**Acute coronary syndromes in women:angiographicfeatures**

**ABSTRACT :**

Problematic and objectives : The incidence of coronaryartery disease appears to behigher in menthan in women. Neverthelesscardiovascularmortalityishigher in womenthan in men. The objective of thisstudyis to find if there are particularangiographicfeaturesthatcanexplainthisovermortality in women.

Methods : This is a retrospective descriptive and analyticalstudy of 191 women with acute coronary syndrome whowentthroughcoronarography over a period of 5 years. Wecollected the angiographicfindingsthatweanalysedusing thestatistical software SPSSversion 18. Our resultswerethencompared to the findings of the literature.

Results : In ourstudy, the incidence of acute coronary syndrome(ACS) in womenwas 4.4 times lowerthan in men. Menopausewas the first cardiovascularrisk factor and wasfoundin 93.2% of our patients, followed by hypertension with a prevalence of 60.7%. Fifth-six point five percentof our patients werediabetic. Dyslipidemiawasfoundin 39.9% of our patients, smoking in 4.7%. All our patients underwentcoronaryangiography. The angiographywasperformedradiallyin 52% of the patients and femorallyin 48% of the cases. It was normal with no significantlesionsin 17% of cases. Atheromatouslesionsdominated. Forty five percent of the patients hadmono-vesselcoronarylesion, 28% had bi-vesselcoronarylesion, and 27% tri-vesselcoronarylesion.

Conclusion : Womengenerally have less extensive and less obstructive coronary disease. However, mortalityishigher in women. A more carefulapproach to diagnosis and more invasive management isneeded to reducefemalemortality.

**Key words :Acute coronary syndrome, women, angiographicfeatures**

## 1. INTRODUCTION

Cardiovasculardiseases are the leading cause of deathamongwomen and men. Although the incidence of coronaryheart disease ishigher in men than in women, cardiovascularmortalityishigher in womenthan in men. [1] [2] As a matter of fact, there are major differencesbetween men and womenconcerningcoronaryartery disease. Women are described to have excessive vasoreactivity, and smallervesselanatomy. [3]Therefore, the angiographicfindings are quitedifferent in coronaryarterydiseases. Our studyaims to show the angiographicparticularities of womendiagnosed with ACS.

## 2. METHODS

This is a retrospective descriptive and analyticalstudy of 191 women with acute coronary syndrome in the department of cardiology B of Ibn Sina Hospital, Rabat, Morocco.

This studycovers a 5-yearperiodfromJanuary 2016 to December 2020 duringwhich 843 patients werehospitalized for acute coronary syndrome, 191 of whomwerewomen.

Data werecollectedfrom patient records and coronaryangiography reports.

To standardise the collection of information, a standard formwasdrawn up for each file, usingepidemiological, clinical, electrocardiographic and biologicaldata,andechocardiographic data as well as angiographic and therapeutic data. Our seriesincludedfemale patients whohadundergonecoronaryangiography for acute coronary syndrome and hadcoronaryangiography for acute coronary and having usable data.

The data collectedwascomputerisedusing the statistical software SPSS version 18.

The variables are expressed as average +/- standard deviation and the qualitative variables as number and percentage.

## 3. RESULTS

### 3.1.Characteristics of the population

In ourstudy, the incidence of ACS in womenwas 4.4 times lowerthan in men. Womenaccounted for 22.6% of patients hospitalised for acute coronary syndrome. The averageage of ourfemale patients was 62 years with extremesbetween 31 and 100 years. One hundredthirteen patients or 59.2% werebetween 60 and 74 years of age and 7.9% of our patients wereyoung with an agebelow 45 years. Almost all of our patients (97.4%) had no social securitycoverage, only 5 patients hadmedicalinsurance.

### 3.2.Cardiovascularriskfactors

Menopausewas the first cardiovascularrisk factor and wasfoundin 93.2% of our patients, followed by hypertension with a prevalence of 60.7%. Only 57% of the hypertensive patients werebalanced, 4.3% of themwere not treated and 36.6% of all patients were on monotherapy with dual therapyin 16.8%. The average duration of hypertension was 7 years, with an incidentaldiscoveryin 2.1%. Threequarters of ourpostmenopausal patients were hypertensive. Fifth six point five percentofour patients werediabetic with an average duration of evolution of 10 years and an incidentaldiscoveryin 2% of women. 10% of patients hadcomplicateddiabetes with diabeticnephropathyin 5.5% and diabeticretinopathyin 2.7%. Fifty one percent of the diabetic patients weretreated by oral antidiabetic and 30% by insulin with a combination of bothin 6.3% of the patients. Diabeteswashighlycorrelated with the number of coronaryevents. (P=.004)Dyslipidemiawasfoundin 39.9% of ourpatients and 15%

of themwere not treated. Smoking with a prevalence of 4.7% wasfound in the youngestwomen. The averageage of smoking patients was 50 years.

**Table 1 : Cardiovascularriskfactors**

| Cardiovascularriskfactors | Number | Percentage |
|---|---|---|
| Menopause | 178 | 93.2% |
| Hypertension | 116 | 60.7% |
| Diabetes | 108 | 56.5% |
| Age | 75 | 39% |
| Dyslipiemia | 59 | 30.9% |
| Smoking | 9 | 4.7% |

### 3.3.Angiographicfeatures

All our patients underwentcoronaryangiography. The angiographywasperformedradiallyin 52% of the patients and femorallyin 48% of the cases. It was normal with no significantlesionsin 17% of cases. Atheromatouslesionswere the most important.

**Table 2 : Distribution by the nature of the lesion**

| Nature of the lesion | Prevalence |
|---|---|
| Atheroma | 83% |
| Thrombotic | 13% |
| Calcifications | 12.6% |
| Spasm | 2.3% |
| intramyocardial bridge | 1.1% |

| Localisation | Prevalence |
|---|---|
| Proximal leftcoronaryartery | 1.2% |
| Distal leftcoronaryartery | 5% |
| Leftanteriordescendingartery I | 25% |
| Leftanteriordescendingartery II | 32% |
| Leftanteriordescendingartery III | 16% |
| Circumflexartery I | 14% |
| Circumflexartery II | 15% |
| Circumflexartery III | 10% |
| Right coronaryartery I | 11.5% |
| Right coronaryartery II | 18% |
| Right coronaryartery III | 6.2% |
| Diagonal branch I | 10% |
| Diagonal branch II | 2.5% |
| Diagonal branch III | 0.6% |
| Left marginal artery I | 13% |
| Left marginal artery II | 2.5% |
| Posteriorinterventricularartery | 4.3% |
| Bisectorbranch | 1.2% |

**Table 3 : Distribution by location of significantlesions**

| | |
|---|---|
| Stagedlesion of the leftanteriordescendingartery | 1.2% |
| Stagedlesion of the right coronaryartery | 2.5% |
| Stagedlesion of the circumflexartery | 2.5% |

**Figure 1 : Distribution according to the number of coronarylesions**

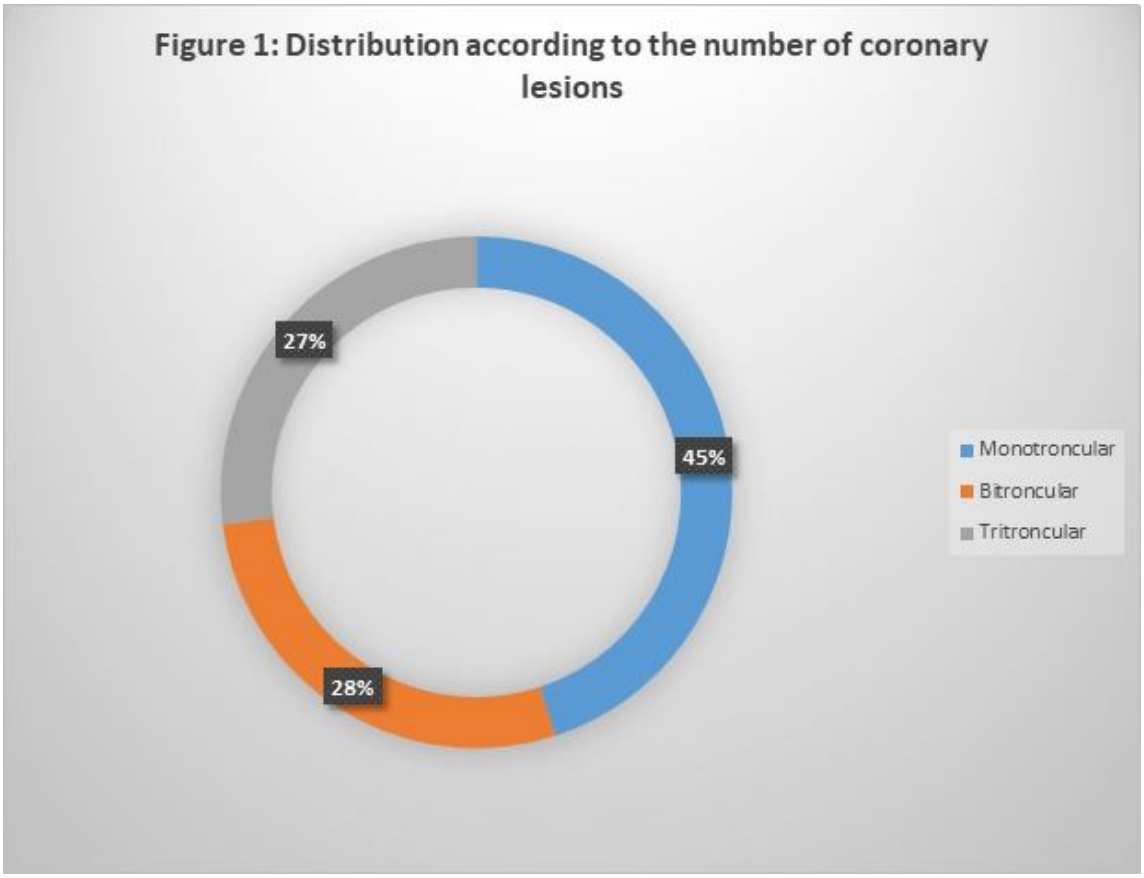
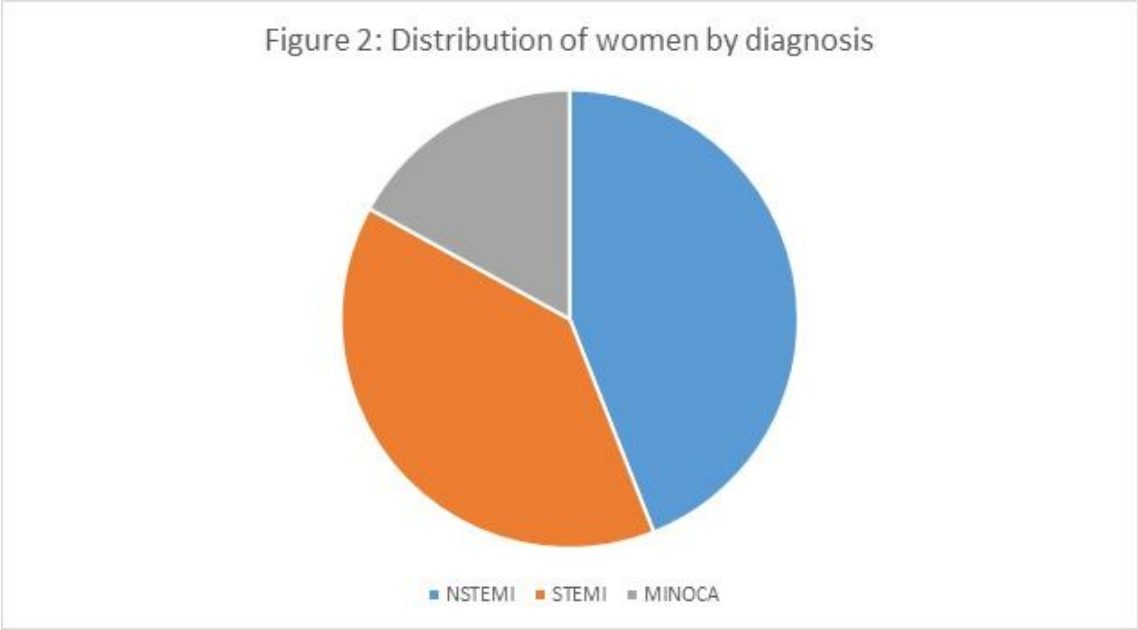



**Figure 2 : Distribution of women by diagnosis**




## 4. DISCUSSION

As in men, atheromais the primary cause of coronaryheart disease, especially acute coronaryheart disease in women. While acute coronarysyndrome ismostoftencaused by atherosclerotic plaque rupture, thereis a significantamount of plaque erosion in women. [4] [5]Womenpresenting with acute coronary syndrome have less extensive coronaryartery disease than men as evidenced by fewer and more focal nonculpritlesions, and fewervessels with angiographicnonculpritlesions. This iscorroborated not only by coronarography but also by intravascular ultrasound IVUS [6]. The majority of our patients hadatheromatouslesions (87%). Moreover, acute coronary syndromes withoutsignificantstenosisoccur more often in womenthan in men. [7]Seventeen per cent of our patients hadmyocardiocalinfarctionin the absence of coronaryartery disease (MINOCA). Berger JS. And al showedthatwomenhad a higher incidence of non-obstructive disease than men 15% vs. 8%. [8] As a matter of fact, Spontaneouscoronaryartery dissection, a rare cause of acute coronary syndrome, isseenin 90% of cases in women of about 50 years of agewithoutriskfactors. In addition, coronaryspasmis more common in women, especiallysmokers. [9] The measurement of coronary flow reserve shows abnormalvasoreactivity in women with anginal syndromes withoutsignificantlesions at the coronaryangiography. [10]Anotherpeculiarity of womenisthatfewertrunks are affected, with a lessertendency for tritruncularinvolvement. Amongour patients, 45% were mono-truncular, 28% were bi-truncular and 27% tritruncular. Berger JS., Elliot L, Gallup D, Roe M, Granger CB, Armstrong PWetalfoundlessfrequenttri-vesselcoronary damage 23% vs. 26%. This wascorroborated by the PROSPECT study. [4] Insummary, itwasfoundthatwomen have fewersignificantlesions on coronaryangiography, thatthey have a lowernumber of affectedtrunks, and that the atheromatouslesionisless extensive in women. In spite of this, mortalityfrom acute coronary syndrome ishigher in womenthan in men. This difference in mortalitycanreach a factor of 1.5, especially in youngwomen. [11] [12] This couldbeexplained by the existence of othersignificantdifferencesincludingdelayeddiagnosis due to

atypicalsymptoms, a lower rate of invasive reperfusion and a delayed reperfusion, a greater effect of cardiovascularriskfactors. [13] [14]

## 5. CONCLUSION

Coronaryartery disease in women and men couldbeconsidered as twodifferententities in terms of bothclinical and angiographicdifferences. Womengenerally have less extensive and less obstructive coronary disease. However, mortalityishigher in women. A more carefulapproach to diagnosis and more invasive management isneeded to reducefemalemortality.

## 6. REFERENCES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**Tables and figures**

**Table 1 : Cardiovascularriskfactors**

**Table 2 : Distribution by the nature of the lesion**

**Table 3: Distribution by location of significantlesions**

**Figure 1 : Distribution according to the number of coronarylesions**

**Figure 2 : Distribution of women by diagnosis**

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