

Acute coronary syndrome – how to reduce the time from the onset of chest pain to treatment?

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Abstract

Background: Enormous progress in treating acute coronary syndrome (ACS) and shortening the time between the onset of pain and intervention has been made in recent years. However, the time from the beginning of pain to the call for help is still too long.

Aim: To establish the causes of delayed call for help by ACS patients and to answer the question how to shorten that time. An additional aim was to examine the knowledge about myocardial infarction (MI) among patients with ACS.

Methods: The study group consisted of 349 patients treated for ACS at the CCU. Nurses interviewed the patients using a questionnaire focused on demographic data, ACS characteristics, risk factors and situations which occurred between pain onset and arrival at the CCU. The data were analysed in relation to sex, place of living, education level, professional activity, history of MI, diabetes, and hypertension.

Results: The time between the onset of symptoms and the call for medical help ranged from 4 to 1140 min. The longest delay was reported by patients aged 56-70 years. Half of them called for help later than after 3 hours. Women waited longer than men. They also waited longer for an ambulance – 20 vs. 15 min ($p < 0.01$). Professionally active patients called for help sooner: 82.7 vs. 120.2 min ($p = 0.02$). Warsaw inhabitants waited longer than those living in other towns and in rural areas ($p = 0.04$). The main causes of delay were: being confident that symptoms would subside (201 patients – 57.6%), or that the symptoms were not associated with heart disease (45 patients – 12.9%). The 41.5% of patients knew what MI was, 37.2% were familiar with features of ischaemic chest pain. Symptoms of pain were known to 44.4% of patients with ACS history vs. 32.2% of previously untreated ($p = 0.02$), blood pressure levels were known to 51.4 vs. 45.4% (NS), and cholesterol to 29.9 vs. 20.0% ($p = 0.03$). A general practitioner was mentioned as the source of information by 44.4% of patients and a nurse – by 11.5%.

Conclusions: The main cause of delayed call for help in ACS patients was a poor level of knowledge about MI, risk factors and management at the time of chest pain onset. Education concerning these issues should be started at school. Physicians, nurses and media should participate in the education.

Key words: acute coronary syndromes, patients' presentation after chest pain onset, education

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Introduction

The results of treatment of acute coronary syndromes (ACS) with ST-segment elevation depend on the time that has passed between the onset of chest pain and the revascularisation of the artery responsible for the myocardial infarction (MI). In ACS without ST-segment elevation (NSTEMI), patients endangered the most should also be emergently sent for intervention. The progress in the treatment of ACS in the last few years resulted from the development of interventional cardiology, the use of new anti-platelet and anti-thrombin medications, as well as the use of procedures that caused a reduction of time that passes between the onset of chest pain and

the time of intervention. All countries are proud of the improvement in the organisation of the system of help in patients with the suspicion of ACS. It takes a shorter time from the call for the ambulances to get to the patient. The telemetric systems allow the transfer of electrocardiograms to the interventional cardiology department, and the anti-platelet medications are applied during the first contact with medical staff. Patients with STEMI are transferred to the catheterisation laboratory directly from the emergency room. However, despite the improved organisation, the time between the onset of chest pain and the call for medical help has not been shortened.

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The aim of this study was to establish the causes of delayed calls for medical help by patients with ACS and an attempt to answer the question how to reduce the time from the onset of chest pain to the call for help? An additional aim was to establish the level of knowledge about MI in the population of patients with diagnosed ACS admitted to the Coronary Care Unit (CCU).

Methods

The study included 349 of 499 patients treated for ACS in our CCU between 7 June and 22 November 2006. Patients with ACS in their first 24 hours of hospitalisation who signed a written consent form to take part in the study were included. The consent of the Local Bioethical Committee for conducting the study was obtained. The exclusion criteria were: difficult or lack of contact with the patient, urgent qualification for surgical treatment, death before filling in the questionnaire, hospitalisation outside the CCU (telemetric monitoring), another admission due to ACS in the period of the study, and lack of the patient's consent to participate in the study.

A special questionnaire was prepared and included 55 questions covering demographic data, history of coronary artery disease (CAD), basic risk factors and questions concerning the course of events between the onset of chest pain and admission to the CCU. The questionnaire contained questions allowing assessment of the patient's knowledge about risk factors of CAD, MI symptoms and sources of information on CAD. The questionnaire was presented by a nurse who answered any questions that the patients had and gave comprehensive answers. The data were analysed in reference to gender, address, education, professional activity, past MI, presence of diabetes and hypertension. All times and delays between the onset of chest pain and the call for medical help were analysed.

Statistical analysis

Statistical analysis was carried out using SAS for Windows 8.02 software. Quantitative variables are presented as arithmetic mean \pm standard deviation (\pm SD). The distribution of compared continuous variables significantly differed from the normal one, so nonparametric tests were used to compare their distribution: Wilcoxon test for two groups and Kruskal-Wallis test for three or more groups. Qualitative data were analysed with the χ^2 test or exact Fisher's test for a small number of observations (to compare the distribution of the categorical variable in two or more groups χ^2 test was used; in case of an expected number of less than five, Fisher's exact test was used). The significance level was considered as $p < 0.05$.

Results

Based on the electrocardiogram, STEMI was recognised in 317 (90.8%) patients and NSTEMI – in 32 (9.2%) patients. All patients were selected for invasive treatment and

received – according to recommendations – acetylsalicylic acid, clopidogrel and unfractionated heparin (UFH) or low molecular weight heparin (LMWH). Primary angioplasty was performed in 318 (91.1%) patients; additionally in 309 (88.5%) patients stents were implanted. The clinical characteristics of the studied population are demonstrated in Table I. Female patients more often presented with diabetes, hypertension and hypercholesterolaemia. Male patients were more often cigarettes smokers ($p=0.0002$). Table II demonstrates the data covering the level of education and professional activity. Men were considerably more often professionally active and had university education. Women were more often retired; two thirds of them had a primary education. In the studied group 24.4% of patients lived in Warsaw, 42.3% in other cities and 33.2% in the country. The longest distance from Warsaw was 100 kilometres. The majority of examined subjects – 314 (90.0%), did not live alone. Among subjects who lived alone there were more women: 20 (17.5%) vs. 15 (6.4%), $p=0.01$. Almost all patients – 327 (93.7%), had access to a telephone. Only 5 (1.4%) subjects did not have health insurance. The time from the onset of pain to the call for medical help ranged from 4 to 1140 min (mean 108 min, median 45 min) (Figure 1). The number of patients depending on the time at which they called for help is presented in Figure 1.

The time at which help was called for was analysed with reference to age, gender, education, address, professional activity as well as prior experience of CAD. Subjects aged 65-70 years were those who delayed the call for help the most; half of those patients called for help after more than 3 hours from the onset of pain (Figure 2). The analysis of the subgroups is shown in Table III. Subjects who were still professionally active called for help significantly faster ($p=0.02$). Warsaw citizens called for help significantly later; the inhabitants of other cities called for help earlier than subjects from the country ($p=0.04$).

The major reason that the subjects gave to excuse the delay in the call for medical help was the conviction that the symptoms would subside and that they were other symptoms, not connected with heart disorders. Thirty five subjects did not give any reason for the delay. In their case the time between onset of pain and the decision to contact the doctor varied from 10 to 25 min. Those subjects declared that they knew what MI was and that they knew the characteristic features of infarct pain (Table IV).

Two hundred and five (58.7%) patients [76 (66%) females and 129 (54.8%) males], took medications (Table V). The time until an ambulance arrived was 17.9 ± 11.1 min (from 3 to 60 min, median 15.0 min). Female subjects waited for the arrival of the ambulance on average 5 min longer (20 vs. 15 min, $p < 0.01$). One hundred two (37.8%) patients went to the nearest emergency room or outpatient department and 217 (62.2%) patients called for an ambulance. The average time between onset of pain and the first contact with medical

Table I. Clinical characteristics of studied subjects

Data from medical history	Number of patients 349 (100%)	Females 114 (32.7%)	Males 235 (67.3%)	p
Age 33-55 years	118 (33.8)	24 (20.3)*	94 (79.7)*	<0.0001*
56-70 years	134 (38.4)	39 (29.1)*	95 (70.9)*	
>70 years	97 (27.8)	51 (52.6)	46 (47.4)	
Family history of CAD	254 (72.8)	83 (72.8)	171 (72.8)	NS
Hypertension	172 (49.8)	71 (62.3)	101 (43.0)	0.0007
treated	170 (97.0)	64 (56.1)	106 (45.1)	NS
Hypercholesterolaemia	101 (28.9)	50 (43.9)	51 (21.7)	<0.0001
treated	98 (97.0)	31 (27.2)	67 (28.5)	NS
Diabetes	57 (16.3)	29 (25.4)	28 (11.9)	0.0013
treated	56 (98.2)	17 (14.9)	39 (16.6)	NS
Cigarette smoking	151 (43.3)	34 (29.8)	119 (15.6)	0.0002
Overweight and obesity	241 (69.1)	78 (68.4)	163 (69.4)	NS
CAD	144 (41.3)	53 (46.5)	91 (38.7)	0.004
Prior MI	80 (22.9)	22 (19.3)	58 (24.7)	NS
pPCI	25 (31.3)	6 (5.3)	19 (8.1)	NS
CABG	3 (3.8)	–	3 (1.3)	NS

Abbreviations: CAD – coronary artery disease, MI – myocardial infarction

*p <0.0001, females, males and age ranges 33-55 years vs. 56-70 years vs. >70 years

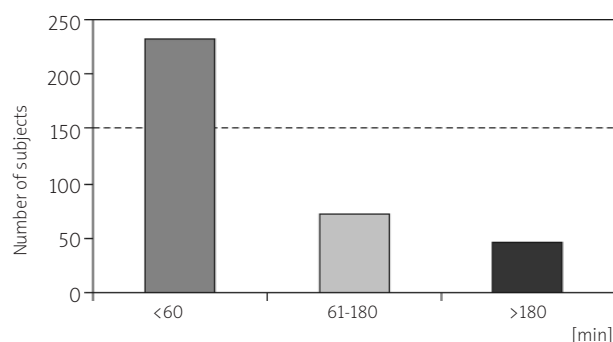
Table II. Education and professional activity in reference to gender

Professional activity	n=349 (%)	Females – 114 (%)	Males – 235 (%)
Professionally active	112 (32.1)	20 (17.5)*	92 (39.2)*
Pensioner/retired	216 (61.9)	90 (79.0)*	126 (53.6)*
Unemployed	21 (6.0)	4 (3.5)	17 (7.2)
Education			
elementary	205 (58.7)	77 (67.5)*	128 (54.5)*
secondary	99 (28.4)	30 (26.3)	69 (29.4)
university	45 (12.9)	7 (6.1)	38 (16.2)

*p <0.0001

professionals was 125.9±173.3 min (from 14 to 1160 min). It was twice as short in those patients who called the ambulance than in subjects who went to the hospital themselves – 91.1 vs. 181.3 min (p <0.0001). During the first 60 min from the onset of chest pain, only 15 (4.3%) patients with ACS were admitted to the CCU while 155 (44.4%) patients were admitted within up to three hours. Over one half of the patients (193) were admitted after 3 hours. A total of 278 (79.7%) patients were transferred to the CCU from another hospital or outpatient department.

Table VI shows the level of knowledge about MI and the risk factors of CAD, also after dividing subjects into groups

**Figure 1.** Time from the onset of chest pain and the call for medical help

of patients previously treated and untreated because of CAD (Table VII). Tables IX and X present the influence of knowledge about MI and its symptoms on the delay in the call for help and applied pharmacotherapy prior to hospitalisation. The level of knowledge about MI and its symptoms was equally low in patients who thought the symptoms would subside and assumed that these were other symptoms, and in other subjects (42.3 vs. 40.5% and 38.8 vs. 35.1%, NS).

In the studied population 40.4% of subjects were overweight and 28.7% were obese; 70.2% of surveyed males and 54.4% of females considered themselves as not having problems with increased weight.

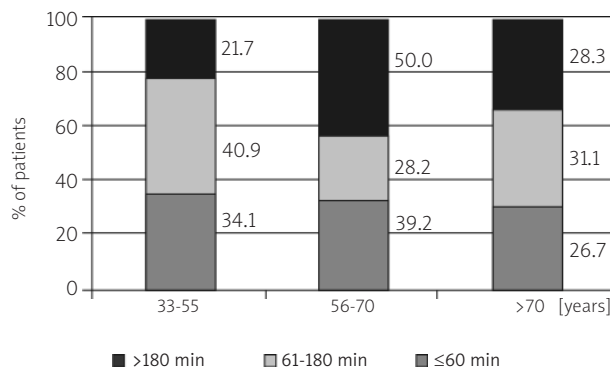


Figure 2. Time from the onset of symptoms to the call for medical help and the age of examined subjects

Table III. Time from onset of chest pain to the call for help – subgroup analysis

Variable (n)	Mean time [± SD] (min)	p
Females (114)	119.8 (176.4)	NS
Males (235)	102.5 (170.3)	
Education		NS
elementary (205)	106.0 (178.2)	
secondary (99)	124.3 (182.7)	
university (45)	82.7 (108.8)	
Professionally active (112)	82.7 (143.7)	0.02
Not working (237)	120.2 (183.3)	
Address		0.04*
Warsaw (85)	141.2 (196.3)	
other city (148)	92.4 (151.5)	
country (116)	104.2 (176.5)	
Prior MI (74)	79.9 (116.0)	NS
No history of CAD (275)	115.8 (183.9)	

* $p=0.04$ – Warsaw vs. other cities vs. country, $p=0.01$ – other cities vs. Warsaw, $p=0.01$ – country and other cities vs. Warsaw, NS – country vs. other cities, NS – country vs. city

The studied subjects indicated a physician as the major source of information (44.4%), whereas only 11.5% – a nurse (Table VIII).

Discussion

It is known that ‘time is muscle’. The faster the treatment of MI is introduced after the onset of symptoms the smaller the damage to the cardiac muscle and the better the results of treatment. It is currently known that the most difficult element of the delay in introducing treatment to be shortened is the delay in the call for help.

The studied population of 349 patients is a typical population of patients with ACS: female patients account for 30% of subjects and are approximately 10 years older than males [1-3]. The most common risk factors in female subjects are diabetes, hypertension and hypercholesterolaemia, and

Table IV. Causes of delayed call for help

Causes of delay	n (%)
Thought the symptoms would subside	201 (57.6)
Thought they were other symptoms	45 (12.9)
Consulted with the doctor	21 (6.1)
Consulted with the family	15 (4.3)
Family matters	14 (4.0)
Was outside home	9 (2.6)
Was afraid it was MI	9 (2.6)

Table V. Drugs taken by patients prior to hospitalisation

Medication	n (%)
Nitrates	103 (29.5)
Pain relief medications	47 (13.5)
Herbal and homeopathic drugs	42 (12.0)
Acetylsalicylic acid	36 (10.3)
Increased the dose of taken medications	23 (6.6)
‘Cardiac drugs’ from other members of the family	12 (3.4)
Sedative drugs	5 (1.4)

Table VI. Knowledge about coronary artery disease

Information	n (%)
Knows what MI is	145 (41.5)
Knows the characteristic features of infarct pain	130 (37.2)
Knows proper values of blood pressure	167 (47.9)
Knows proper level of cholesterol concentration (<200 mg%)	84 (24.1)
Cigarette smoking is a risk factor	331 (94.8)
Genetic factors can cause MI	171 (49.0)
Fruits and vegetables are a source of cellulose	110 (31.5)
Optimal diet – mediterranean diet	88 (25.2)
Stress is a risk factor of CAD	306 (87.7)
Gender influences the occurrence of MI	109 (31.2)
Knows what coronary angiography is	157 (45.0)
Knows what angioplasty is	123 (35.2)

in males – cigarette smoking [4-6]. More than half of examined subjects called for help very quickly – within the first hour. Over a dozen patients called for help after 3 hours. It is interesting that the greatest delay was observed in middle aged patients, mainly females. The delay in the call for help in female subjects resulted from the assumption that they were at a smaller risk for MI than males [7-9]. Additionally, women often present with atypical symptoms, and the sensitivity and specificity of ECG and exercise stress test are lower. It took more time for female subjects to call for help; however, it also took considerably more time for the

Table VII. Knowledge about myocardial infarction and risk factors of coronary artery disease vs. the history of prior treatment of coronary heart disease

	No prior treatment of CAD n=205 (%)	Prior treatment of CAD n=144 (%)	p
Knows what MI is	76 (37.1)	69 (47.9)	0.04
Knows characteristic features of infarct pain	66 (32.2)	64 (44.4)	0.02
Knows proper values of blood pressure	93 (45.4)	74 (51.4)	NS
Knows proper level of cholesterol concentration (<200 mg%)	41 (20.0)	43 (29.9)	0.03
Cigarette smoking is a risk factor	100 (48.8)	71 (49.3)	NS
Genetic factors can cause MI	66 (32.2)	44 (30.6)	NS
Fruits and vegetables are a source of cellulose	50 (24.4)	38 (26.4)	NS
Optimal diet – mediterranean diet	175 (85.4)	131 (91.0)	NS
Stress is a risk factor of CAD	65 (31.7)	44 (30.6)	NS
Gender influences the occurrence of MI	110 (53.7)	77 (53.5)	NS
Knows what coronary angiography is	77 (37.6)	80 (55.6)	0.0009
Knows what angioplasty is	61 (29.8)	62 (43.1)	0.01

ambulance to get to them. This resulted in delayed arrival at the hospital of almost 25 minutes. Females were also hospitalised longer. The observations made about female patients are in agreement with the results obtained by other authors [1, 4-6]. A lack of health insurance or living alone did not influence the delay in the call for help.

Data concerning the education of subjects with ACS, their family situation and place of living are rarely published. One might think that educated subjects who live in a city, have access to telephones and especially patients who have been suffering from CAD before, should call for help earlier. The inhabitants of Warsaw waited longer until they called for help. Perhaps the inhabitants of big cities have a sense of easier access to medical help. The study conducted by Szczepański et al. in the 1970s on the causes of delayed calling for medical help demonstrated that country dwellers wait longer than city dwellers, and the major cause was lack of knowledge about the necessity of hospitalisation and the fear of hospitalisation itself. Nowadays city dwellers delay the call for medical help more than country dwellers

Table VIII. Sources of information

Source of information	n (%)
Physicians	155 (44.4)
Radio/TV	122 (35.0)
Books/magazines	120 (34.4)
Other patients/friends	71 (20.3)
Nurses	40 (11.5)
Not interested	37 (10.6)
Internet	14 (4.0)

and the longest delay was observed in the case of Warsaw citizens. This is surprising considering the data demonstrating that city dwellers demonstrate better knowledge about MI and risk factors of CAD compared with country dwellers. In the studied group of subjects professionally active patients called for help on average 30 minutes earlier (p=0.02). It is surprising that patients treated due to CAD before did not call for medical help

Table IX. Time from the onset of chest pain to the call for help vs. the knowledge about MI and its characteristic features

Information [n]	Mean time [± SD] (min)	Median [min]	p
Knows what MI is (145)	120.3 (199.1)	40.0	NS
Does not know what MI is (204)	99.5 (150.2)	50.0	
Knows characteristic features of infarct pain (130)	98.9 (153.2)	40.0	NS
Does not know characteristic features of infarct pain (219)	113.7 (182.7)	60.0	
Thought the symptoms would subside(201)	141.8 (198.5)	60.0	<0.0001
Thought the symptoms would not subside (148)	62.5 (113.9)	20.0	
Thought they were other symptoms (45)	234.0 (268.1)	120.0	<0.0001
Did not think they were other symptoms (304)	89.6 (144.7)	40.0	

Table X. Knowledge about MI and its characteristic features vs. drugs taken prior to hospitalisation

Drugs taken prior to hospitalization	Knows what MI is n=145 (%)	Does not know what MI is n=204 (%)	p
Drugs taken	91 (62.8)	114 (55.9)	NS
Nitrates	53 (36.6)	50 (24.5)	0.02
Pain relief drugs	17 (11.7)	30 (14.7)	NS
Herbal and homeopathic drugs	9 (6.21)	33 (16.2)	0.005
Acetylsalicylic acid	22 (15.2)	14 (6.9)	0.02
Increased doses of taken drugs	14 (9.7)	9 (4.4)	0.05
'Cardiac drugs' from other members of the family	5 (3.5)	7 (3.4)	NS
Sedative drugs	1 (0.7)	4 (2.0)	NS

Table XI. Knowledge about characteristic features of the infarct pain vs. drugs taken prior to hospitalisation

	Knows characteristic features of the infarct pain n=130 n (%)	Does not know characteristic features of the infarct pain n=219 n (%)	p
Drugs taken	80 (61.5)	125 (57.1)	NS
Nitrates	46 (35.4)	57 (26.0)	NS
Pain relief drugs	17 (11.7)	30 (14.7)	NS
Herbal and homeopathic drugs	13 (10.0)	29 (13.2)	NS
Acetylsalicylic acid	19 (14.6)	17 (7.8)	0.04
Increased doses of taken drugs	14 (10.8)	9 (4.1)	0.02
'Cardiac drugs' from other members of the family	4 (3.1)	8 (3.7)	NS
Sedative drugs	2 (1.5)	3 (1.4)	NS

earlier. It means that the education that should be conducted in this population is at a very poor level.

The reasons why the call for medical help is delayed are interesting; examined subjects most often thought that the symptoms would subside or did not associate them with heart disease. Those patients who knew what MI is about took ASA ($p=0.02$) and nitrates ($p=0.02$) significantly more often. Similarly, those patients who knew the characteristic features of infarct pain took ASA ($p=0.04$) significantly more often. This pharmacological behaviour could indicate that the subjects suspected heart disease but it did not influence the time to call for help. Analysis of the median of this delay reveals that patients who did not have knowledge about MI and its symptoms delayed calling for help more. An important reason for delayed hospitalisation seems to be a denial of the disease or undervaluation of its symptoms which means that patients waited until the symptoms subside spontaneously or thought that the symptoms were not connected with heart disease. It can be assumed that if patients who thought that the symptoms would subside or did not result from heart disease had greater knowledge of MI and its symptoms, they would interpret the symptoms they experience better and their delay in calling for help would not be so much longer ($p < 0.0001$).

Our study indicates that the level of knowledge about the risk factors of CAD, and also about infarct pain, and methods of treatment and prevention, is very low (Table VI and VII). It leads to the conclusions that education associated with prior hospitalisation and chronic ambulatory treatment was hardly sufficient and the didactic methods require modification. Kubica et al. reported similar results [5, 10]. Only half of patients treated for CAD knew what a MI was and what the characteristic features of coronary pain were. The lack of knowledge about the benefits of physical activity and proper diet is disturbing. The knowledge about MI, risk factors and the rules of healthy lifestyle significantly increased along with higher education in cities and in patients who stayed professionally active. Kędzierski et al. obtained similar results [11].

Because the examined subjects indicated their doctors as the major source of information (44.4%) it seems clear that the primary care physicians should conduct intensive education of the subjects who are under their care, covering the issues of risk factors, symptoms and complications of CAD, all the more so as available studies show that around 70% of adults seek help in their local outpatient departments [12].

It is surprising that a very small number of subjects indicated nurses as those who promote knowledge about

ischaemic heart disease. Ciechaniewicz et al. present similar data [13]. It seems necessary to more intensively include nurses in the educational programme, especially as studies conducted by Motyka et al. [14] showed that patients expect to receive information about their symptoms and indications on healthy lifestyle from nurses. The sequence of indicated sources of information about ischaemic cardiac disease – doctors, media, books, other patients, friends and nurses – is the same as in the study by Kędzierski et al. [11]. It is surprising that the position of the internet is so far behind; however, this could be explained by the fact that 231 of the studied subjects were older than 56 years and were thus using the internet less often.

Modification of lifestyle requires a large-scale educational campaign that aims to inform society about the threats associated with CAD. Only adequate knowledge can influence the efficacy of primary and secondary prevention of CAD. Television, radio and press should also be used apart from professionally prepared health service staff [15]. The internet as yet plays a marginal role in this area. Education should be based on easily adapted information about the symptoms of the disease as well as about the need to immediately call for an ambulance. In Sweden in the 1990s, an educational programme lasting for a year resulted in shortening of delay to hospitalisation by 40 minutes, and such results lasted for the next 3 years. A similar effect was obtained in Germany, where the delay was shortened by 20% [16]. The suggestion made by Kruszewska et al. in 1997 [16] to incorporate the issues of primary prevention of CAD into secondary school programmes should be seriously considered.

Subjects who called for an ambulance received medical help significantly sooner than other patients. This leads to the obvious conclusion that such behaviour when chest pain occurs needs to be promoted because it shortens the time between the onset of symptoms and first contact with a doctor ($p < 0.0001$).

Conclusions

1. The main reason why patients with ACS delay their call for help is a low level of knowledge about MI, risk factors and proper behaviour when chest pain occurs. Therefore, there is an urgent need to spread such knowledge, including young healthy people.
2. Doctors and nurses should undergo proper training preparing them to conduct large-scale health education, adjusted in form and scope to specific groups.
3. Radio, television, books and magazines should be used as methods of large-scale education. The education should also be conducted in schools.

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Ostre zespoły wieńcowe – jak skrócić czas od początku bólu do leczenia?

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Streszczenie

Wstęp: Mimo ogromnego postępu w leczeniu ostrych zespołów wieńcowych (OZW) i dążenia do skrócenia czasu od początku dolegliwości do interwencji, nie udaje się skrócić czasu od początku bólu do wezwania pomocy medycznej. Wynika to najpewniej z niskiego poziomu wiedzy na temat OZW.

Cel: Celem pracy jest ustalenie przyczyn opóźnionego wzywania pomocy medycznej przez chorych z OZW i próba odpowiedzi na pytanie, jak skrócić czas od początku bólu do wezwania pomocy. Dodatkowym celem jest ustalenie poziomu wiedzy pacjentów na temat zawału mięśnia sercowego (MI).

Metody: Grupę badaną stanowiło 349 chorych leczonych z powodu OZW na Oddziale Intensywnej Terapii Kardiologicznej (OITK). Pielęgniarki OITK przeprowadzały ankietę, która zawierała 55 pytań dotyczących danych demograficznych, danych z wywiadów na temat choroby wieńcowej, czynników ryzyka, przebiegu zdarzenia od początku bólu do przyjazdu do OITK. Pytania pozwalały określić poziom wiedzy na temat czynników ryzyka choroby wieńcowej, objawów MI oraz ustalić źródła informacji o chorobie niedokrwiennej serca. Dane analizowano w zależności od płci, miejsca zamieszkania, wykształcenia, aktywności zawodowej, przebytego wcześniej MI, występowania cukrzycy, nadciśnienia tętniczego. Analizę statystyczną przeprowadzono przy użyciu programu SAS for Windows 8.02. Zmienne o wartościach ilościowych opisano za pomocą średniej arytmetycznej \pm odchylenie standardowe. Do porównywania zmiennych ciągłych stosowano testy nieparametryczne: dla dwóch grup test Wilcozona, dla trzech i więcej Kruskala-Wallis. Dane jakościowe opisano statystycznie za pomocą testu χ^2 lub dokładnego testu Fishera dla małej liczby obserwacji. Za różnicę znamioną statystycznie przyjęto wartość $p < 0,05$.

Wyniki: Czas od początku bólu do wezwania pomocy medycznej wahał się od 4 do 1140 min, czyli 19 godzin, średnio wynosił 108 min, mediana 45 min. Najbardziej opóźniony wezwanie pomocy osoby w wieku 56–70 lat; połowa z nich wezwała pomoc w czasie dłuższym niż 3 godz. od początku bólu. Dłużej zwlekały z wezwaniem pomocy kobiety, one również czekały na przyjazd pogotowia ratunkowego (PR) średnio o 5 min dłużej (20 vs 15 min, $p < 0,01$). Osoby pracujące zawodowo wzywały pomoc istotnie wcześniej – średnio po 82,7 vs 120,2 min ($p=0,02$). Mieszkańcy Warszawy wzywali pomoc istotnie później niż mieszkańcy innych miast i niż mieszkańcy wsi ($p=0,04$). Głównym powodem opóźnienia wezwania pomocy medycznej było przekonanie, że dolegliwości ustąpią – 201 (57,6%) osób oraz że są to inne, niezwiązane z sercem dolegliwości – 45 (12,9%) chorych. Tylko 41,5% badanych wie, co to jest MI, 37,2% zna cechy bólu zawałowego. Wiedza osób leczonych wcześniej z powodu choroby wieńcowej jest niewystarczająca – charakterystyczne cechy bólu zna 44,4 vs 32,2% wśród wcześniej nieleczonych ($p=0,02$), prawidłowe wartości ciśnienia tętniczego zna odpowiednio 51,4 vs 45,4% osób (NS), a cholesterolu 29,9 vs 20% ($p=0,03$). W 44,4% badani podawali lekarza jako źródło informacji, a w 11,5% – pielęgniarki.

Wnioski: Przyczyną opóźnionego wzywania pomocy przez chorych z OZW jest niski poziom wiedzy o MI, czynnikach ryzyka i postępowaniu w chwili wystąpienia dolegliwości w klatce piersiowej. Dlatego istnieje pilna konieczność propagowania wiedzy na ten temat, również wśród młodych, zdrowych ludzi. W edukacji powinni wziąć udział lekarze i pielęgniarki, należy wykorzystać radio, telewizję oraz książki i czasopisma. Edukacja powinna być także prowadzona w szkołach.

Słowa kluczowe: ostry zespół wieńcowy, czas od początku bólu do wezwania pomocy, edukacja chorych

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