25%
50-59	36	36%
60-69	27	27%
70-79	9	9%
80-89	3	3%
Total	**100**	**100%**
Table 1: Showing age distribution		

Risk Factors	No. of Cases	Percentage
Obesity	30	30%
Diabetes mellitus	28	28%
Hypertension	37	37%
Hyperlipidemia	40	40%
Alcohol	3	3%
Tobacco consumption	23	23%
Table 2: Showing coronary risk factors		

ORIGINAL ARTICLE

Symptoms	No. of Patients	Percentage
Chest pain	80	80
Sweating	55	55
Breathlessness	25	25
Palpitations	15	15
Nausea / vomiting	14	14
Giddiness	10	10
Pain abdomen	2	2
Table 3: Showing the symptoms at the time of presentation		

Killip's class	No. of Patients	Percentage
I	65	65%
II	20	20%
III	6	6%
IV	9	9%
Table 4: Showing the cardiac status at the time of admission according to Killip's class		

Sl. No.	Site of MI	No. of Patients	Percentage
1	Anterior wall a)Anterior b)Antero-septal c)Extensive anterior	48 16 22 10	58% 20% 27% 11%
2	Inferior wall a)Inferior wall b)Inferior wall+ Right ventricular c)Infero-lateral	29 16 8 5	35% 20% 9% 6%
3	Anterior + Inferior	5	7%
	Total	**82**	**100%**
Table 5: Showing site of infarction in patients with Acute Myocardial infarction			

ORIGINAL ARTICLE

Fig 1: Complications of IHD - LVF, Cardiogenic shock, heart blocks and Ventricular tachycardia

Fig 2: Mortality in relation to complications
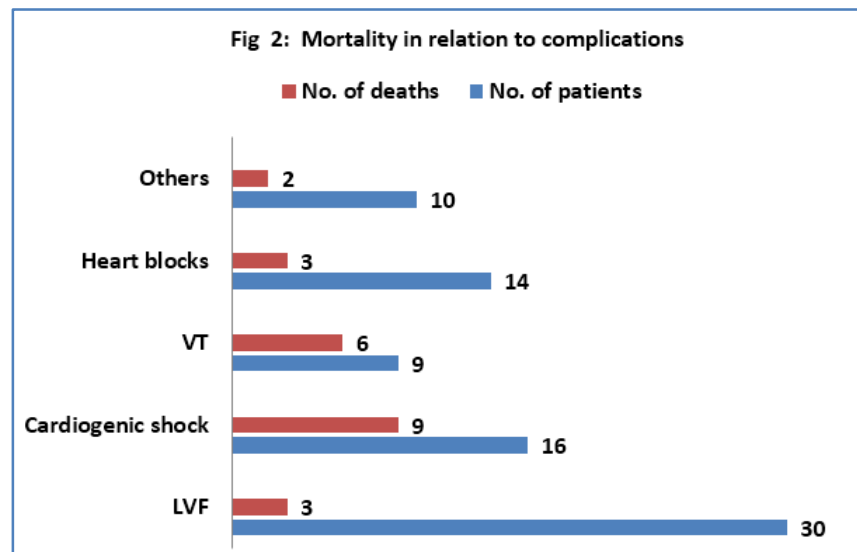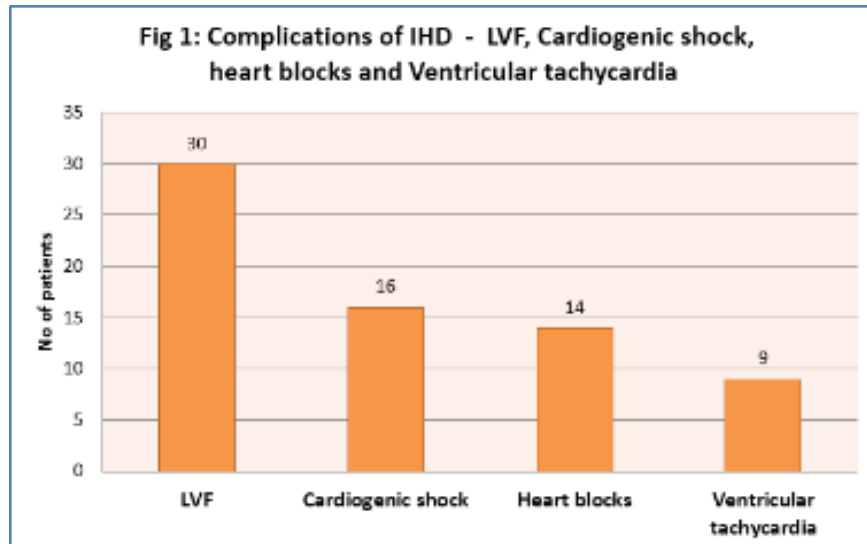
Age Interval In years	No. of Deaths	Percentage
40-49	4	17.3%
50-59	10	43.4%
60-69	4	17.3%
70-79	3	13.1%
80-89	2	8.69%
Total	**23**	**100%**
Table 6: Relationship between mortality and age groups		

ORIGINAL ARTICLE

Fig 3: Relationship between mortality and site of AMI
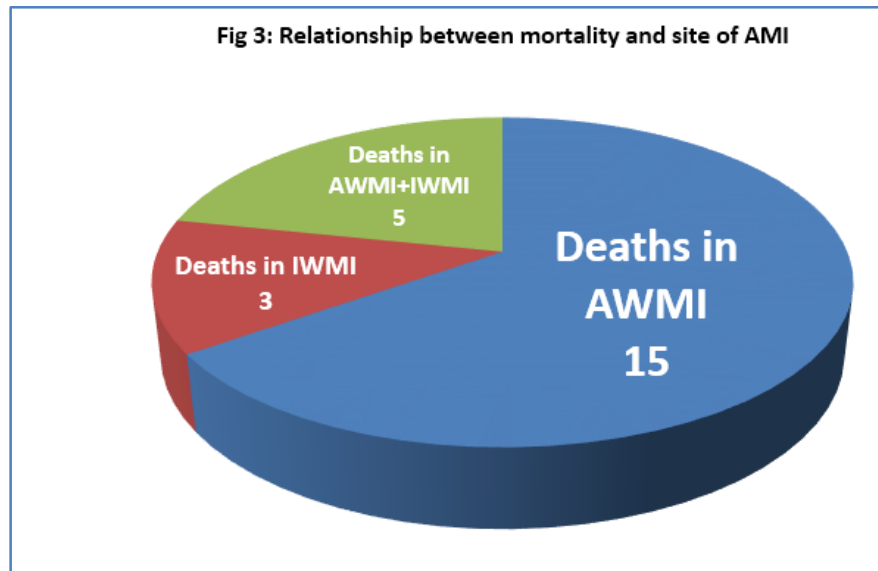
Killip's Class	No. of Patients	No. of Deaths	Mortality (Percentage)
I	65	5	7.69%
II	20	4	20%
III	6	5	83.33%
IV	9	9	100%
Table 7: Showing relationship between Killip's class and mortality			

Duration on Hours	No. of Deaths	Percentage
<24 hours	15	65.2%
24 – 48 hours	5	21.7%
>48 hours	3	13.1%
Table 8: Showing relation between mortality and time after admission		

DISCUSSION: In the present study it was noted that the incidence of IHD was maximum in 6th decade followed by in the age group of 7th decade. V. Parameshwara et. al[5] observed increased incidence of ischemic heart disease among women in the 5th and 6th decade. Kannel et al[6] has found a sharp increase in IHD among men during the 5th and 6th decade of life and women lag approximately 10 years behind in his study. IHD does not become a major cause of morbidity and mortality in women until the age of 55 years. Incidence of IHD increases in both men and women with each decade of advancing age within each age group. The incidence of IHD was greater in men than women; however gender related differences diminished with advancing age. (The Framingham Heart study).

ORIGINAL ARTICLE

In the present study chest pain was the most common presenting complaint followed by sweating and breathlessness. Presenting symptoms usually include chest pain with typical radiation, nausea and diaphoresis. Older patients less frequently have typical signs and symptoms such as chest pain with classical radiation pattern. In the present study some patients did not present with the chest pain, among which many were having diabetes mellitus. Diabetic patients are likely to present with the atypical symptoms. Many of the studies also reveal the similar data.

In the present study most of the patients with diabetes mellitus had hypertension. Kannel[6], reported that diabetes increased the risk of coronary artery disease 3 fold in women, placing them in similar risk to men of the same age. The present study is comparable with the study Vaccarino et al[7] done with respect to females and comparable with study Meher et al[8] with respect to males. Diabetes eliminates the advantage of being female with respect to prevalence of IHD.[9]

In the present study hypertension is an important risk factor for IHD. Case control and cohort studies have consistently identified hypertension as a major independent risk factor for the development of IHD and subsequent mortality. The incidence of hypertension in the present study correlates well with the study of Bengttson et al (1973) and james C.[10] (2013).

Obesity whether in itself is an independent risk factor for IHD remains unclear and the available evidence suggests that the unrestrained weight gain worsen the atherogenic risk factor profile. Parameshwara et al,[5] in their study on ischemic heart disease patients found 20% of women patients as having obesity. In the present study we had 30% women IHD patients with obesity may be due to rapid urbanization and change in lifestyle. Data from the Nurses' Health Study that even women with a modestly increased body mass index(25-29kg/m2) had twice the risk of CHD as the leanest women(body mass index <21 kg/m2).[11]

In the present study totally 40 patients (40%) had abnormal lipid profile. It is the low HDL and high Triglycerides level which are important risk factors in female patients in contrast to total cholesterol and LDL for males as risk factors for CAD.[12,13,14]

In the Framingham study, total plasma cholesterol level was found to be a major predictor of IHD risk for both men and women. For every 1% increase in total plasma cholesterol level a 2% increase in the incidence of IHD was observed for both men and women (Table 9).

In the present study of women with Ischemic heart disease majority of them were post-menopausal. It is observed that there is higher incidence of IHD among post-menopausal group when compared to still menstruating group. Many studies have shown similar findings. Gordon et al[15] compared pre and post-menopausal women of same age group. A 2 fold increase in IHD incidence among post-menopausal women was observed. Colelitz et al examined menopause and its role in IHD risk among women participating in the Nurses' health study cohort. A significant increase in IHD was observed among post-menopausal women. Rosenberg et al[16] found increasing risk of IHD as the age of menopause decreases. An increased risk of IHD has been observed among women who undergo premature menopause with bilateral Oopherectomy and hysterectomy.

In the present study majority of the patients presented with myocardial infarction. Overall there does not appear to be any significant gender related difference in the location of acute myocardial infarction and results demonstrate the same. This series of patients shows that women are more apt to present initially with acute MI. In Framingham study 68% of deaths in women occurred at initial manifestation of CAD, compared 49% in males. This may be due to a higher proportion on unrecognized infarction in women.

ORIGINAL ARTICLE

Among most of the patients who expired all were in post-menopausal age and had multiple risk factors. Two large studies, the Framingham heart study and MILIS (Multicentre Investigation of the Limitation of Infarct Size) study, have shown that women with IHD had poor prognosis after acute MI then men.

In Framingham heart study the 30 days mortality rate following Acute MI was significantly higher in women than in men (28% v/s 16%). Ganez manin et al, Tofler et al, have shown in their study higher crude in-hospital mortality rate among women with IHD when compared to men.

The increase in cardiovascular mortality observed among diabetics in the present study as well as by other is not completely understood. An increase prevalence of other established risk factors may contribute. Diabetic patients in the Framingham cohort were found to have an increased prevalence of systemic hypertension and higher relative body weights when compared with their non-diabetic counter parts.

As majority of the patients (74%) in the present study in the age group of 45-70 years, mortality also high in the same age group compared to other studies. In the present study mortality rate among patients who developed cardiogenic shock was 39.1%. The other complications are comparable to study done by Passey[17] (Table 10).

Risk factors	Vaccarino et.al[7]	James.C[10] (Females)	James.C[10] (males)	Meher et.al[8] (males)	Present study
HTN	59.3%	39%	39%	27.4%	37%
DM	33.1%	54%	54%	32.9%	28%
Hyperlipidemia	23%	78%	66%	60.4%	40%
Obesity	-	55%	50%	24.7%	30%
Smoking	-	0%	40%	50%	-
Table 9: Comparison of risk factors with other studies with respect to females and males					

Complication	No. of Deaths	Passey[17]	Present Study
Cardiogenic shock	9	49%	39.1%
LVF	3	21%	13.1%
VT + VF	6	19%	26.1%
Others	2	9%	8.7%
Table 10: Mortality in comparison with other studies with respect to complications			

CONCLUSION: Our study reveals major risk factors like diabetes mellitus, hypertension, abnormal lipid profile, and obesity played important role for IHD in women as men. Although higher incidence of CAD was seen among post-menopausal group many patients were menstruating when they had CAD. There was considerable number of patients with IHD without any attributable major coronary risk factors. The significance is that IHD in women can occur without any major coronary risk factors. Diabetic women are at increased risk of death from a coronary event. The harsh reality is that even today majority of the women and their treating physicians, believe that women are at a lower risk for suffering from IHD than men.

ORIGINAL ARTICLE

Although the lifetime risk of dying from heart disease is more than eight times higher than breast cancer in women, yet they fear more for breast cancer, and neglect any precautions for ischemic heart disease. Hence IHD no longer remains gender neutral and has been found to be a principle killer in Indian women. A large multicenter study can help further substantiate the hypothesis and help devise better and specific treatment guidelines for Indian women patients at higher risk for CAD.

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ORIGINAL ARTICLE

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FINANCIAL OR OTHER COMPETING INTERESTS: None

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