

Evaluation of The Patients Discharged from Emergency Department with Non-specific Chest Pain

Acil Servisten Non-spesifik Göğüs Ağrısı ile Taburcu Olan Hastaların Değerlendirilmesi

Ali Duman, Ayhan Aköz, Bekir Dağlı, Mücahit Kapçı, Ümran Gürbilek, Kenan Ahmet Türkoğlan

Adnan Menderes University Faculty of Medicine, Department of Emergency Medicine, Aydın, Turkey



Abstract

Objective: The aim of this study is to evaluate 6-month fate of the patients who were discharged from the emergency department with the diagnosis of non-specific chest pain.

Materials and Methods: Forty patients aged 18 and over admitted to medical faculty hospital, emergency department with the complaint of chest pain and discharged with the diagnosis of non-specific chest pain were included in the study. The patients were followed up via university and state hospital database for 6 months. The patients were also interviewed via telephone calls.

Results: The mean age of the patients was 54.1 ± 17.3 years. Of the patients, 22 (55%) were male and 18 (45%) were female. Of the patients, 11 were diagnosed with non-specific chest pain, 1 (2.5%) panic attack and 3 (7.5%) coronary artery disease after the angiography. In six-month follow-up, 1 patient (2.5%) died at Aydın Atatürk State Hospital due to cardiac arrest.

Conclusion: The management of patients with chest pain is a common and challenging clinical problem in the emergency department. With the early diagnosis and treatment after a careful evaluation, life-threatening diseases can be prevented and health care costs can be reduced. We are in the opinion that this group of patients should be further examined in outpatient clinics at the proper time after the discharge from the emergency department.

Keywords

Non-specific chest pain, emergency department, discharged

Anahtar Kelimeler

Non-spesifik göğüs ağrısı, acil servis, taburculuk

Received/Geliş Tarihi : 30.09.2016

Accepted/Kabul Tarihi : 25.10.2016

doi:10.4274/meandros.2997

Address for Correspondence/Yazışma Adresi:

Ali Duman MD,
Adnan Menderes University Faculty of
Medicine, Department of Emergency Medicine,
Aydın, Turkey
E-mail : aliduman3489@gmail.com
ORCID ID: orcid.org/0000-0001-9461-5812

©Meandros Medical and Dental Journal, Published by Galenos Publishing House.
This is article distributed under the terms of the Creative Commons Attribution NonCommercial 4.0 International Licence (CC BY-NC 4.0).

Öz

Amaç: Çalışmamızda acil servisten non-spesifik göğüs ağrısı tanısıyla taburcu edilen hastaların 6 aylık akıbetlerinin değerlendirilmesi amaçlanmıştır.

Gereç ve Yöntemler: Çalışmaya 1 ay süresince tıp fakültesi hastanesi acil servise göğüs ağrısı şikayeti ile başvuran on sekiz yaş üstü yapılan tetkik ve takip sonrası non-spesifik göğüs ağrısı tanısı ile taburcu olan 40 hasta alındı. Hastalar 6 ay süresince üniversite ve devlet hastaneleri veri tabanından takip edildi. Aynı zamanda telefon ile kendisi veya yakınından bilgi alındı.

Bulgular: Çalışmaya dahil edilen 40 hastanın yaş ortalaması $54,1 \pm 17,3$ yılı. Hastaların 22'si (%55) erkek, 18'i (%45) kadındı. Hastaların 11 tanesi non-spesifik göğüs ağrısı ve 1 tanesi panik atak tanısı alırken 3 hastaya (%7,5) yapılan anjiyo sonrası koroner arter hastalığı tanısı konmuştur. Altı aylık takip sonucunda 1 hasta (%2,5) arrest olarak götürüldüğü Aydın Atatürk Devlet Hastanesi'nde eks olmuştur.

Sonuç: Göğüs ağrısı yönetimi acil serviste en büyük zorluklardan biridir. Dikkatli değerlendirme sonrası erken tanı ve tedavi ile ciddi hayatı tehdit eden hastalıklar

önlenebilir ve sağlık maliyetleri düşürülebilir. Bu hastaların acil servis taburculuğundan sonra uygun zamanda poliklinik kontrolleri ve ileri tetkiklerinin yapılması gerektiğini düşünmekteyiz.

Introduction

Chest pain accounts for approximately six million annual visits to emergency departments in the United States, making chest pain the major cause of morbidity and mortality associated with coronary artery disease. Approximately 2% of patients with acute coronary syndrome are mistakenly discharged from the emergency department (1). The most common difficulty encountered in evaluating the patients with chest pain in the emergency room is the large numbers of diseases that may lead these symptoms and difficulties in establishing the differential diagnosis. The first step in the differential diagnosis is the detection of cardiac or non-cardiac life-threatening conditions such as acute coronary syndrome, pulmonary embolism, aortic dissection and the planning of emergency treatment (2). As well as symptoms promptly detected and treated in differential chest pain, there are many other symptoms with low mortality. These groups of chest pains usually result from musculoskeletal system, gastrointestinal tract and psychogenic origin. These symptoms generally cannot be examined in the emergency department in detail and after eliminating the life-threatening situations the patients are discharged from the hospital with the diagnosis of non-specific chest pain (NSCP). Approximately 40-60 percent of the patients admitted to the emergency department with chest pain are discharged with the diagnosis of NSCP. The patients discharged from the hospital with the diagnosis of NSCP have lower mortality rates and studies showed that these groups of patients frequently apply to hospitals and have repeatedly diagnostic tests (3).

The aim of this study is to evaluate 6-month fate of the patients who were discharged from the emergency department with the diagnosis of NSCP.

Materials and Methods

After obtaining the approval of the Adnan Menderes University Faculty of Medicine of Local Ethics Committee (2015/627), this prospective cross-sectional clinical study was scheduled to be completed in six months. Informed consent was

received all of patients. Forty patients aged 18 and over admitted to medical faculty hospital, emergency department with the complaint of chest pain and discharged with the diagnosis of NSCP were included in the study. Electrocardiography (ECG) and chest X-rays were performed and troponin and Creatine Kinase-MB (CK-MB) were studied. The cut-off limit of ≤ 5.0 $\mu\text{g/L}$ was used for CK-MB and ≤ 0.10 $\mu\text{g/L}$ for troponin in ruling out myocardial infarction (4). The patients were observed for 4 to 12 hours. The patients were included in the study after evaluated by the emergency medicine and cardiology specialist without any intervention to the evaluation and treatment processes. After obtaining the informed consents, patient age, gender, complaints, history and laboratory and ECG results were recorded. The patients were followed up via university and state hospital database for 6 months. The patients were also interviewed via telephone calls. Exclusion criteria are as follows: trauma patients, patients under the age of 18, unconscious patients, those admitted to emergency department with cardiopulmonary arrest, those having no history of chest pain and patients who were reluctant to participate in the study.

The SPSS (Statistical Package for the Social Sciences) (SPSS for Windows, Version 18.0; Chicago, IL, USA) package program was used for the statistics used in the study. Descriptive statistics of the categorical variables were shown in numbers (%). Kolmogorov-Smirnov test was used to test whether continuous variables were normally distributes. Since age was normally distributed, descriptive statistics were shown as average \pm standard deviation.

Results

The mean age of the patients was 54.1 ± 17.3 years (range 20-87 years). Of the patients, 22 (55%) were male and 18 (45%) were female. Four patients (10%) had diabetes, 8 patients (20%) hypertension, 6 patients (15%) coronary artery disease, 1 patient (2.5%) chronic obstructive pulmonary disease and 3 patients (7.5%) had other diseases. On the other hand, there was no additional disease in 18 patients. While 14 (35%) patients were on regular medication, 26

(65%) patients did not use drugs. ECGs examination of the patients revealed normal ECG in 26 (65%) patients and non-specific ST and T changes in 14 patients (35%). Fifteen patients (37.5%) reapplied to the hospitals with the complaint of chest pain during the 6-month follow-up. Of these admissions, 7 (17.5%) were to university school of medicine, 8 (20%) were to state hospital. Of the patients, 11 were diagnosed with NSCP, 1 (25) panic attack and 3 (7.5%) coronary artery disease after the angiography (Table 1). In six-month follow-up, 1 patient (2.5%) died at state hospital due to cardiac arrest.

Discussion

The management of patients with chest pain is a common and challenging clinical problem in the emergency department. This symptom is the second most common cause of emergency department visits in the United States and accounts for 5-20% of all admissions. Approximately half of the cases are cardiac-origin and chest pain results from ischemic or non-ischemic heart disease. The other half is due to non-cardiac causes, primarily esophageal disorder (5).

In the literature, the mean ages were 56.9 ± 19 , 41.35 ± 12.20 and 59.6 ± 13.7 years (1,5,6). In these studies, 52.6%, 58.4% and 44.8% of the patients were male, respectively (1,6,7). The mean age and sex ratio in our study is consistent with the literature.

In the study of Leite et al. (5), additional diseases such as hypertension (in 50.7%), diabetes (in 11.8%), coronary artery disease (in 12.7%), atrial fibrillation (in 18.5%), heart failure (in 16.6%) and chronic pulmonary

obstructive disease (in 7.6%) were present. In their study, Coşkun et al. (7) found comorbid diabetes mellitus, coronary artery disease and hyperlipidemia in 13.6%, 26.8% and 4.1% of the patients, respectively. Additional diseases such as coronary artery disease or angina (27.6%), hypercholesterolemia (32.8%) and hypertension (67.7%) were detected in the study of Lai et al. (1). Consistent with the literature, coronary artery disease, diabetes and hypertension were the most common additional diseases in our patient group.

In the study of Lai et al. (1), ECG examination revealed non-specific ST-T wave changes (41.9%), normal ECG (36.9%) and old infarction (5.8%). In our study, 65% of the patients had normal ECG whereas 35% had non-specific ST-T wave changes.

In the study of Lai et al. (1), the number of readmissions of the patients who were previously admitted to the emergency department with the complaint of chest pain was 27 (7.0%). On the second admission, while 5 patients were discharged, 19 were hospitalized. Eight patients were hospitalized for cardiac evaluation; four had normal results; three had coronary artery disease and one had ambiguous results. Two patients died due to out-of-hospital cardiac arrest in the follow-up; one is 4 and the other is 49 days after emergency department evaluation (1). In their study, Kirk et al. (8) followed up the patients with negative or non-diagnostic exercise stress tests for 30 days. During the 30-day follow up, despite the readmission rate of 10.7%, no cardiac mortality was observed. Polanczyk et al. (9) reported hospital

Table 1. Details of the patients with a post-discharge coronary artery disease

Presentation	Cardiac markers	Outcome
Sixty five-year-old man No history of heart disease Non-specific ST-T wave changes	Troponin I: 0.01 µg/L CK-MB: 0.4 µg/L	Department of cardiology, state hospital Coronary artery disease
Sixty two-year-old man Known coronary artery disease on recent angiogram, diabetes mellitus, hypertension Non-specific ST-T wave changes	Troponin I: 0.29 µg/L CK-MB: 1.3 µg/L	Department of cardiology and emergency medicine, medical faculty Coronary artery disease
Seventy nine-year-old man Known coronary artery disease on recent angiogram, diabetes mellitus, hypertension Non-specific ST-T wave changes Normal electrocardiography	Troponin I: 0.058 µg/L CK-MB: 1.2 µg/L	Department of cardiology, medical faculty Coronary artery disease

CK-MB: Creatine Kinase-MB

readmission rate of 17% in patients with negative stress test. During six-month follow up, myocardial infarction coronary artery bypass graft and angioplasty (2%) were detected. In the study of Leite et al. (5), of the 211 patients discharged from the hospital with the diagnosis of non-cardiac chest pain, three patients (1.4%) applied to the emergency service for cardiac reasons within 6 weeks. In our study, 15 patients (37.5%) reapplied to the hospital for chest pain. Three patients (7.5%) received the diagnosis of coronary artery disease after the angiography. Higher readmission rates were observed in our study compared to similar studies in the literature. This difference may be contributed to the different patient group (studies in the literature mostly involve patients admitted to the emergency department with all type of chest pain and non-cardiac chest pain) and the duration of follow up period (6 months). At the same time, our study involved patients who were discharged from the emergency department with the diagnosis of NSCP and those frequently change doctor or hospital. Having higher readmission rate in the patient group diagnosed with coronary disease in our study can be explained by the following reasons; first the number of patients in our study was relatively less than the others in the literature. Second, studies in the literature mostly involve the patients further examined in cardiology or chest pain units. The number of patients who died in the follow-up in our study is consistent with those in the literature.

Conclusion

NSCP is a compelling and common condition in clinical practice. With the early diagnosis and treatment after a careful evaluation, life-threatening diseases can be prevented and health care costs can be reduced. We are in the opinion that this group of patients should be further examined in outpatient clinics at the proper time after the discharge from the emergency department.

Ethics

Ethics Committee Approval: The study was approved by the Adnan Menderes University Faculty of Medicine of Local Ethics Committee (2015/627).

Informed Consent: Consent form was filled out by all participants.

Peer-review: Internally peer-reviewed.

Authorship Contributions

Concept: A.D., A.A., Design: A.D., Data Collection or Processing: Ü.G., M.K., Analysis or Interpretation: K.A.T., A.A., Literature Search: B.D., Writing: A.D.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study has received no financial support.

References

1. Lai C, Noeller TP, Schmidt K, King P, Emerman CL. Short-term risk after initial observation for chest pain. *J Emerg Med* 2003; 25: 357-62.
2. Demiryöğüran NS, Topaçoğlu H, Karcioğlu Ö. Nonspesifik Göğüs Ağrılı Hastalarda Anksiyete Bozukluğu. *DEÜ Tıp Fakültesi Derg* 2005; 19: 127-32.
3. Seo TH, Kim JH, Lee JH, Ko SY, Hong SN, Sung IK, et al. Clinical distinct features of noncardiac chest pain in young patients. *J Neurogastroenterol Motil* 2010; 16: 166-71.
4. Koukkunen H, Pyrala K, O Halinen M. Low-risk patients with chest pain and without evidence of myocardial infarction may be safely discharged from emergency department. *Eur Heart J* 2004; 25: 329-34.
5. Leite L, Baptista R, Leitão J, Cochicho J, Breda F, Elvas L, et al. Chest pain in the emergency department: risk stratification with Manchester triage system and HEART score. *BMC Cardiovascular Disord* 2015; 15: 48.
6. Yazkan R, Han S. Multidisciplinary Evaluation of Noncardiac Chest Pain. *J Clin Anal Med* 2012; 3: 296-9.
7. Coşkun SÖ, Parlak İ, Değerli V, Elçin G, Denizliñoğlu B, Yıldırım E, et al. Evaluating The Acute Coronary Syndrome Rates of The Patients Who Apply To Emergency Service With Chest Pain. *Medical Journal of İzmir Hospital* 2015; 19: 84-94.
8. Kirk JD, Turnipseed S, Lewis WR, Amsterdam EA. Evaluation of chest pain in low-risk patients presenting to the emergency department: the role of immediate exercise testing. *Ann Emerg Med* 1998; 32: 1-7.
9. Polanczyk CA, Johnson PA, Hartley LH, Walls RM, Shaykevich S, Lee TH. Clinical correlates and prognostic significance of early negative exercise tolerance in patients with acute chest pain seen in the hospital emergency department. *Am J Cardiol* 1998; 81: 288-92.