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ORIGINAL ARTICLE

Effect of chronic opioid using on three-month-survival of patients suffering from acute myocardial infarction

Hossein Saidi[1], Kaveh Naderi[1], Farahnaz Janmohammadi[2], Leili Namdari[1], Amir Noyani[3], Mahdi Rezai[1], Manizhe Nasirizade[4]✉

[1]*Emergency Medicine Management Research Center, Iran University of Medical Sciences, Tehran, Iran*

[2]*Student Research Committee, School of Medicine, Iran University of Medical Sciences, Tehran, Iran*

[3]*Clinical Research Development Unit, Imam Hossein Hospital, Shahroud University of Medical Sciences, Shahroud, Iran*

[4]*Faculty of Nursing and Midwifery College, Birjand University of Medical Sciences, Birjand, Iran*

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Abstract

Introduction: Although various factors have been recognized influencing the short-term and long-term survival of patients suffering from a heart attack, there are some other factors that have not been determined as prognostic factors affecting the survival of patients. One of these factors is the history of opioid use among patients. This study was conducted to investigate the relationship between the survival of patients suffering from acute myocardial infarction (AMI) and the use of opioids.

Methods: This prospective cohort study was carried out on 222 patients suffering from AMI admitted to two teaching hospitals. The patients who passed away in the emergency department were excluded from this study. All patients were divided into two consumers or non-consumers groups according to the past and present use of opioids. The patients' status was investigated within 3 months of hospitalization while their clinical symptoms were recorded. The collected data were analyzed in SPSS software(version 18) using the Mann–Whitney U test and independent t-test. A p-value of < 0.05 was considered significant.

Results: The mean age scores of subjects in case and control groups were 61.3±13.2 and 61.5±12.6, respectively. Both groups had the same history of diabetes, hyperlipidemia, hypertension, and ischemic heart disease. Based on the results, although the mean score of survival of patients in the opioid user group was slightly higher than that in the control group within 1, 2, and 3 months after the hospitalization, this difference was not significant (P>0.05).

Conclusions: Opioid use has not any significant effect on the pain severity or mortality (survival) of patients after heart attack during 1, 2, or 3 months.

Key words: Ischemic heart disease, Opioid, Survival

Introduction

Acute myocardial infarction (AMI) is one of the main reasons for mortality and the most common and life-threatening diseases in the United States (1, 2). In the underdeveloped countries, especially in Iran, cardiovascular diseases are the most important mortality factors imposing considerable costs on the patients by decreasing life expectancy and increasing mortality rate among young patients (3). In addition, the changes in lifestyles and socioeconomic factors have led to an increase

@2020Journal of Surgery and Trauma
Tel: +985632381203
Fax: +985632440488
Po Bax 97175-379
Email: jsurgery@bums.ac.ir

✉**Correspondence to:**
Manizhe Nasirizade, Faculty of Nursing and Midwifery College, Birjand University of Medical Sciences, Birjand, Iran;
Telephone Number: +989151611519
Email Address: m.nassirizadeh@yahoo.com

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in coronary artery disease (CAD) risk factors, making these factors one of the serious threats for human life (4).

Among various measures influencing the survival of patients suffering from AMI, the prompt treatment of making regulation of coronary blood flow at the beginning hours of AMI incidence is the most important intervention (5). According to the results of studies carried out by the World Health Organization in 21 countries, Monica Project, the average scores of heart attack mortality during 28 days after its occurrence were 49% and 45% among males and females, respectively (6). Although various factors have been known as being effective on short-term and long-term survival of patients suffering from a heart attack, there are still some other factors, not being determined as definite, having an impact on the occurrence of this disease. One of these factors is considered to be the use of opioids which has been wrongly believed by the public as an effective factor in the prevention of heart attack or survival of such patients (7-9). In research conducted by Masoomi et al., opioid use among patients suffering from an acute heart attack was considered as an independent risk factor (10). In another study carried out by Bafghi et al. on 536 patients, opioid use was a risk factor for coronary artery disease occurrence (11). To the best of our knowledge, no special research has been performed investigating the relationship between the use of opioids and the survival of patients suffering from AMI. Therefore, this simulation study was conducted to investigate the relationship between the use of opioid and short-term and long-term survival of patients.

Methods

This prospective cohort study was performed on 222 patients suffering from AMI admitted to Sina and Hazrat Rasool Akram teaching hospitals, Tehran, Iran. This study was approved by the Ethics Committee of Iran University of Medical Sciences (1396.8821215192). The patients who passed away in the emergency department were not included in this study, while those hospitalizing in the Coronary Care Unit (CCU) were interned into the study.

The subjects were diagnosed with AMI, based on the information obtained from their symptoms and signs, an increase in cardiac enzymes (e.g., troponin), and changes in the electrocardiogram (i.e., ST elevation or non-ST elevation). Subsequently, a demographic form, consisting of information about the disease, gender, socioeconomic status, and history of diabetes disease, hyperlipidemias, and opioid use, was filled out. All patients were categorized into two groups, namely consumers and non-consumers, with the criterion of using opioids. The risk factors for mortality decrease, such as smoking, hyperlipidemia, and diabetes mellitus, were similar in both groups (P>0.05). The demographic form was completed through surveying patients and their families, reviewing their hospital documents, and considering patients' examination results.

The patients in both groups were monitored under the supervision of the emergency medicine specialist and the cardiology consultant. The status of patients was investigated during 3 months of their hospitalization by monthly examination and phone contact. The patients using ecstasy with opioids were excluded from the study.

Finally, the obtained results after 1, 2, and 3 months were compared between the two groups. The collected data were analyzed in SPSS software (version 18) using independent t-test and Mann-Whitney U tests. Quantitative variables were reported as mean±standard deviation, while frequency and frequency percentages were used to report qualitative variables. A binomial test was also used for comparison of proportions. Based on the results, the p-value of < 0.05 was considered significant.

Results

The most common presenting symptoms were chest pain, chest discomfort, and shortness of breath. Among the subjects, 43 and 31 cases, respectively in consumer and non-consumer groups, received fibrinolytic treatment. Table 1 represents the main demographic information of

Table 1: Demographic information of participants

	Opium users	Non-opium users	P-value
Male/Female ratio	5/2	2/1	<0.001*
History of hospital admission	47.9%	51.9%	0.320
Diabetes mellitus	31.4%	30.8%	0.521
Hyperlipidemia	27.1%	37.5%	0.067
Hypertension	39.8%	52.9%	0.035*
Ischemic heart disease	27.1%	32.0%	0.257

* p-value of = 0.05 considered significant

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Table 2: Comparison of some results between groups

	Opium users	Non-opium Users	P-value
Age	61.3±13.2	61.5±12.6	0.97
Pain Score	6.4±1.2	6.8±2.1	0.51
Length of CCU stay	5.5±2	6±3	0.88
1 month survival	97.5%	97.1%	0.59
3 months survival	94.1%	91.3%	0.3

the subjects in the two groups. Accordingly, the percentages of female/male ratio and hypertension are more significant among non-consumers (P-value<0.001 and P-value=0.035, respectively).

The mean score of age was not significant between the two groups (P=0.97). Moreover, it was revealed that the pain scores at the baseline were similar in the two groups (P=0.339). In addition, there no significant difference was observed between the length of stay in the CCU ward between the groups (P=0.88; Table 2).

The survival rate in both groups was more than 97% at the end of the first month of hospitalization (97.1% and 97.5% in non-consumer and opioid user groups, respectively). Furthermore, no significant difference was revealed between the two groups in this regard (P=0.597). Although the survival rate of subjects in the consumer group was slightly higher than that in the non-consumer group after the second month of hospitalization, this difference was not statistically significant (P=0.30). The same result was found out after the third month of hospitalization with 94.1% and 91.3% rates of survival in the non-consumer and consumer groups, respectively. However, this difference was not significant (P=0.30).

Discussion

One of the major problems in every society is opium abuse, including Iran (12). The available evidence regarding the consequences of chronic opioid usage was not straightforward. Some researchers stated chronic opioid takings may lead to the increased risk of a number of such adverse outcomes as cardiovascular disease (13-15). On the other hand, some researchers believe that opioids may ameliorate the incidence of certain diseases, such as diabetes mellitus and cardiovascular disease (7).

As mentioned in previous studies, the mortality rates are higher among the opioid-addicted than the general population (16). However, in this study, the survival of patients after hospitalization was more than 97%, and According to the results of studies carried out by the World Health Organization in 21 countries, Monica Project, the average scores of heart attack mortality during 28 days after its occurrence were 49% and 45% among males and females, respectively (6). Furthermore, in another study, the survival of opium users admitted to CCU with MI was slightly less than that of non-users (8). Harati et al. showed that the mortality rate of patients with MI who were either opium-dependent or non-opium-dependent was similar (9). The results of the regression analysis performed by Sadeghian et al. revealed that opium addiction was not an independent risk factor for mortality. In the mentioned study, the mortality rate among ST-elevation myocardial infarction and non-ST-elevation myocardial infarction patients were 5.5% and 2.4%, respectively, after 30 days, which were similar to the results of our study (17). In the current study, the high survival rate of subjects in both groups could be due to the proper treatment or prompt diagnosis of MI. The survival rate discrepancy between the present study and the MONICA project can be the exclusion of patients passed away in the emergency department during the first hours in our study.

In recent studies, the different effects of opium on heart attack patients have been reported. For instance, in two different studies, opioids were considered among the independent risk factors for coronary artery diseases (10, 18). While in another study carried out on addicted patients to opioids in New York for 20 years, the long-time use of opioids resulted in the decrease of coroner artery disease severity (7). The survival rates of opioid users in our study were slightly higher than those in the other group; however, it was not significant.

Based on the results of this study, the mean age of the subjects in the two groups was not significantly different. Nonetheless, in the opium users group, the proportion of males to females was markedly more than that in the non-consumers. The reason for this proportion could be explained by the fact that males are more likely to abuse opium in society (19). The most common presenting symptoms in the emergency department were chest pain, followed by shortness of breath. No significant difference was observed between the two groups regarding the presenting symptoms.

Although it may be supposed that using opium

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can decrease the pain feeling or delay the patient's referring to the emergency department, there was no significant difference between the pain score of both groups at the baseline. Moreover, using opium had not any significant effect on the CCU length of stay. The findings of a study performed by Bafghi et al. have shown that the time elapsed between the onset of symptoms and CCU admission was similar in opium users and non-users, which are compatible with the results of our study (11).

One of the limitations of this study was the difficulty of following the patient's course of treatment, especially for opioid users due to their lack of proper socioeconomic status.

Conclusions

According to the results of this study, it can be concluded that using opioids had not any significant effect on the severity of pain and survival of the addicted patients, in comparison to non-addicted subjects.

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Conflict of Interest

The authors declare that there is no conflict of interest.

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