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Specific Features and Clinical Profile of Acute Coronary Syndrome by Sex

*Farouk Menzou**

Department of Internal Medicine and Cardiology, University Hospital of Douéra, Algeria

Abstract

Introduction: Despite the decline in cardiovascular disease in recent decades, an increase in the death rate has been observed in younger women (<55 years). Women have more time between onset of symptoms and presentation and are less likely to undergo diagnostic tests such as EKG and troponins, especially younger women. The presentation can be similar between men and women; over 80% of both report chest pain when presenting with acute coronary syndrome.

Objective of the Study: The aim of our work is to assess the differences between the two sexes; the cardiovascular risk profile, management of acute care and secondary prevention as well as in-hospital and 1-year mortality.

Methods: We recruited 346 patients, the mean age 63.4 ± 12.7 years are admitted for ACS (179 (51.7%) STEMI, 120 (34.7%) NSTEM and 47 (13.6%) unstable angina), we evaluated the clinical characteristics , electrical, biological, therapeutic as well as the risk scores and the intra-hospital and 1-year mortality according to the sex of all the patients hospitalized for an ACS.

Results: We have 100 (28.9%) women and 246 (71.1%) men, a ratio of 2.46, men with ACS are older than women (66.34 ± 12.3 *vs.* 62.13 ± 12.7; p<0.01), 17% women and 23.6% men are under 55 years old, there are more hypertensive women (80% *vs.* 39.2%, p<0.01), with a ratio of 1.6, there are more women with diabetes (65% *vs.* 47.9%, p<0.01) with a ratio of 1.4, There is no significant difference between the two sexes in terms of frequency of dyslipidemia (p=0.06), 85% of women are menopausal, at the ECG the involvement in women is more extensive (number of leads affected >6 in 76% *vs.* 64.2%, p=0.04), Renal involvement is more significant in women (p=0.02), there is a Statistically significant difference in mortality at 1 year between women and men (17% *vs.* 7.3%; p=0.01).

Conclusion: Women hospitalized for ACS have more cardiovascular risk factors than men and cardiovascular mortality at 1 year remains higher in women, this observed difference is mainly linked to the disparity in the quality of care and the results in patients with ACS.

Keywords: Female; Clinical profile; Acute coronary syndrome; Long-term mortality

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Correspondence:
Farouk Menzou, Department of Internal Medicine and Cardiology, University Blida1, University Hospital of Douéra, Algeria,
E-mail: menzoufarouk@yahoo.fr

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Introduction

Traditionally, cardiovascular diseases (coronary artery disease, arterial disease, and stroke) and more particularly coronary disease are considered to be diseases mainly affecting men, women being considered "protected". However, statistics from the World Health Organization show that cardiovascular mortality is higher in women than in men. Cardiovascular disease is even the leading cause of death in women, ahead of the more frequently cited breast cancer [1]. But if we look at the incidence of cardiovascular disease in large epidemiological studies such as Framingham for example, for all age groups (between 45 and 95 years), the incidence is higher in men than in women [2,3]. This brings us to the first paradox. In Algeria, ischemic heart disease is the leading cause of death with 36% according to the latest 2016 World Health Organization data [4].

Materials and Methods

Study population

Single-center, cross-sectional, prospective, cohort-type observational study carried out in patients hospitalized for ACS in the cardiology intensive care unit of the internal medicine department of the University Hospital of Douera, the inclusion criteria are: Any patient over 18 years admitted for an SCA; including ACS with elevation of the ST segment, ACS without elevation of the ST segment (MI without Q wave and unstable angina), the non-inclusion criteria are: Patients

under palliative care with neoplastic pathology whose life expectancy is lower at six months, patients with severe chronic respiratory failure oxygen dependent, ACS occurring within 48 h after a therapeutic intervention (angioplasty or coronary bypass) or other cardiac surgery and pregnant women. Follow-up of all patients for 1 year.

Results

Characteristics of the study population

Represented by Table 1, the male population with acute coronary syndrome represents 71.1% of the overall population, the average age is higher in men (66.3 ± 12.3 years *vs.* 62.1 ± 12.7 years, p<0.01), there is more STEMI in men (58.1% *vs.* 36%, p<0.01), more diabetics in women (47.9% *vs.* 65%, p<0.01), more tobacco users (82.9% *vs.* 5%, p<0.01), more hypertensive in women (80% *vs.* 49.2%, p <0.01), the BMI is higher in women (28.7 ± 5.6 *vs.* 26.1 ± 4.1 kg/m^2, p<0.01), more metabolic syndrome in women (80% *vs.* 47.2%, p<0.01), renal function is lower in the female population (65.3 ± 33.1 ml/min/m^2 *vs.* 74.6 ± 31.5 ml/min/m^2, p<0.01), pharmacological fibrinolysis is used less in women (18% *vs.* 30.1%, p=0.02) and there is more angioplasty in men (32.9% *vs.* 20 %, p=0.02), on the other hand no significant difference concerning coronary artery bypass grafting, cardiovascular inheritance, dyslipidemia in both groups.

There are more women with a very high CRUSADE score (40% *vs.*9.3%, p<0.01), on the other hand no statistically significant difference for the intra-hospital GRACE score and at 6 months and the TIMI score. Between the two sexes.

After one year of follow-up, there is more mortality in the female group (17% *vs.* 7.3%, p=0.01), more cardiovascular events (64% *vs.* 51.2%, p=0.04), more heart failure (37% *vs.* 17, p<0.01), more severe bleeding (13 *vs.* 5.7, p=0.03) no statistical difference between the two sexes concerning ischemic recurrence and the number of rehospitalization after one year of follow-up (Figure 1).

Discussion

In this single-center study, women hospitalized for ACS have more comorbidities with more diabetes, hypertension, metabolic syndrome in accordance with previous studies [5,6], there are more men in our study corresponding to the data from the ACCESS study [7], mortality after one year is greater in the female population, previous studies have shown that the differences between the sexes in early mortality after ACS are largely explained by these clinical differences during presentation [8,9], Previous studies have reported early excess mortality after STEMI in younger women and detected an interaction between sex and age [10,11]. Our study found that women presented to the hospital for ACS treatment 1.2 h later than men.

This delayed presentation has been associated with an increased risk of death and recurrent events in patients with ACS. This prolonged delay in hospital presentation in women compared to men can be attributed to misinterpretation of symptoms, lack of awareness and barriers to accessing care [12,13].

Women are less likely to receive reperfusion therapy (thrombolysis, ATL) on arrival than men. These disparities in acute treatment also contributed to the difference in death rates between men and women.

A meta-analysis that investigated gender differences in mortality

Table 1: Clinical characteristics of the study population.

Population	ACS male (n=246)	SCA female (n=100)	P (value)
Middle age (years)	66.34 ± 12.3	62.13 ± 12.7	<0.01
STEMI	143 (58.1)	36 (36)	<0.01
NSTEMI	73 (29.7)	47 (47)	<0.01
Unstable angina	30 (12.2)	17 (17)	0.31
Average BMI (Kg/m^2)	26.1 ± 4.1	28.7 ± 5.6	<0.01
TT moyen (Cm)	94.6 ± 11.5	97.6 ± 12.5	0.03
Tobacco	204 (82.9)	5 (5)	<0.01
Dyslipidemia	85 (35.6)	46 (46)	0.06
Diabetes	118 (47.9)	65 (65)	<0.01
Hypertension	121 (49.2)	80 (80)	<0.01
Metabolic syndrome	116 (47.2)	80 (80)	<0.01
Killip ≥ 2	47 (19.1)	27 (27)	0.13
Pain –medical contact delay >6 h	128 (52)	65 (65)	0.03
Number of ECG leads reached >6	158 (64.2)	76 (76)	0.04
LVEF simpson	48 ± 9.4	42 ± 3.6	0.5
Creatinine clearance	74.6 ± 31.5	65.3 ± 33.1	0.02
Thrombolysis	74 (30.1)	18 (18)	0.02
ATL	81 (32.9)	20 (20)	0.02
CABG	36 (14.6)	10 (10)	0.32
GRACE score intra-H high	106 (43.1)	55 (55)	0.06
GRACE score 6 months high	102 (41.5)	51 (51)	0.13
STIMI score high	39 (15.6)	24 (24)	0.1
CRUSADE score very high	23 (9.3)	40 (40)	<0.01

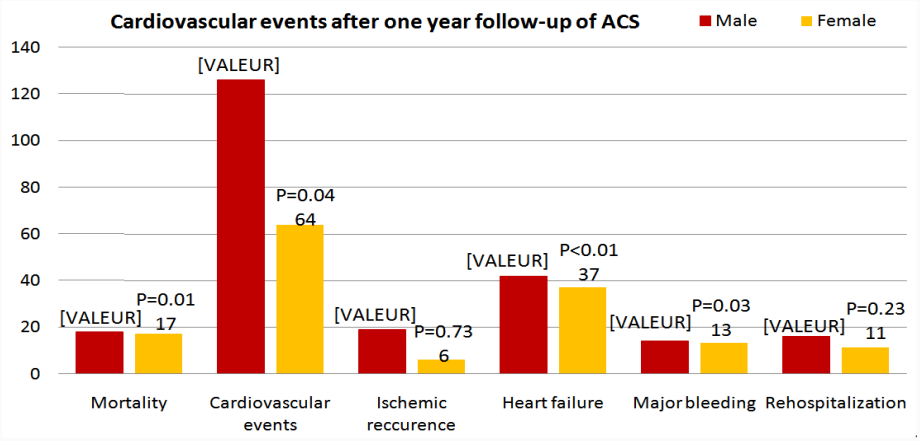

Figure 1: Cardiovascular events after a one-year follow-up.

in patients treated with primary ATL concluded that increased mortality in women was likely confounded by differences in baseline cardiovascular risk factors and profiles. Clinics addressing gender disparities in evidence-based treatment may improve outcomes for patients with STEMI [14].

Conclusion

The present study evaluated gender differences in hospital management and outcome of patients with ACS. Women with ACS had a higher unadjusted risk of death than men. Women were less likely to receive acute reperfusion therapy than men. However, the reasons for these differences based on gender in the clinical management of ACS remain largely unknown. Gender differences in quality of care mortality and cardiovascular events after one year of follow-up underscore the need for further investigation and a specially targeted quality improvement program to reduce or even eliminate disparities in care.

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