Comparison of risk factors and clinical presentation between men and women with acute coronary syndrome at Sohag University Hospitals.

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ABSTRACT

Background: Comparison of risk factors and clinical presentation between men and women with acute coronary syndrome at Sohag University Hospitals. presence of relation between sex of the patient and clinical presentation is still controversial

Objective: The objective of this study is to determineof risk factors and clinical presentation between men and women with acute coronary syndrome at Sohag University Hospitals

patients& Methods :All the patients underwent the following :
(1) Detailed history was taken including:
Age,sex, residence, smoking, duration of diabetes and type of treatment used,HTN or other current illness(2)Examination:Full clinical examination(3) Laboratory investigations: Fasting blood glucose level, lipid profile ,cardiac enzymes,   complete blood counting(4) Electrocardiograph

Results:male patients with acute coronary syndrome mainly had risk factors as smoking as (44%) followed by HTN (42%) then DM (37%) , while female patients mainly had risk factors of HTN and DM as (65%) followed by dyslipidemia (39%), old age and obesity are more frequent in females than males. Clinical presentation of typical chest pain is higher in males (87%) than in females(73%).

Conclusion:women with acute coronary syndrome had higher rates of traditional risk factors like old age, obesity, hypertension, diabetes while smoking and positive family history are higher in men . typical chest pain is more common in men

Keywords :acute coronary syndrome

Introduction

Cardiovascular disease is the leading cause of death in women as well as in men. each year evidence of sex-related disparities in acute coronary syndrome prognosis emerged >30 years ago; however, the mechanisms behind these differences remain unclear.among patients with acute coronary syndrome (ACS),**(1)** fewer women present with ST-Segment elevation myocardial infarction (STEMI) and more present with unstable angina compared with men. An analysis of the global use of strategies to open occluded coronary arteries (GUSTO) IIb trial showed that STEMI was significantly less frequent in women than in men (27.2% versus 37.0%; *P* <0.001). Inthe groups of patients with Non ST-Segment myocardial infarction (NSTEMI) or unstable angina, women were more likely to have unstable angina than men.

women with ACS were older and had higher rates of traditional risk factors such as diabetes mellitus, hypertension, and previous congestive heart failure compared with men with ACS . These patterns have been confirmed by other studies from Australia, Canada, China, South Korea, the Middle East, and the USA, among others. , differences in baseline risk factors seem to vary by age. A study from the US National Registry of Myocardial Infarction, a registry including >1 million patients with MI between 1994 and 2006, showed that women aged <65 years were more likely to present with a history of diabetes, heart failure, or stroke, These differences in presentation were less

pronounced or absent altogether as patients aged**.(2)**

Diabetes, in particular, carries a differential risk of ACS between women and men. The INTERHEART study, a global case–control study in >27,000 participants, showed that women with diabetes were 4.3 times more likely to develop an MI than women without diabetes. By contrast, in men with diabetes the risk of MI was 2.7 times higher than in men without diabetes**.(3)**

Several lifestyle and psychosocial factors also carry a differential risk of ACS in women and men, particularly in young women. Obesity is more common in young (aged <55 years) female patients with ACS than in their male counterparts (prevalence 51% versus 45%; P = 0.0004)16, although this difference does not seem to exist in older women**.(4)**

Smoking is a stronger risk factor for MI in women than in men (relative risk (RR) 3.3 versus 1.9), and the difference in risk is even greater in women aged <45 years (RR 7.1 versus 2.3)18. Interestingly, smoking is the biggest risk factor for coronary plaque erosion, which is a particularly common mechanism of ACS in women**.(5)**

Menopauseis thought to be an important risk factor in women because circulating estrogen has a protective role on the vascular endothelium. The incidence of acute MI rises sharply in women after menopause; however, the relationship between menopause, age, and cardiovascular events is difficult to unravel. Although endogenous estrogen seems to be protective, studies to examine the effect of exogenous estrogen therapy on women after menopause show that hormone replacement therapy actually precipitates acute coronary events, a controversial randomized, controlled trial by Schaerbeek and colleagues found that women in early post menopause might derive a cardiovascular benefit from hormone replacement therapy **(6).**

Clinical Presentation: the GRACE registry33indicated that women were more likely to have atypical symptoms such as nausea than men. Similarly, a review of nine large cohort studies showed that the absence of chest pain was more common in women with ACS than in men (37% versus 27%). This difference was accentuated when only small, single-centre investigations were considered (30% versus 17%). Women are also more likely to present with pain in the upper back, neck, arm, and jaw, and with dyspnea and weakness

Patients & methods:
The study was performed on patients presented with acute coronary syndrome
the patients were classified into 2 groups:
group1- Female patients with acute coronary syndrome.
group2- Male patients with acute coronary syndrome.
All the patients underwent the following :
(1) Detailed history was taken including:
Age,sex, residence, smoking, duration of diabetes and type of treatment used,HTN or other current illness(2) Examination:Full clinical examination(3) Laboratory investigations:
Fasting blood glucose level, lipid profile ,cardiac enzymes, complete blood counting
(4) Electrocardiograph

Inclusion criteria:
All patients with acute coronary syndrome.

Exclusion Criteria:
patients<18years .
Pregnancy.

Results

Our study included 200 patients who were admitted in CCU of Sohag University hospitals or those who were in cardiology outpatient clinic and we classified them into 2 groups according to their gender; male and female patients. **(1)- comparison between male and female** :

(A)- Demographic data :

As regard **BMI** we found that BMI of studied females ranging from 21-35 and of studied males ranging from 20-29 (table 1).

Age of studied females ranging from 45-71 year and age of studied males was 41-59 year (table 1).

Table 1 Age and BMI according to gender

Variable	Females N=100	Males N=100	P value
Age /years Mean ± SD Median (range)	58.22±5.99 57 (45-71)	53.48±4.16 54 (41-59)	<0.0001
BMI Mean ±SD Median (range)	25.64±3.40 25 (21-35)	24.26±2.34 24 (20-29)	0.001

(B)- Presence of risk factors :

In comparison between male female as regard risk factors we found that *hypertension* was in 65% of studied females and in 42%of studied males(table 2).

Diabetes was found in 65% of studied females and in37% of studied males(table 2).

Dyslipidemia was found in 39% of studied females and was found in 32% of studied males (table2).

Smoking: 8% of studied females were smokrs while 44% of studied males were smokers (table 2).

Table 2 Risk factors according to gender

Variable	Females N=100	Males N=100	P value
Hypertension No Yes	35 (35.00%) 65 (65.00%)	58 (58.00%) 42 (42.00%)	0.001
DM No Yes	35 (35.00%) 65 (65.00%)	63 (63.00%) 37 (37.00%)	<0.0001
Dyslipidemia No Yes	61 (61.00%) 39 (39.00%)	68 (68.00%) 32 (32.00%)	0.30
Smoking No Yes	92 (92.00%) 8 (8.00%)	56 (56.00%) 44 (44.00%)	<0.0001

 (c)- Family and Past history :

In comparison between male and female as regards presence of family and past history of CAD we found that family history was positive in 6% of studied females and in 11% of studied males (table 3).

Previous MI was found in 18% of studied females and in 14% of studied males , Previous PCI was done in 18% of studied females and in 12% of studied males , Previous CABG was done in 2%of studied females and in 3%of studied males (table 3)

Table 3 Family and past history according to gender

Variable	Females N=100	Males N=100	P value
F/H of CAD No Yes	94 (94.00%) 6 (6.00%)	89 (89.00%) 11 (11.00%)	0.21
Previous AMI No Yes	82 (82.00%) 18 (18.00%)	86 (86.00%) 14 (14.00%)	0.44
Previous PCI No Yes	82 (82.00%) 18 (18.00%)	88 (88.00%) 12 (12.00%)	0.24
Previous CABG No Yes	98 (98%) 2 (2.00%)	97 (97.00%) 3 (3.00%)	0.66

(D)- Presenting symptoms :

In comparison between male and female as regards presenting symptoms we found that:

i-Chest pain: in studied females 73% of cases presented with typical chest pain ,7% of cases with a typical chest pain while 20% presented without chest pain (table 4). while in studied male cases we found that 87% of studied males presented with typical chest pain, 5% with atypical chest pain and 8% without chest pain (table 4).

ii- Dyspnea: As regards dyspnea we found that in studied females 88% of cases not presented with dyspnea while 4% presented with dyspnea grade I , 5% grade II, 2 %was grade III and 1% was grade IV (table 4).

In studied males 95% of cases not presented with dyspnea 2% was grade I, 1% was dyspnea grade II, 1% was grade III and 1% was grade IV(table 4).

iii - As regards ***other symptoms*** we found that ***palpitation*** was found in 1% of studied males (table 9) and in 1%of studied females(table 4).

Vomiting was found in 18% of studied females and in 12% of studied males(table 4).

Dizziness was in 27% of studied females and in 24%of studied males(table 4).

Cold sweats was found in 40% of studied females and in47%of studied males(table 4).

In comparison between male and female as regards ***cardiac enzymes*** we found that 30%of studied females had elevated cardiac enzymes while in studied males 25%had elevated cardiac enzymes (table 4).

Table 4 Presenting symptoms according to gender

Variable	Females N=100	Males N=100	P value
Chest pain No Typical Atypical	20 (20.00%) 73 (73.00%) 7 (7.00%)	8 (8.00%) 87 (87.00%) 5 (5.00%)	0.04
Dyspnea No Grade I Grade II Grade III Grade IV	88 (88.00%) 4 (4.00%) 5 (5.00%) 2 (2.00%) 1 (1.00%)	95 (95.00%) 2 (2.00%) 1 (1.00%) 1 (1.00%) 1 (1.00%)	0.42
Palpitation No Yes	99 (99.00%) 1 (1.00%)	99 (99.00%) 1 (1.00%)	1.00
Vomiting No Yes	82 (82.00%) 18 (18.00%)	88 (88.00%) 12 (12.00%)	0.24
Dizziness No Yes	73 (73.00%) 27 (27.00%)	76 (76.00%) 24 (24.00%)	0.63
Cold sweats No Yes	60 (60.00%) 40 (40.00%)	53 (53.00%) 47 (47.00%)	0.32
Cardiac enzymes Not elevated Elevated	70 (70.00%) 30 (30.0%)	75 (75.00%) 25 (25.00%)	<0.0001

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(E)- Distribution of ACS:

In comparison between male and female groups as regard distribution of ACS we found that *STEMI* female cases were 52% while *STEMI* male cases were 64% (table5).

NSTEMI female cases were 47% while *NSTEMI* male cases were 31% (table 5).

And *unstable angina* was in15% of female cases and in 5% of male cases (table5).

Table 5 Acute coronary syndrome according to gender

Variable	Females N=100	Males N=100	P value
STEMI No Yes	48 (48.00%) 52 (52.00%)	36 (36.00%) 64 (64.00%)	0.09
NSTEMI No Yes	53 (53.00%) 47 (47.00%)	69 (69.00%) 31 (31.00%)	0.02
Unstable angina No Yes	85 (85.00%) 15 (15.00%)	95 (95.00%) 5 (5.00%)	0.02

Discussion:

Our study included 200 patients who were admitted in CCU of Sohag University hospital or those who were in cardiology outpatient clinic , our study was on group of patients , age of them ranging from 41-71 year . As regard risk factors in our study 53.5 % were hypertensive 51% diabetic, 35% dyslipidemic and 26% were smokers, this similar to the study of **(7).**

Our study revealed that the age of studied males ranging from 41 – 59 year , while that in females ranging from 45 – 71 year. Also, we found that BMI of studied male groups ranging from 20 – 29 , but in females was 21 – 35 ,this is near to the study of **(8).** This significant difference between males and females as regard age was due to the protective effect of estrogen in females. female patients were more obese than male patients with acute coronary syndrome may was due to lack of physical activity and some psychological factors in females that cause weigh gain.we also found that there were differences as regard other risk factors between males and females who studied as follows , hypertension was common in females(65%) compared with males(42%) with acute coronary syndrome .DM was higher in females in (65%)of them, but in

males affect about(37%). These percentage similar to study**(9) .**Our explanation of having females higher percentage of DM compared with males with ACS may was due to females are older, more obese, sedentary life style and hormonal influence. In our study ,dyslipidemia was common in females (39%) than that in males (32%) , and the study showed that (44%)of males were smokers, while only(8%)of females were smokers .this disagreed with the study of **(10)** as higher percentage of females were smoker. and this was because of the fact that this study was performed on another population belonging to USA.

We found that females suffering from old MI was higher (18%) than those of males (14%) .Males with past history of CABG was (3%), while females was(2%). although **(11)** revealed that males were higher than females that affected by old MI and history of CABG. and this may was due to that study was performed on a large number of males and also with old age more than our study that was on equal number between males and females with acute coronary syndrome.

Family history of IHD was an important risk factors that was positive

in about (11%) in males and only in (6%)of females .Our study showed important differences in presenting symptoms between males and females with acute coronary syndrome , (73%) of females presented with typical chest pain ,(7%) of them with atypical chest pain . while (87%) of males presented with typical chest pain and only (5%) of them with atypical chest pain.This percentage near to that study **(12) .**And we explained that DM was more common in females than males presented with acute coronary syndrome and also females were older and that made some females presented with atypical chest pain or even without chest pain because of neuropathy.Among male patients (5%) complained of dyspnea , while (12%) of females complained of dyspnea. We found that palpitation was (1%)in males as well as in females .cold sweats is a common presentation in males (47%) , also in females was a relatively high (40%). Dizziness presented in about (27%) of studied females compared with males that was about(24%) .

Another common presentation was vomiting , of which (18%) of females complained and (12%)of males complained .This was different from study of **(13)** which revealed that males and females were equally affected . but this study was performed on about 500 patients and our one was only on 200 patients. By investigations , we noticed that there was a difference between males and females particularly in cardiac enzymes ,(25%) of studied males had elevated cardiac enzymes while (30%) of studied females showed elevations in cardiac enzymes . although another study(**14)** showed that males had elevated cardiac enzymes more than females. And our explanation toward that difference between the two studies was because in our study we noticed that female

patients with acute coronary syndrome had higher groups with NSTEMI compared with males and this was the opposite in the other study.ACS patients were classified in our study as follows STEMI male patients accounted for (64%) , which was more than female patients that was (52%) unlike NSTEMI male patients that was about (31%) , while female patients was (47%) . As regard UA , female patients was (15%) presented with UA of studied female patients that was 3 times of male patients presented with UA(5%) .This agreed with study of **(15) .**

Conclusion:
Our study was performed on 200 patients presented with acute coronary syndrome and were classified into 2 groups according to gender
women with acute coronary syndrome had higher rates of traditional risk factors like old age, obesity, hypertension, diabetes while smoking and positive family history are higher in men. typical chest pain is more common in men while atypical presentation was more common in females fewer men presented with STEMI than women and unstable angina showed similarity in the two groups

Recommendation :
The relation between clinical presentation of acute coronary syndrome and the genderof the patient needs more researches to be done

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