

Clinical characteristics of Polish women with ST-segment elevation myocardial infarction

Marcin Sadowski¹, Mariusz Gąsior², Marek Gierlotka², Marianna Janion^{1, 3}, Lech Poloński²

¹Swietokrzyskie Cardiology Centre, Kielce, Poland

²3rd Chair and Department of Cardiology, Medical University of Silesia, Silesian Centre for Heart Diseases, Zabrze, Poland

³Faculty of Health Sciences, The Jan Kochanowski University of Humanities and Sciences, Kielce, Poland

Abstract

Background: Differences in clinical manifestation, therapeutic strategies and prognosis in men and women with acute coronary syndromes became crucial in the last decade.

Aim: To present clinical characteristics of Polish women with ST-segment elevation myocardial infarction (STEMI).

Methods: A total of 26,035 patients with STEMI (8989 females, 34.5%) were included between 01.06.2005 and 31.05.2006. Data were obtained from the Polish Registry of Acute Coronary Syndromes (PL-ACS).

Results: Women were older than men. The incidence of classical risk factors, anterior infarction, atrial fibrillation, higher heart rate, cardiac arrest, pulmonary oedema and cardiogenic shock was higher in women. Coronary angiography was performed in 58.7% of patients, significantly less in women. There was a longer time delay in women at each stage of treatment. In-hospital and 12-month mortality was significantly higher in women. Pulmonary oedema, cardiogenic shock, cardiac arrest, age, diabetes and anterior infarction were independent factors of risk of death in multifactorial analyses, both in in-hospital and long term observation.

Conclusions: Basic clinical characteristics of women with STEMI is poorer than in men. Women have longer time delay at each stage of treatment. Invasive strategy was less frequently applied in women. Independent predictors of death are similar in men and in women. Both in-hospital and one year mortality is higher in women.

Key words: ST-segment elevation myocardial infarction, mortality, registry, female gender

Kardiol Pol 2010; 68, 6: 627–634

INTRODUCTION

Cardiovascular diseases (CVD) are the leading cause of mortality in both men and women worldwide. According to a WHO report, about 55% of deaths in European women are related to CVD, including 23% caused by coronary artery disease (CAD) and 18% due to stroke. Conversely, in men, CVD is the cause of 43% of deaths, including CAD (21%) and stroke (11%) [1]. These statistics are alarming — in Europe, one woman dies of CVD every 6 minutes. Myocardial infarction (MI) is a leading cause of death worldwide. It is estimated that circa 3 million people have MI each year.

It is estimated that in Poland, ST-segment elevation myocardial infarction (STEMI) occurs in about 30,000 patients per

year. Due to indisputable benefits resulting from intensive progress in cardiology, including the organisation of health care, modern pharmacotherapy and interventional cardiology, between 1999 and 2006 in-hospital mortality in MI patients dropped by 3.9% [2] and average 30 day mortality in STEMI is now 8.4% [3]. In patients included in large clinical trials on fibrinolysis and/or percutaneous coronary intervention (PCI) in STEMI, 30-day mortality rate is around 4–6%. Data from registries are unoptimistic and point to a certain discrepancy in the management of STEMI patients in these trials (due to the specific study protocols) and the “real life” settings. Below, data from a large Polish registry is presented and compared with other registries concerning similar issues.

Address for correspondence:

Marcin Sadowski, MD, Swietokrzyskie Cardiology Centre, ul. Grunwaldzka 45, 25–736 Kielce, Poland, tel: +48 606906454; e-mail: emsad@o2.pl

Received: 31.01.2010 Accepted: 10.03.2010

METHODS

Data from consecutive 26,035 STEMI patients admitted to hospitals in Poland between 1 June 2005 and 31 May 2006 were collected, including 8989 (34.5%) women. In hospital data analysis was approved by administrators of the Polish National Acute Coronary Syndrome Registry (PL-ACS) [4], which was carried out by the Silesian Centre for Heart Diseases in Zabrze in cooperation with the National Health Fund (NHF) as part of the National Programme for Prevention and Treatment of Cardiovascular Diseases POLKARD launched by the Polish Ministry of Health. Data from post-discharge period were retrieved from the NHF divisions and mortality data were gathered from the Register Office.

Statistical analysis

Continuous variables are presented as means \pm standard deviation or median \pm interquartile range, depending on the normality of distribution. Significance of the differences between mean values of the compared groups was assessed by Student t-test or Mann-Whitney U test, respectively. In case the distribution of a variable was different from normal, ANOVA Kruskal-Wallis rank test or Mann-Whitney U test were used. Parametric test usage was dependent on the homogeneity of variance. F test was applied to test this assumption. Categorical variables were tested with χ^2 test. Twelve-month mortality was analysed by Kaplan-Meier method, and significance of between-group differences — by the log-rank test. Multivariable analysis for in-hospital and 12 month mortality was carried out by multivariable logistic regression. Results were presented as odds ratios (OR) and 95% confidence intervals (CI). A p value \leq 0.05 was considered statistically significant. Calculations and statistical analyses were carried out with Statistica PL, version 6,1 (StatSoft Inc.).

RESULTS

Out of 26,035 patients, the vast majority (78,6%) were hospitalised at cardiology departments and 21.4% in departments of internal medicine. Mean patient age was 64.7 ± 12.5 years. Study population included 8989 (34.5%) women and 17,046 (65.5%) men ($p < 0.0001$). In the analysed population, women were older than men by 7.7 years on average and this was statistically significant (Table 1). In women, the well established risk factors such as hypertension, diabetes, obesity, were significantly more prevalent and, conversely, smoking, prior MI, prior PCI and coronary artery bypass grafting (CABG) were less prevalent. The prevalence of hypercholesterolaemia was similar in both sexes. The natural history of STEMI in women in comparison to men was unfavourable. Anterior MI was significantly more prevalent, as well as atrial fibrillation, higher heart rate, in-hospital cardiac arrest, cardiogenic shock and pulmonary oedema (Table 1). Women were significantly less often hospitalised in cardiology departments. In the group of men, mean activity of the cardiac isoenzyme of the creatinine kinase was significantly higher.

Women, especially during the first 3 hours from symptom onset, presented to hospital significantly less often and that the delay of > 12 hours occurred more often in this particular patient group.

Depending on patient clinical status, time of admission and type of facility, patients were treated either conservatively, or by fibrinolysis or percutaneous or surgical intervention (i.e. PCI or CABG) (Table 2). Coronary angiography was carried out in 58.7% of patients with STEMI, significantly less often in women. Significantly lower proportion of women received interventional treatment and significantly higher proportion of women was treated medically. In women receiving interventional treatment primary angioplasty (pPCI) was performed significantly less often within 12 hours from symptom onset. In women selected for reperfusion, treatment delay was significantly greater than in men. It concerned both fibrinolysis and pPCI. On the other hand, time from admission to fibrinolysis was not significantly different in both sexes (2 min difference); in case of pPCI it was longer in women by 1 min. In women, in-hospital complications were also noted more often. These included: repeat STEMI (4.2% vs 3.6%, $p = 0.0067$), stroke (1.0% vs 0.4%, $p < 0.0001$), major bleeding (1.1% vs 0.6%, $p < 0.0001$) and cardiac death (11.7% vs 6.6%, $p < 0.0001$).

Analysis of pharmacological treatment applied during hospitalisation revealed significantly lower usage of acetylsalicylic acid (ASA), thienopiridine, unfractionated heparin, beta-blockers, statins and higher usage of low molecular weight heparins, nitrates, diuretics, insulin and oral hypoglycaemic agents in women than in men ($p < 0.0001$ for each comparison). Proportion of patients treated with angiotensin-converting enzyme inhibitors was similar in both sexes. At discharge, these differences were alike with the exception of ASA which was recommended for secondary prevention to similar proportion of men and women.

In-hospital mortality in STEMI was significantly higher in women (11.9%) than in men (6.9%, $p < 0.0001$). During the long term observation, complete mortality data for the 12 month post-discharge period were collected. In-hospital and long-term mortality in women in all the analysed periods was significantly higher than in men (Fig. 1) what was particularly noticeable on Kaplan-Meier curves (Fig. 2).

As shown by multivariable analysis of in-hospital mortality, the most important, independent and significant factors increasing in-hospital mortality in women were pulmonary oedema and cardiogenic shock (OR 7.93, 95%CI 6.77–9.28, $p < 0.0001$), aborted sudden cardiac death (SCD) prior to admission (OR 2.94, 95%CI 2.13–4.04, $p < 0.0001$), patient age (OR 1.73, 95%CI 1.6–1.87, $p < 0.0001$), diabetes (OR 1.30, 95%CI 1.11–1.53, $p < 0.0014$) and anterior MI (OR 1.27, 95%CI 1.1–1.47, $p < 0.0013$). Multivariable analysis of 12-month mortality showed that the most important, factors increasing mortality in women were again pulmonary oedema and cardiogenic shock (OR 3.55, 95%CI 3.21–3.92,

Table 1. Comparison of clinical characteristics of men and women

Factors compared	Women n = 8989 (34.5%)	Men n = 17,046 (65.5%)	P
Age [years]	69.7 ± 11.9	62.0 ± 12.0	< 0.0001
Elderly ≥ 65 years	6176 (68.7%)	7254 (42.6%)	< 0.0001
Hypertension	6023 (67.0%)	9555 (56.1%)	< 0.0001
Diabetes	2520 (28%)	2826 (16.6%)	< 0.0001
Hypercholesterolaemia	3612 (40.2%)	6673 (39.1%)	0.10
Smoking	1859 (20.7%)	7838 (46.0%)	< 0.0001
Obesity BMI > 30 kg/m ²	2131 (23.7%)	2282 (13.4%)	< 0.0001
History of MI	1197 (13.3%)	2720 (16.0%)	< 0.0001
MI site			
Anterior	3849 (42.8%)	6859 (40.2%)	< 0.0001
Inferior	4168 (46.4%)	8550 (50.2%)	< 0.0001
Other	972 (10.8%)	1636 (9.6%)	0.0019
ECG-rhythm			
Sinus	7975 (88.8%)	15618 (91.7%)	< 0.0001
AF	736 (8.2%)	857 (5%)	< 0.0001
Paced	41 (0.5%)	73 (0.4%)	0.75
Other	232 (2.6%)	479 (2.8%)	0.28
HR	81 ± 22	79 ± 20	< 0.0001
Time from pain onset to admission			
0–3 h	2718 (33.9%)	6137 (39.6%)	< 0.0001
3–12 h	3167 (39.5%)	5965 (38.5%)	0,11
> 12 h	2123 (26.5%)	3407 (22%)	< 0.0001
SCD/hospitalisation			
Prior to	267 (3%)	805 (4.7%)	< 0.0001
During	1023 (11.4%)	1180 (6.9%)	< 0.0001
No	7629 (84.9%)	14938 (87.6%)	< 0.0001
Killip class			
4 — shock	713 (7.9%)	1089 (6.4%)	< 0.0001
3 — oedema	484 (5.4%)	514 (3%)	< 0.0001
1 and 2	7792 (86.7%)	15443 (90.6%)	< 0.0001
CK-MB [IU/L] — max. values	86 (34–201)	108 (40–241)	< 0.0001
EF			
≥ 50%	2335 (48%)	4811 (47.9%)	0.93
30–50%	2234 (45.9%)	4667 (46.5%)	0.51
< 30%	296 (6.1%)	561 (5.6%)	0.22
Cardiology department	6802 (75.7%)	13673 (80.2%)	< 0.0001
Length of stay [days]	6 (3–10)	5 (3–9)	< 0.0001

BMI — body mass index; MI — myocardial infarction; AF — atrial fibrillation; HR — heart rate; SCD — sudden cardiac death; CK-MB — activity of the cardiac isoenzyme of creatinine kinase; EF — ejection fraction

$p < 0.0001$), aborted SCD prior to admission (OR 1.77, 95%CI 1.47–2.13, $p < 0.0001$), patients age (OR 1.54, 95%CI 1.47–1.61, $p < 0.0001$), anterior MI (OR 1.21, 95%CI 1.11–1.32, $p < 0.0001$) and diabetes (OR 1.25, 95%CI 1.13–1.37, $p < 0.0001$) (Figs. 3, 4).

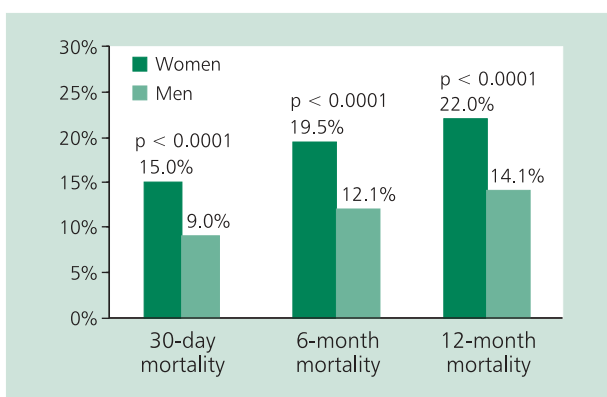
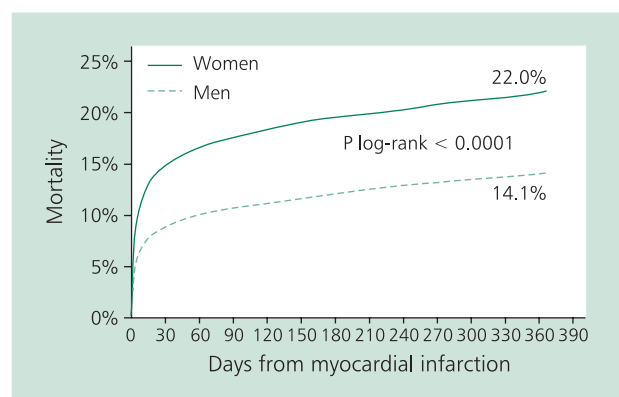
DISCUSSION

Until recently unnoticed, the issue of differences in CAD between sexes has recently been increasingly recognised in modern cardiology. Currently, a great emphasis is placed on the search of causes of variability of the disease course, ma-

Table 2. Comparison of acute STEMI management in men and in women

Compared characteristics	Women (n = 8989)	Men (n = 17,046)	P
Conservative treatment	3669 (40.8%)	5375 (31.5%)	< 0.0001
Fibrinolysis	748 (8.3%)	1367 (8%)	0.40
Fibrinolytic			
SK	587 (6.5%)	1009 (5.9%)	0.051
t-PA	93 (1.0%)	226 (1.3%)	0.042
Other	68 (0.8%)	132 (0.8%)	0.88
Coronary angiography	4708 (52.4%)	10578 (62.1%)	< 0.0001
Invasive treatment (PCI, CABG)	4352 (48.4%)	9914 (58.2%)	< 0.0001
Mode of intervention			
PCI	4295 (47.8%)	9784 (57.4%)	< 0.0001
CABG	12 (0.1%)	41 (0.2%)	0.069
PCI + CABG	45 (0.5%)	89 (0.5%)	0.82
PCI			
Up to 12 h	3214 (35.8%)	7494 (44%)	< 0.0001
Up to 24 h	3583 (39.9%)	8253 (48.4%)	< 0.0001
Up to 4 days	3920 (43.6%)	8984 (52.7%)	< 0.0001
Post-fibrinolysis up to 24 h	67 (0.7%)	156 (0.9%)	0.16
Post-fibrinolysis all	111 (1.2%)	235 (1.4%)	0.34
Delayed \geq 4 days	199 (2.2%)	429 (2.5%)	0.13
Second stage	342 (3.8%)	826 (4.8%)	0.0001
Stenting rate in PCI	3965 (91.4%)	9134 (92.5%)	0.018
IIb/IIIa glycoprotein Inhibitor (all)	1101 (12.2%)	2868 (16.8%)	< 0.0001
IIb/IIIa glycoprotein Inhibitor in PCI patients			
Before angio	60 (1.4%)	200 (2%)	0.0079
Before PCI	574 (13%)	1445 (14.4%)	0.023
During PCI	394 (8.9%)	1026 (10.2%)	0.014
Not administered	3391 (76.7%)	7352 (73.4%)	< 0.0001
Times (in minutes, as medians)			
Pain-fibrinolysis	180 (94–360)	155 (90–300)	0.0043
Admission-fibrinolysis	25 (14–45)	23 (14–45)	0.78
Pain-PCI up to 12 h	255 (175–375)	241 (165–360)	< 0.0001
Admission-PCI up to 12 h	45 (30–70)	44 (30–68)	0.032

SK — streptokinase; t-PA — tissue plasminogen activator; PCI — percutaneous coronary angioplasty; CABG — coronary artery bypass grafting; second stage — patient admitted electively for PCI

**Figure 1.** Comparison of mortality rates in men and in women**Figure 2.** Kaplan-Meier curves for one-year mortality of men and women

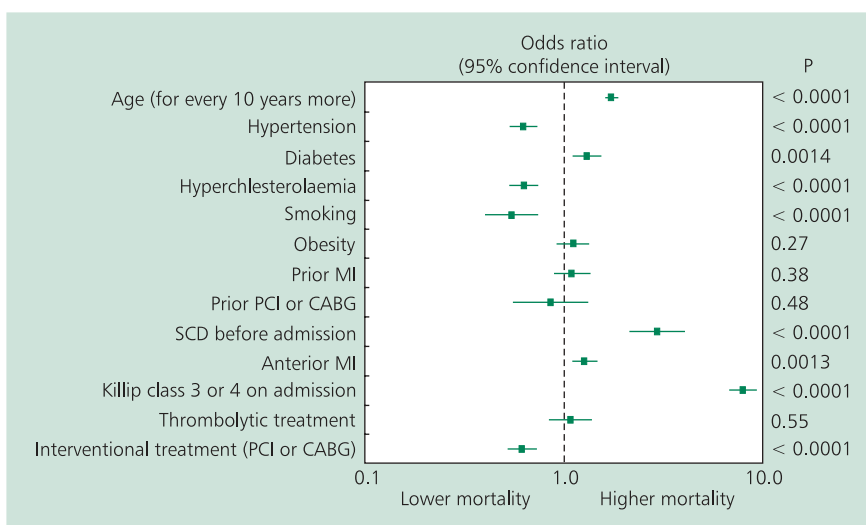


Figure 3. Multivariable analysis of in-hospital mortality in women

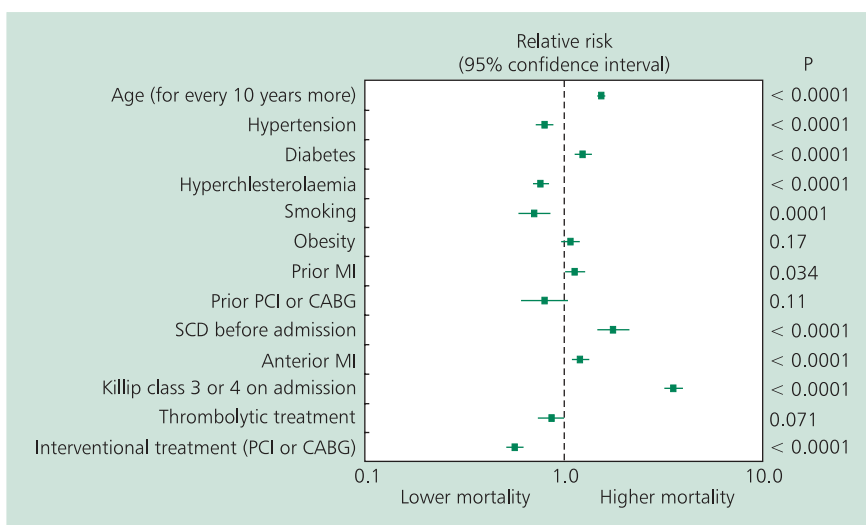


Figure 4. Multivariable analysis of one-year mortality in women

nagement and prognosis in both sexes. This includes stable CAD as well as its most severe presentation, i.e. acute coronary syndromes (ACS). Despite many positive changes, issues such as low representation of female gender in the clinical trials (ca 30%) and the lack of adequate reporting of these trials in terms of sex-related differences, result in the lack of adequate knowledge that would be necessary for modification of the current guidelines. And in fact, women are managed on the basis of results extrapolated from trials referring mainly to men. The population of the current study is a registry-derived one and no modifying criteria were applied, so it reflects the real-life management of STEMI patients in Poland.

Acute coronary syndromes are more prevalent in elderly women with more numerous risk factors and result in higher mortality rates. Women with STEMI are older than men by 8 years on average (4 to 13 depending on the registry), but in particular age groups differences can be found. In the GUSTO IIb ACS (Global Use of Strategies to Open Occluded Coronary Arteries IIb Acute Coronary Syndromes) study [5], in which the proportion of women was 30% (of 12000 participants), age and number of risk factors (arterial hypertension, diabetes, hypercholesterolaemia) at the time of ACS were significantly greater in women.

The prevalence of the classical risk factors of CAD is very high in the general population, and even more so in the po-

pulation of patients with ACS. In the INTERHEART study [6] including over 15,000 patients, 90% of men and 94% of women had hypercholesterolaemia, visceral obesity, hypertension, diabetes, or were smokers. The similar rate of arterial hypertension in women can be found in large registries including great numbers of STEMI patients (The Euro Heart Survey Acute Coronary Syndromes — EHS-ACS: 54.2% in women < 55 years, and 71% in female patients older than 65 years [7]; Unité de Soins Intensifs Coronaires — USIC I and II: 50.3% in women < 68 years and 67% in women older than 68 years [8]; National Registry of Myocardial Infarction — NRMI-2, -3 and -4 including jointly nearly 600,000 patients: about 62% on average [9]). In Poland in the period studied, the prevalence of arterial hypertension in women with STEMI was high (67% vs 56% in men, $p < 0.0001$), but it was rather similar to the rates noted in other countries worldwide.

In the available literature concerning STEMI issues in women, only rates of hyperlipidaemia or hypercholesterolaemia were presented, without detailed lipid fraction data and without reference to menopausal status. In some of these papers more women than men were hypercholesterolaemic. However, in many publications referring to large, geographically remote populations (Korea [10], France [8], USA [11, 12], China [13]), i.e. in patients with different genetic background and dietary habits, these differences were not statistically significant.

The acute phase of STEMI leads to metabolic decompensation, and hyperglycaemia is an independent risk factor of infarct-related mortality [14]. In the available registries, referring to populations from all continents, significantly more women with STEMI had diabetes in comparison with men. In the studied group, 28% of women and 16.6% of men had diabetes ($p < 0.0001$). In the multifactorial analysis, diabetes was an independent risk factor of mortality in women with STEMI, and the power of this factor was greater in women than in men for in-hospital period.

In comparison with other powerful risk factors (age, Killip class, pre-admission SCD), the impact of diabetes was smaller, but still statistically significant.

In all the available analyses concerning STEMI patients, smoking was more prevalent in men. Due to cultural and commercial issues, throughout the 20th century smoking was a habit typical for men, whereas it was forbidden or deemed unsuitable for women. In the recent years, however, due to cultural changes in the western world, the increasing number of young women smokers (also young girls) can be observed. In Poland, in the studied group, the proportion of female smokers was 20.7% vs 46% of men ($p < 0.0001$).

Despite the fact that obesity is often accompanied by hypertension, lipid and haemostasis disturbances, in the Nurses Health Study, body mass index (BMI) > 25 kg/m² was an independent factor increasing the risk of developing CAD by 8%. Moreover, the risk related to obesity is greater in women than in men — BMI higher than 35 kg/m² increases the risk

by 42% in men and by 93% in women [15]. In EHS-ACS study obesity as defined by BMI of more than 30 kg/m² was found in 21.7% of women (in 27.1% women < 55 years, in 3.6% women aged 55–64 years and in less than 20% of older women) [16]. In the AMIS Plus Registry (Acute Myocardial Infarction In Switzerland, 20,290 patients, 28% women) BMI > 25 kg/m² was found in 55.3% of female patients [17]. In the studied group the prevalence of obesity did not differ from that observed in other studies (23.7% vs 13.4% in men, $p < 0.0001$).

The benefit derived from most immediate restoration of coronary flow and myocardial perfusion is currently undisputable [18–25]. However, based on NRMI-2 i GRACE (Global Registry of Acute Coronary Events) it was found that about 30% of patients fail to receive any reperfusion therapy [26, 27]. In the studied group, conservative treatment was offered to 31.5% of men which is concurrent with tendencies observed globally. On the other hand, the lack of any reperfusion therapy in over 40% of female patients causes concern. Similarly, the analysis of the parameters related to fibrinolysis and primary angioplasty leads to unoptimistic conclusions. At every stage, the treatment was less optimal in women. Primary PCI in female patients was performed less often, and in women in whom it was performed, the percentage of procedures carried out within 12 hours of symptom onset was smaller than in men ($p < 0.0001$). Similar differences were found when 24 hour and 4 day periods were analysed.

In female patients, fibrinolysis was administered significantly later from symptom onset and from admission. Certain explanation of this observation comes from the fact, that within the 3 hour period in which the benefits derived from treatment are the greatest, women present to hospital significantly later than men, and in the period over 12 hours from symptom onset, significantly more women were admitted ($p < 0.0001$ for both comparisons). Additional argument in favour of this hypothesis comes from the observation that unfavourable delay of the times relevant for reperfusion therapy related mainly to the time that elapsed from symptom onset (fibrinolysis delay in women: 25 min, $p = 0.0043$; delay of pPCI: 14 min, $p < 0.0001$). The differences measured from admission to the initiation of reperfusion therapy were much smaller (2 min for fibrinolysis: $p = \text{NS}$, 1 min for pPCI: $p = 0.032$). However they may seem small in absolute figures, the differences observed between the group that survived to discharge and the patients who died during hospitalisation seem to confirm the results of De Luca et al. [28].

CONCLUSIONS

On the basis of a large group of patients it can be stated that in Poland women with STEMI have significantly worse clinical profile, adversely influencing their prognosis. In comparison with men, significant delay of reperfusion in relation to symptom onset is observed. Similarly, invasive treatment and modern pharmacotherapy are administered significantly less

often in female patients. Risk factors adversely influencing prognosis are similar in men and in women whereas in-hospital and one-year mortality in women is significantly greater than in men.

References

1. Stramba-Badiale M, Fox KM, Priori SG et al. Cardiovascular diseases in women: a statement from the policy conference of the European Society of Cardiology. *Eur Heart J*, 2006; 27: 995–1005.
2. Fox KA, Steg PG, Eagle KA et al. Decline in rates of death and heart failure in acute coronary syndromes, 1999–2006. *JAMA*, 2007; 297: 1892–1900.
3. Hasdai D, Behar S, Wallentin L et al. A prospective survey of the characteristics, treatments and outcomes of patients with acute coronary syndromes in Europe and the Mediterranean basin; the Euro Heart Survey of Acute Coronary Syndromes (Euro Heart Survey ACS). *Eur Heart J*, 2002; 23: 1190–1201.
4. Poloński L, Gasior M, Gierlotka M et al. Polish Registry of Acute Coronary Syndromes (PL-ACS). Characteristics, treatments and outcomes of patients with acute coronary syndromes in Poland. *Kardiologia Pol*, 2007; 65: 861–872.
5. Hochman JS, Tamis IE, Thomson TD et al. Sex, clinical presentation, and outcome in patients with acute coronary syndromes. Global Use of Strategies to Open Occluded Coronary Syndromes IIb Investigators. *N Engl J Med*, 1999; 341: 226–232.
6. Yusuf S, Hawken S, Ounpuu S et al. Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): case-control study. *Lancet*, 2004; 364: 937–952.
7. Rosengren A, Wallentin L, Gitt AK et al. Sex, age, and clinical presentation of acute coronary syndromes. *Eur Heart J*, 2004; 25: 663–670.
8. Simon T, Mary-Krause M, Cambou JP et al. Impact of age and gender on in-hospital and late mortality after acute myocardial infarction: increased early risk in younger women: results from the French nation-wide USIC registries. *Eur Heart J*, 2006; 27: 1282–1288.
9. Shavelle DM, Rasouli ML, Frederick P et al. Outcome in patients transferred for percutaneous coronary intervention (a National Registry of Myocardial Infarction 2/3/4 analysis) *Am J Cardiol*, 2005; 96: 1227–1232.
10. Lee KH, Jeong MH, Ahn YK et al. Gender differences of success rate of percutaneous coronary intervention and short term cardiac events in Korea Acute Myocardial Infarction Registry. *Int J Cardiol*, 2008; 130: 227–234.
11. Jacobs AK, Johnston JM, Haviland A et al. Improved outcomes for women undergoing contemporary percutaneous coronary intervention: a report from the National Heart, Lung, and Blood Institute Dynamic registry. *J Am Coll Cardiol*, 2002; 39: 1608–1614.
12. Vaccarino V, Rathore SS, Wenger NK et al. National Registry of Myocardial Infarction Investigators. Sex and racial differences in the management of acute myocardial infarction, 1994 through 2002. *N Engl J Med*, 2005; 353: 671–682.
13. Song XT, Chen YD, Pan WQ et al. Gender based differences in patients with acute coronary syndrome: findings from Chinese Registry of Acute Coronary Events (CRACE). *Chin Med J (Engl)*, 2007; 120: 1063–1067.
14. Van de Werf F, Bax J, Betriu A et al. Management of acute myocardial infarction in patients presenting with persistent ST-segment elevation: the Task Force on the Management of ST-Segment Elevation Acute Myocardial Infarction of the European Society of Cardiology. *Eur Heart J*, 2008; 29: 2909–2945.
15. Hu FB, Stampfer MJ, Manson JE et al. Trends in the incidence of coronary heart disease and changes in diet and lifestyle in women. *N Engl J Med*, 2000; 343: 530–537.
16. Rosengren A, Wallentin L, Simoons M et al. Age, clinical presentation, and outcome of acute coronary syndromes in the Euroheart acute coronary syndrome survey. *Eur Heart J*, 2006; 27: 789–795.
17. Perers E, Caidahl K, Herlitz J et al. Spectrum of acute coronary syndromes: history and clinical presentation in relation to sex and age. *Cardiology*, 2004; 102: 67–76.
18. GUSTO Investigators. An international randomized trial comparing four thrombolytic strategies for acute myocardial infarction. *N Engl J Med*, 1993; 329: 673–682.
20. Brodie BR, Hansen C, Stuckey TD et al. Door-to-balloon time with primary percutaneous coronary intervention for acute myocardial infarction impacts late cardiac mortality in high-risk patients and patients presenting early after the onset of symptoms. *J Am Coll Cardiol*, 2006; 47: 289–295.
21. Cannon CP, Gibson CM, Lambrew CT et al. Relationship of symptom-onset-to-balloon time and door-to-balloon time with mortality in patients undergoing angioplasty for acute myocardial infarction. *JAMA*, 2000; 283: 2941–2947.
22. Berger PB, Ellis SG, Holmes DR Jr. et al. Relationship between delay in performing direct coronary angioplasty and early clinical outcome in patients with acute myocardial infarction: results from the Global Use of Strategies to Open Occluded Arteries in Acute Coronary Syndromes (GUSTO-IIb) trial. *Circulation*, 1999; 100: 14–20.
23. De Luca G, van't Hof AW, de Boer MJ et al. Time-to-treatment significantly affects the extent of ST-segment resolution and myocardial blush in patients with acute myocardial infarction treated by primary angioplasty. *Eur Heart J*, 2004; 25: 1009–1013.
24. Boersma E, Maas AC, Deckers JW et al. Early thrombolytic treatment in acute myocardial infarction: reappraisal of the golden hour. *Lancet*, 1996; 348: 771–775.
25. Fibrinolytic Therapy Trialists' (FTT) Collaborative Group. Indications for fibrinolytic therapy in suspected acute myocardial infarction: collaborative overview of early mortality and major morbidity results from all randomised trials of more than 1000 patients. *Lancet*, 1994; 343: 311–322.
26. Barron HV, Bowlby LJ, Breen T et al. Use of reperfusion therapy for acute myocardial infarction in the United States: data from the National Registry of Myocardial Infarction 2. *Circulation*, 1998; 97: 1150–1156.
27. Eagle KA, Goodman SG, Avezum A et al. Practice variation and missed opportunities for reperfusion in ST-segment-elevation myocardial infarction: findings from the Global Registry of Acute Coronary Events (GRACE). *Lancet*, 2002; 359: 373–377.
28. De Luca G, Suryapranata H, Ottervanger JP et al. Time delay to treatment and mortality in primary angioplasty for acute myocardial infarction: every minute of delay counts. *Circulation*, 2004; 109: 1223–1225.

Charakterystyka kliniczna polskich kobiet z zawałem serca z uniesieniem odcinka ST

Marcin Sadowski¹, Mariusz Gąsior², Marek Gierlotka², Marianna Janion^{1, 3}, Lech Poloński²

¹Świętokrzyskie Centrum Kardiologii, Kielce

²III Katedra i Oddział Kliniczny Kardiologii, Śląskie Centrum Chorób Serca, Zabrze

³Wydział Nauk o Zdrowiu, Uniwersytet Humanistyczno-Przyrodniczy Jana Kochanowskiego, Kielce

Streszczenie

Wstęp: Choroby układu sercowo-naczyniowego są wiodącą przyczyną zgonów na świecie u obu płci. W Polsce zapadalność na zawał serca, który jest główną przyczyną śmiertelności na świecie, szacuje się na około 30 000 rocznie. Odmienny przebieg kliniczny, postępowanie terapeutyczne i rokowanie w ostrych zespołach wieńcowych u obu płci nabrały w ostatnim 10-leciu istotnego znaczenia. U chorych włączanych do dużych badań klinicznych oceniających fibrylizację i/lub przeszłokoronarną interwencję wieńcową w zawał serca śmiertelność 30-dniowa wynosi 4–6%. Dane pochodzące z rejestrów wskazują na rozbieżność w postępowaniu między procedurą wymuszoną protokołem badania klinicznego a leczeniem rzeczywistej populacji.

Cel: Celem pracy była charakterystyka kliniczna polskich kobiet z zawałem serca z uniesieniem odcinka ST (STEMI).

Metody: Badaniem objęto 26 035 kolejno hospitalizowanych chorych ze STEMI w okresie jednego roku (01.06.2005–31.05.2006) w Polsce, w tym 8989 (34,5%) kobiet. Dane uzyskano z bazy Ogólnopolskiego Rejestru Ostrego Zespołu Wieńcowych (PL-ACS).

Wyniki: Polskie kobiety ze STEMI są starsze niż mężczyźni. Częściej występują u nich klasyczne czynniki ryzyka, zawał ściany przedniej, migotanie przedsionków, większa częstotliwość rytmu serca, nagłe zatrzymanie krążenia w trakcie hospitalizacji, wstrząs kardiogeny i obrzęk płuc. Koronarografię wykonano u 58,7% pacjentów, w tym znacznie rzadziej u kobiet. Do leczenia inwazyjnego zakwalifikowano 54,8% osób, w tym również istotnie mniejszy odsetek kobiet. Na każdym etapie terapii występowały większe opóźnienia u kobiet. Śmiertelność szpitalna i 12-miesięczna były istotnie wyższe u kobiet. W analizach wieloczynnikowych najsilniejszymi czynnikami zwiększającymi ryzyko zgonu były obrzęk płuc, wstrząs kardiogeny, wystąpienie nagłego zatrzymania krążenia przed przyjęciem do szpitala, wiek chorych, obecność cukrzycy, zawał ściany przedniej.

Wnioski: W Polsce kobiety ze STEMI charakteryzują się istotnie gorszym profilem klinicznym obciążającym rokowanie. W porównaniu z mężczyznami występuje u nich istotne wydłużenie czasu od początku wystąpienia objawów do zastosowania leczenia reperfuzyjnego. Istotnie rzadziej stosuje się u nich terapię inwazyjną i nowoczesną farmakoterapię. Czynniki obciążające rokowanie są podobne u kobiet i u mężczyzn, a śmiertelność kobiet jest znacznie większa w obserwacji szpitalnej i rocznej.

Słowa kluczowe: zawał serca z uniesieniem odcinka ST, śmiertelność, rejestr, płeć żeńska

Kardiologia 2010; 68, 6: 627–634

Adres do korespondencji:

dr n. med. Marcin Sadowski, Świętokrzyskie Centrum Kardiologii, ul. Grunwaldzka 45, 25–736 Kielce, tel: +48 606906454, e-mail: emsad@o2.pl

Praca wpłynęła: 31.01.2010 r. Zaakceptowana do druku: 10.03.2010 r.