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Original Research Article

Analysis of socioeconomic factors and their influence on the incidence of complications in patients with acute coronary syndrome in Warmia and Mazury Province

Beata Moczulska *, *Monika Kubiak*

Department of Internal Medicine, Gastroenterology and Hepatology with Cardiology Unit and Centre for the Treatment of Heart Failure and Cardioncology, Clinical University Hospital in Olsztyn, Poland

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ABSTRACT

Introduction: Socioeconomic status (SES) has the influence on the course and prognosis of acute coronary syndrome (ACS).

Aim: Assessment of the effect of certain socioeconomic factors on the incidence of cardiovascular complications of ACS during hospitalization and 3-month follow-up.

Material and methods: Patients enrolled in the study had ACS, diagnosed by ECG changes, positive markers of myocardial damage and angiography: ST segment elevation myocardial infarction (STEMI), non-ST segment elevation myocardial infarction (NSTEMI), and unstable angina (UA). Patients were given questionnaires regarding place of residence, education, occupation, and work status. The incidence of complications of ACS during hospitalization and 3-month follow-up was evaluated.

Results and discussion: The study included 160 subjects (30 female and 130 male) aged 57.6 ± 9.4 years. 70% of patients had STEMI, 18% NSTEMI, and 12% UA. In the study group 72% of patients lived in cities, 57.5% of patients had primary or vocational education. Men significantly more frequently had primary and vocational education in comparison with women ($P < 0.005$). 48% of patients were active workers, 66% of whom had physical work. The remaining subjects (52%) were not working with disability pension (25%) and retirement pension (75%). Men were significantly more frequently on pension than women ($P < 0.033$). Complications of ACS during hospitalization were observed in 56 patients (35%), after 3-month follow-up in 26 (16%) patients. Having a job before the occurrence of ACS correlates with a higher incidence of complications both during hospitalization and a 3-month follow-up ($P < 0.04$).

Conclusions: High rates of unemployment in Warmia and Mazury Province probably force patients to return to work shortly after ACS episode.

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* *Correspondence to*: Department of Internal Medicine, Gastroenterology and Hepatology with Cardiology Unit and Centre for the Treatment of Heart Failure and Cardioncology, Clinical University Hospital in Olsztyn,Warszawska 30, 10-082 Olsztyn, Poland.
Tel.: +48 608 690 980.
E-mail address: mala.becia@poczta.fm (B. Moczulska).

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1. Introduction

Ischemic heart disease (IHD) and its complications constitute one of the major causes of morbidity and mortality among the inhabitants of industrialized countries. In spite of the increasing development of methods of treatment of IHD complications, high mortality in the population of subjects with acute coronary syndrome (ASC) is still noted. Other than classic risk factors of ACS complications are thus being identified. Socioeconomic status (SES) is one of the non-classic risk factors, the importance of which is increasingly more emphasized in studies.[1–4]

2. Aim

Assessment of the effect of certain socioeconomic factors on the incidence of cardiovascular complications of ACS during hospitalization and a 3-month follow-up.

3. Material and methods

The analysis included patients hospitalized for ACS in the Department of Cardiology of the Provincial Specialist Hospital in Olsztyn during the years 2005–2008, who met the following criteria: age above 18 years; no history of diabetes mellitus, cancer, mental illness; ACS diagnosed based on patient history, physical examination, electrocardiography, positive markers of myocardial damage, coronary angiography.

A questionnaire was developed, which assessed:

(1) classic cardiovascular risk factors: physical activity (at least 30-min walk daily); smoking; lipid profile (total cholesterol, LDL-cholesterol, HDL-cholesterol); arterial hypertension (≥140/90 mmHg) or antihypertensive treatment; body mass index (BMI);
(2) socioeconomic factors – SES components: place of residence (city – above 100 000 inhabitants, town – below 100 000 inhabitants, village); education (primary, vocational, secondary, higher); work status (employed, disability pension, retirement pension); type of work (professional worker; physical worker);
(3) incidence of cardiovascular complications of ACS, such as: stroke, myocardial infarction (MI), heart failure, cardiac arrhythmias (during hospitalization and after 3 months) based on questionnaires, follow-up in Cardiology Clinic, hospitalization data and echocardiography.

Laboratory tests were performed with the use of diagnostic equipment of the Provincial Specialist Hospital in Olsztyn (Modular analyzer P800 and E170).

Acute coronary syndrome was diagnosed on the basis of the following electrocardiographic criteria: ST segment depression of at least 0.05 mV in two contiguous leads; ST segment elevation of at least 0.05 mV in two contiguous leads; T wave inversion (of at least 0.1 mV; pseudo-normalization of inverted T wave); simultaneous ST segment elevation and depression.[5]

A 12-lead electrocardiogram (ECG) was recorded using ASPEL apparatus, echocardiography was performed using GE Vingmed System Five Ultrasound with a 3.5 Hz transducer in a Non-Invasive Laboratory of the Provincial Specialist Hospital in Olsztyn.

Coronary angiography was performed using Judkins technique[6] in Invasive Cardiology Unit of the Provincial Specialist Hospital in Olsztyn.

3.1. Statistical analysis

Statistical analysis was performed using the Statistica 7.0 PL software. The verification of hypotheses on the existence or lack of correlation between categorical variables was performed with the use of Pearson's χ^2 test and G^2 maximum likelihood estimation. For comparison of average values of measurable variables variance analysis ANOVA or Student's *t* test were used. For multiple comparison of the group means post hoc tests were used: Tukey HSD for unequal *N*. Nonparametric *U* Mann–Whitney test (for two groups) and the Kruskal–Wallis test (for many groups) were used for the analysis of measurable variables which do not have normal distribution (Schapiro–Wilk test) or homogeneity of variance (Levene's test). Correlation was measured with the Spearman's test.

Confidence intervals (95% CI) were generated for the analyzed values. Level of significance was $P < 0.05$.

3.2. Bioethics committee

The study was approved by Bioethics Committee of Warmia and Mazury Regional Chamber of Physicians on January 27, 2006 (no. 104/2006). It included analysis of results of standard diagnostic tests and voluntary anonymous (maintaining the confidentiality of personal data) survey of patients hospitalized in the Department of Cardiology of the Provincial Specialist Hospital in Olsztyn.

4. Results

The study enrolled 160 patients with ACS aged 57.6 ± 9.4 years. In this group, 72% of patients lived in cities (the rest lived in villages), 58% of patients had primary or vocational education. Men significantly more frequently had primary and vocational education in comparison with the group of women ($P = 0.005$). 48% of patients were active workers, 67% of whom had physical work. The remaining subjects (52%) were not working with disability pension (13%) and retirement pension (39%). Men were significantly more frequently on pension than women ($P < 0.033$) (Table 1).

In the study group mean BMI was 27.7 ± 3.8 kg/m^2, and with no statistical relationship with gender. Arterial hypertension (AH) was diagnosed in 42% of patients, while significantly more frequently it occurred in women ($P = 0.001$). More than a half of patients (52%) were smokers. The average concentration of total cholesterol was 197.9 mg/dL, LDL cholesterol 126.3 mg/dL, and HDL cholesterol 47.1 mg/dL. 63% of patients had a sedentary lifestyle (Table 2).

In addition, 70% of patients were diagnosed with STEMI, 18% NSTEMI, 12% UA.

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