Original Article

Gender, Clinical Presentation And Risk Factors in Acute Coronary Syndrome under 45 years A Comparison Study

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Abstract

Background: *Acute coronary syndrome (ACS) is a common cause of disability and death, and when it happens in young individuals, it causes more social and economic disadvantages. Gender differences have been identified in nearly every aspect of cardiovascular disease including acute coronary syndrome. Several studies reported differences between men and women in the clinical presentation & risk factors of acute coronary syndromes.*

Methods: *In this observational analytic study a total 115 patients (75 males and 40 females) under 45 years presenting with acute coronary syndrome were enrolled to see the gender differences in clinical presentation and risk factors.*

Results: *The mean age in males was 36.6±4.8 years and in female 39.0±3.8 years. Chest pain was the main presenting complaints in both sexes but atypical presentation was significantly higher in females. Smoking was the most common risk factor in males and hypertension & diabetes were significantly higher in females. Females mostly diagnosed as Unstable Angina and NSTEMI and males as STEMI.*

Conclusion: *There are significant differences between males and females in respect to clinical presentation and risk factors in acute coronary syndrome under 45 years of age.*

Keywords: *Acute coronary syndrome, Risk factors, Clinical presentation, Gender differences.*

Introduction

Acute coronary syndrome (ACS) encompasses a wide spectrum of presentations ranging from unstable angina and non-ST segment elevation myocardial infarction (NSTE-ACS) to ST-segment elevation ACS (STE-ACS) and sharing a common pathophysiological pathway related to coronary plaque erosion or rupture with variable degrees of coronary obstruction and thrombosis[1]. The majority of ACS occurs in individuals > 45 years old. However, 5-10% of myocardial infarctions (MI) occur in patients younger than that. Although MI's in younger patients are generally associated with a favorable prognosis, the personal and social burden of premature coronary disease is substantial[2]. Women and men with acute coronary syndromes have been found to have different clinical profiles and presentation, with a smaller percentage of women than men presenting with ST-elevation AMI (STEMI), but more presenting with unstable angina[3]. Several conditions found only in women hint at differences in the pathophysiology of ischemic vascular disease between the sexes. Such female-specific conditions include early menopause, gestational diabetes, peripartum vascular dissection, pre-eclampsia and eclampsia, polycystic ovarian syndrome, low-birth-weight children and hypothalamic hypoestrogenemia.

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Several of these states, most of which occur at a younger age, carry an increased risk for ischemic heart disease (IHD)[4]. In Bangladesh previous study reveals the prevalence of smoking is higher in young male & the prevalence of hypertension and DM is significantly higher in the young female patients[5].

Methodology

This was an observational analytic study that was carried out in the department of cardiology, National Heart Foundation Hospital and Research Institute, Mirpur, Dhaka, Bangladesh. All consecutive patients under 45 years presented with ACS meeting inclusion & exclusion criteria were selected. A total 115 patients (75 males and 40 females) under 45 years presented with acute coronary syndrome were enrolled to see the sex differences of clinical presentation and risk factors.

Meticulous history was taken regarding symptoms (chest pain, dyspnoea or other atypical features) and risk factors. Detailed clinical examination was performed in each patient. Blood sample was taken for Troponin I, CKMB, Blood glucose, Hb%, Blood group, Serum creatinine, Serum Electrolytes and serum fasting lipid profile. Patient's baseline 12 lead ECG, Echocardiography and chest x-ray was performed. Patients were stratified into two groups according to sex.

Results

Chest pain was the presenting features in 84.15% patients, shortness of breath (SOB) was present it 14.75% patients and 15.85% patients had atypical features e.g. palpitation, back pain, abdominal pain, sweating, vomiting. Comparison between the groups revealed chest pain was the most common presenting complaint in both sexes and it was found in 93.3% in males and 75% in females. Atypical features was more common among females than males, 25% and 6.7% respectively (Table-I).

Table I: clinical presentation of the study groups during admission

Variables	Male (n=75)		Female (n=40)		p value
	n	%	n	%	
Chest pain	70	93.3	30	75	.008
Shortness of breath	9	12	7	17.5	.413
Atypical features	5	6.7	10	25	.008

Smoking was the most common risk factor in male and hypertension and diabetes were the most common risk factor in females. Smokeless tobacco (sada pata, jarda, gul etc) use is also an important issue in both sexes. There are no significant differences regarding other conventional risk factors (Table-II).

Table- II: Distribution of major risk factors in between the groups (n=115)

Risk factors	Male (n=75)		Female (n=40)		p value
	nº	%	nº	%	
C urrent Smoking	43	57.3	00	0.0	.001
Smokeless tobacco use	02	2.7	04	10.3	.179
Hypertension	26	34.7	22	55.0	.0047
Dyslipidaemia	31	41.3	17	42.5	1.00
Family H/O CAD	25	33.3	17	42.5	.416
Diabetes Mellitus	19	25.3	20	50.0	.013
Obesity	33	44.0	19	47.5	.84 4

In this study, unstable angina was diagnosed in 26.7% in males and 42.5% in females, NSTEMI was diagnosed in 5.3% in males and 20% in females and STEMI was diagnosed in 68% in males and 37.5% in females' patients. Unstable angina was the most common diagnosis in females and STEMI was the most common diagnosis in males (Figure-I).

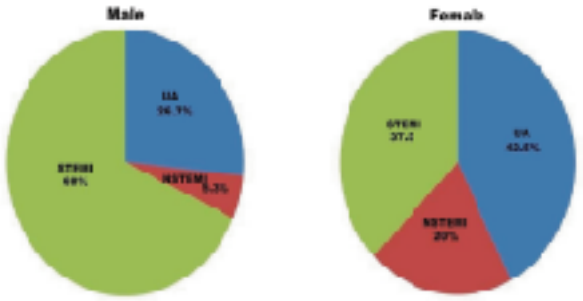

Figure I: Pie chart showing clinical diagnosis of the study patients (n=115).

Discussion

A significant percentage of female had atypical features, found in 25% females. Apart from that other presenting complaints are similar in both groups. These findings are consistent with the study done by Schoenenberger[6]. Smoking is the most common risk factor in male and hypertension and diabetes are the most common risk factors in female. There are no significant differences regarding other conventional risk factors.

Risk factors for developing ACS in young are some extent different than older and are significantly varied between male and female. Tungsubutra[2] observed cigarette smoking was an important cardiovascular risk factor that was inversely related to age. Up to 66% of the presented young patients reported a history of smoking. Several studies found an exceedingly high rate of tobacco use among young patients with AMI ranging from 70% to > 90%. Recent research in Bangladesh it was found that smoking was the most common risk factor (64%) in young patients. Diabetes and hyperlipidemia are also frequently present in young CAD patients. Diabetes in women may have a more powerful role than in men. Hypertension (72.72 %) and DM (27.27 %) was much higher among young female patients[5]. In a recent study it also stated that, cocaine abuse seems to be a relevant causative agent in younger patients[6]. Several studies concluded that younger women presenting with less ST elevation and more unstable angina[3,7]. In this study, unstable angina was the most common diagnosis in females and STEMI was the most common diagnosis in males, which supports previous studies.

Conclusion

This study showed that, atypical features are more common in females under 45 years presenting with acute coronary syndrome. Smoking is the most alarming risk factors in males and diabetes and hypertension in females. Females had significant left main coronary artery disease especially among diabetic and dyslipidaemic. Risk factors identification, early diagnosis and management are very crucial in the primary and secondary prevention in patient under 45 years presenting with acute coronary syndrome.

Limitations of the study

Although the result of this study is statistically significant, there were some major limiting factors which might affect the results.

- It was a single centre study.
- Sample size was small.
- New emerging risk factors were not analyzed.

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