WHO EMRO | Interpretation of symptoms as a cause of delays in patients with acute myocardial infarctio

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تفسير الأعراض باعتبارها سبباً لتأخر تعافي مرضى احتشا ء عضلة القلب الحاد، إسطنبول، تركيا

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: هدفت هذه الدراسة المقطعية الشاملة إلى تقييم تفسير الأعراض باعتبارها سبباالخلاصة لتأخر تعافي مرضى احتشاء عضلة القلب الحاد . أُجريت الدراسة في إحدى المستشفيات الجامعية في إسطنبول، تركيا . وشملت العينة 93 مريضاً : 73 منهم من الذكور، بمتوسط أعمار 57.89 (12.13) عاما وتراوح زمن التأخر قبل الوصول إلى المستشفى ما بين 15 دقيقة إلى 10 أيام، وبلغ الزمن الوسيط ساعتين (مدى بين الربعين : 9.50). انتظر المرضى زوال الألم (48.4%) وحاولوا تهدئة أنفسهم (39.8%). وعزا معظم المرضى الأعراض المتصلة باحتشاء عضلة القلب إلى أسباب غير أمراض القلب . ولدى إجراء تحليل انحدار لوجستي متعدد المتغيرات، صنِّف نوع احتشاء عضلة القلب استناداً إلى نتائج تخطيط كهربية القلب (OR= 5.18; 95/CI= 1.69-15.91; p= 0.004) ،المستشفى إلى الوصول قبل الطويل التأخر بزمن مستقل كمتغير وارتبط مما يدل على أن المرضى الذين يعانون من ارتفاع في الوصلة ST يسعون إلى الحصول على رعاية صحية مبكرة . ويسبب التفسير الخاطئ للأعراض والمفاهيم الخاطئة بشأن العلاج الطارئ عند حدوث احتشاء عضلة القلب إلى تأخر قبول المرضى مما قد يؤثر على علاجهم .

ABSTRACT This cross-sectional study aimed to assess interpretation of symptoms as a cause of delays in patients with acute myocardial infarction (AMI). It was conducted at a university hospital in Istanbul, Turkey. The sample included 93 patients: 73 male, mean age 57.89 (12.13) years. Prehospital delay time ranged from 15 minutes to 10 days, with a median of 2 hours (interquartile range: 9.50). Patients waited for pain to go away (48.4%) and tried to calm down (39.8%). Most patients attributed AMI-related symptoms to a reason other than heart disease. In a multivariate logistic regression analysis, the type of AMI was classified based on electrocardiography findings (odds ratio 5.18, 95% confidence interval: 1.69–15.91, P=0.004) and was independently associated with a long prehospital delay time, indicating that patients with ST segment elevation MI would seek early medical care. Misinterpretation of symptoms and misconceptions about emergency treatment during AMI cause delays in admission and may affect treatment.

L’interprétation des symptômes comme cause de délais pour les patients

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victimes d’un infarctus du myocarde aigu, Istanbul (Turquie)

RÉSUMÉ La présente étude transversale visait à évaluer l’interprétation des symptômes comme cause de délais pour les patients victimes d’un infarctus du myocarde aigu. Elle a été conduite dans un centre hospitalier universitaire à Istanbul, en Turquie. L’échantillon incluait 93 patients, dont 73 hommes, d’un âge moyen de 57,89 ans (12,13). Le temps d’attente avant de se rendre à l'hôpital était compris entre 15 minutes et 10 jours, avec une médiane de 2 heures (écart interquartile : 9,50). Les patients attendaient que la douleur disparaisse (48,4 %) et essayaient de se calmer (39,8 %). La majorité des patients attribuaient les symptômes de l’infarctus du myocarde aigu à une autre raison qu’une maladie cardiaque. À l’analyse de régression logistique multivariée, le type d’infarctus du myocarde aigu était classifié selon les résultats de l’électrocardiographie (odds ratio de 5,18, intervalle de confiance à 95 % = 1,69-15,91, p=0,004) et avaient une association indépendante avec un temps d’attente préhospitalier long, ce qui indique que les patients subissant un infarctus du myocarde aigu avec élévation du segment ST recouraient rapidement à des soins médicaux. Une mauvaise interprétation des symptômes et des idées reçues sur les traitements d’urgence prodigués lors d’un infarctus du myocarde aigu étaient à l’origine de délais d’admission et peuvent affecter le traitement.

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Introduction

Mortality associated with acute myocardial infarction (AMI) occurs within the first 2 hours after the onset of symptoms, and common complications include recurrent ischaemia, reinfarction, ventricular arrhythmia and cardiac death (1–3). The time between onset of MI symptoms and initiation of coronary reperfusion is a determining factor of morbidity and mortality (2, 4,5). Early recognition of AMI-related symptoms and strategies for enhancing early diagnosis and treatment avoid fatalities and maintain quality of life by improving coronary reperfusion and reducing the possibility of death from ventricular arrhythmia (2,6,7). Mortality rate from AMI is reported to be high before arriving in hospital (1,8). Many patients with symptoms of AMI wait for a long time before seeking treatment (9). It has been reported that the median delay in patients with AMI ranges between 1.5 and 6.5 hours (10).

Public awareness of symptoms of MI and the importance of seeking immediate treatment is vital for avoiding delays in patients with AMI and preventing associated complications. There are many factors associated with delays in seeking early medical help in patients with AMI. Many patients with MI do not associate chest pain with heart problems, and therefore, admission for treatment is delayed because of the denial of complaints (10–12). Dracup & Moser found that patients did not appraise the symptoms as serious or as originating from the heart and waited to see whether symptoms disappeared (10).

Studies conducted in Eastern Mediterranean countries found long delays among Jordanian (13,14), Egyptian (15), Greek (16) and Israeli (17) patients with AMI. Other studies in Eastern Mediterranean and Asian countries also found that the sociodemographic (6,14,15,18) and clinical (6,16,19) characteristics, interpretation of symptom nature (14,15,19,20) and transportation of patients with AMI (6,20) predicted early access to medical treatment. Cognitive status and emotional variables (14,15,21) influenced the symptom interpretation and care-seeking behaviour.

Education for early recognition of symptoms associated with AMI could help with shortening the decision time for patients and promoting active behaviour in decreasing delays in patients with AMI (6,20). Investigating the factors associated with delay in AMI patients could increase the rate of early admission and administration of interventional treatment. This study aimed to assess interpretation of symptoms as a cause of delays in patients with AMI. We asked the following questions. (1) Do patients with AMI symptoms delay seeking treatment? (2) What are the prehospital interpretations of symptoms, and the predictors that may contribute to delay in patients with AMI?

Methods

Study sample, setting and procedure

We conducted a cross-sectional study in the Cardiology Department of a university hospital in Istanbul, Turkey. Around 600 patients were treated for AMI at the hospital in 2012.

The study sample was selected using purposive sampling, which is a nonprobability sampling method. We did not use any formula for sample size calculation. All patients who were admitted to the Cardiology Department between 1 June and 31 July 2013 were invited to participate. The inclusion criteria was as follows: (1) diagnosis of AMI; (2) consent to participate in the study; (3) age ≥18 years; (4) stable haemodynamic status (normal blood pressure measurements and pulse rates, sinus rhythm, absence of arrhythmias) following emergency management

(percutaneous coronary intervention) of AMI; and (5) ability to communicate verbally, and read, understand and speak Turkish.

One hundred and twenty-six patients were approached in the 2 months. Fourteen patients were excluded because they did not have a stable haemodynamic condition or underwent some additional therapeutic interventions for AMI (e.g., elective angiography); 12 patients were not willing to participate in the study; 2 patients were unable to communicate due to symptoms or memory loss; and 5 patients felt too tired to participate. In total, 93 AMI patients participated in the study.

Ethical considerations

The research conformed to scientific and ethical principles outlined in the Declaration of Helsinki. Approval was obtained from the Ethics Committee of the hospital prior to the study. The study was approved by the Hospital Review Board. Patients were informed about the purpose of the study and guaranteed confidentiality. All patients enrolled in the study gave written informed consent to participate in the study.

Data collection

After obtaining signed informed consent, all participant information was collected from the patients themselves and medical records. Face-to-face interviews were carried out in a private/separate area for an average of 20 minutes. Data about symptoms of MI and treatment-seeking behaviour were collected at 24 hours after admission to the hospital. Two data collection tools were used: Patient Information Form and the Interpretation of Symptoms and Prehospital Delay Survey.

Sociodemographic characteristics and health-related information were obtained using the Patient Information Form. It is reported that sociodemographic and clinical characteristics, clinical symptoms, symptom interpretations and expectations, and cognitive and emotional variables are closely associated with prehospital delay in patients with AMI (6,13–16). Consistent with previous studies, the Patient Information Form included questions for assessment of variables associated with prehospital delay in patients with AMI.

The Interpretation of Symptoms and Prehospital Delay Survey was prepared by researchers based on previous studies to assess the patients' symptom interpretation and factors associated with a delay between onset of AMI symptoms and hospital arrival (10,22). The questionnaire/survey was tested in a pilot study with 15 patients. Participants were asked for

their comments on the clarity of each item. The feedback was assessed and small corrections were made. These 15 patients were not included in the current study sample.

The first section of the survey included questions about the presence, characteristics, onset and severity of symptoms (e.g., chest pain, cold sweating, weakness, shortness of breath, nausea, vomiting and palpitations) experienced due to AMI. Patients were asked to rate the severity of symptoms experienced during AMI between 0 and 10 (0 = none, 5 = moderate, 10 = severe). The second section comprised structured, multiple choice and semistructured questions. Prehospital delay time was recorded in minutes. Patients were classified as early (≤2 hours) or late (>2 hours) arrivers according to the time of onset of symptoms and arrival at the hospital. The third section of the survey consisted of nine structured statements, which described the interpretations of symptoms. Patients were asked to answer each statement on a 5-point Likert-type scale: strongly disagree (1), disagree (2), not sure (3), agree (4) and strongly agree (5). The total score ranged from 9 to 45. A higher score indicated that patients tended to underestimate the effects of AMI and misinterpret cardiac symptoms. The Cronbach α reliability coefficient of the third section was 0.79.

Data analysis

The data of 93 patients were analysed using SPSS version 16.0. Some descriptive statistics tools, including frequency, mean, standard deviation (SD) and percentage, were used to describe the data. The Kolmogorov–Smirnov test was used to determine the suitability of data with a normal distribution. The statistical significance was 5% ($P \leq 0.05$) in all analyses. Mean scores for the Interpretation of Symptoms and Prehospital Delay Survey were compared with independent variables. The Mann–Whitney U test, a nonparametric test, was used to compare differences between two independent variables. The Kruskal–Wallis test was used to compare among > 2 independent variables. Spearman correlation analysis was used to determine relationships between variables. The early and late responders were identified with respect to certain characteristics such as sex, age group, history of heart disease and family history of heart disease. Multivariate logistic regression analysis was applied to find independent factors associated with prehospital delay. Medians and interquartile ranges (IQRs) were calculated for the delay time. The bootstrap method was used to calculate odds ratio (OR) and 95% confidence interval (CI).

Results

Sociodemographic and clinical characteristics of participants

The mean age of the patients was 57.89 (SD 12.13) years (range: 37–82 years) and 78.5% were male (Table 1). The majority of the patients (61.3%) were diagnosed with ST segment elevation myocardial infarction (STEMI).

The first complaints of patients with AMI were reported as chest pain [8.24 (2.38)], cold sweating [5.71 (4.15)], weakness [5.20 (4.32)], shortness of breath [4.20 (4.38)], stress/panic [4.13 (4.20)], nausea/vomiting [3.04 (4.06)], palpitations [2.18 (3.43)] and indigestion [2.24 (3.63)]. Two-thirds of the patients (66.7%) felt anxious when they experienced symptoms associated with AMI. The most severe symptoms experienced by patients with MI were chest pain [8.24 (2.38)], cold sweating [5.71 (4.15)], weakness [5.20 (4.32)], feeling stressful/anxious [4.20 (4.38)], shortness of breath [4.13 (4.20)], nausea/vomiting [3.04 (4.06)], indigestion [2.24 (3.63)] and palpitation [2.18 (3.43)].

Patients' delay in seeking treatment for AMI symptoms

Prehospital delay time ranged from 15 minutes to 10 days. The median (25th, 75th percentiles) delay time was 2 hours (1, 10.5 hours), IQR was 9.50. The information about the number of patients who were early (≤ 2 hours) or late (> 2 hours) arrivers to the hospital is presented in Table 2
.

Patients reported that they reached the hospital most frequently by taxi, private car, ambulance, public transport or walking. While 52.7% of the patients presented directly to the emergency department, 47.3% were transferred from a medical centre to the current hospital for treatment. More than half of the patients (55.9%) came to the hospital with one of their relatives, 18.3% of them arrived alone, 18.3% of them arrived with their spouses and 7.5% of them arrived with friends.

The patients' AMI symptoms most frequently began at home, and the patients frequently reported that they were with one of their family members, spouse or a friend. Nearly half (45.2%) of the patients reported that they were directed to the hospital by the person who was with them. When the patients first noticed their cardiac symptoms, they waited for the pain to disappear (48.4%), tried to calm down (39.8%), began to think about going to the hospital (35.5%), tried to convince themselves that they were not having a critical health problem (34.4%), used medication (34.4%), went to the hospital (33.3%), tried to relax (31.2%), tried not to think about their complaints (14%), or prayed for symptoms to disappear (15.1%). Only a small group of patients called the ambulance (emergency service) (3.2%) or went to the doctor (1.1%) as a first action when they noticed their AMI symptoms.

Symptom interpretation and predictors that may contribute to prehospital delay

Patients often associated their AMI-related complaints with reasons other than heart disease. Most of the patients (81.7%) stated that awareness or understanding of which symptoms are indicative of heart problems would significantly increase the rate of admission to the hospital.

Most of the patients (33.3%) stated that they did not consider their complaints to be serious and expected to recover (Table 3). Most patients (43%) reported that their complaints were ongoing and they did not immediately cease. The majority (45.2%) of the patients reported that they did not attribute symptoms to cardiac causes. From the Interpretation of Symptoms and Prehospital Delay Survey, the response “I could not understand that the complaints were related to the heart” had the highest score [3.62 (1.48)], and “I thought that the complaints were due to my age” had the lowest score [2.75 (1.29)]. The mean score was 28.32 (7.69) (range: 9–45).

We found significant differences between scores with respect to type of AMI and a history of heart disease (P Table 4). The scores of the patients diagnosed with non-ST segment elevation myocardial infarction (NSTEMI) [30.89 (6.02)] were significantly higher than the scores of patients diagnosed with STEMI [26.70 (8.23)] (Zmwu = –2.134, P = 0.033). The scores of the patients with no history of heart disease [29.29 (7.50)] were significantly higher than the scores of patients with a history of heart disease [25.39 (7.69)] (Zmwu = –1.968, P = 0.049). There were no significant differences in the Interpretation of Symptoms and Prehospital Delay Survey with regard to sex or education level (P > 0.05). In addition, there were no significant differences with respect to the regularity of health control, history of bypass surgery, a history of chronic disease, or family history of heart disease (P > 0.05). There were also no significant differences in the Interpretation of Symptoms and Prehospital Delay Survey scores with regard to variables such as a mode of transportation to the hospital, person (companion/attendant/escort) who came to the hospital with the patient, presence of anxiety when complaints began and knowledge about the aetiology of these complaints (P > 0.05).

Older patients (aged ≥ 60 years) obtained higher survey scores than younger patients (P

In a multivariate logistic regression analysis, the type of AMI (OR: 5.18, 95% CI: 1.69–15.91, P = 0.004) was independently associated with a long prehospital delay time, indicating that patients with STEMI would seek early and immediate medical care (Table 5).

Discussion

The success of treatment and better outcomes in patients with AMI depends on early initiation of interventions. The duration between the onset of symptoms and initiation of treatment is long for most patients (23–25). In the current study, the prehospital delay time ranged from 15 minutes to 10 days, and the median prehospital delay was 2 hours.

Patients cannot appraise their symptoms as serious or originating from the heart and thus

arrival to hospital is delayed (11,26). One study reported that the patients with AMI (41%) did not interpret their symptoms as being of cardiac origin (27). Other studies have reported that delays were longer in patients with AMI who did not appraise their symptoms as being serious or originating from the heart (7,10,12,28). Mussi et al. found that those who did not recognize the symptoms of AMI and did not manage pain effectively took longer before deciding to seek treatment and present to a hospital (7). Recognizing that symptoms are coming from the heart is an important factor leading patients to seek early hospital treatment (11,12).

Patients with AMI often tend to rest, wait for their symptoms to cease and pray for recovery at the onset of symptoms (10,11,24). Consistent with these studies, we found that patients waited for recovery and tried to calm themselves down when they first noticed their complaints. These findings show the need for public education that is aimed at increasing awareness of symptoms of AMI and the importance of shortening delay in seeking assistance.

Lack of knowledge about specialized facilities for primary cardiac interventions for AMI, and transportation to the hospital, are the leading causes of delays. Nearly half of the current sample (47.3%) was transferred from another medical centre to the university hospital for emergency treatment. Transfer from one medical centre to another causes delays for early treatment of AMI. This indicates the importance of increasing public awareness about specialized hospitals for urgent treatment of AMI. Increasing the number of specialized centres for emergency intervention, increasing awareness among at-risk groups about specialized cardiac units, and informing healthcare professionals about the urgent healthcare chain will help avoid delays.

The support of family and friends is crucial in emergency cases. In the current study, cardiac complaints began at home for two-thirds of the patients. One-third of the patients had one of their family members with them during the onset of symptoms, and approximately half of the patients were directed to the hospital by the person who was with them when they experienced complaints.

The current study was limited by the small sample of 93 patients who were hospitalized. The data on delays were collected using a survey prepared by the researcher, therefore, data collection was subjective.

In conclusion, understanding the associations of symptom interpretation and early symptoms with prehospital delay will help clinicians to develop strategies to increase public awareness of

the importance of acting timely with suspected AMI. Our results reveal that increasing awareness of AMI symptoms, support for interpretation of AMI-related symptoms, and timely medical and social support will shorten delays. A further study should be conducted to investigate the influence of traffic problems in Istanbul on delay in reaching the hospital.

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