

The Opioid Effects On The Cardiac Markers And Left Ventricular Contractility In Acute Myocardial Infarction Patients

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Citation

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Abstract

Background: Coronary artery disease is one of the most expensive diseases in the world and one of the most common causes of mortality in Iran and Lorestan state. The association between this disease and its risk factors like smoking was established. According to non medical consumption of opium in many parts of our state, we decided to perform a research in order to evaluate the opioid effects on myocardial infarction (MI) extension.

Material & methods: In this descriptive analytical study, we assessed 60 patients with MI admitted in the CCU ward of Imam Khomeini Hospital. The diagnosis of MI was based on their medical history, ECG changes and cardiac enzymes approved by the same cardiologist. Then the consumption of opioid by the patients was evaluated by a questionnaire. According to opioid consumption the patients were divided into two groups. The peak amount of the CPK, CKmb and LDH enzymes and ejection fraction were recorded into two groups during their hospitalizations.

Results: The mean peak of CPK and CKmb in the user opium group and in the nonuser were 1075, 152 and 906, 102 respectively. The mean peak of LDH in the users and nonusers were reported 1400 and 1029 respectively. There are significant differences between the measured enzymes between the two groups ($P=0.001$).

Conclusions: According to the effects of opioid on the cardiac enzymes and probably on the MI extension, opioid consumption could be preventative for MI complications.

INTRODUCTION

Through increasing industrialization in developing countries coronary artery diseases (CAD) will be gradually the top cause of death in all countries. Since CAD is one of the most expensive diseases in human societies, the extensive research has been done in developing countries for disease control and prevention of its complications as the major causes of disabilities.

CAD is a common cardiac disease that increased through aging (1, 2). It is considered that 73 millions of American people affected by atherosclerotic diseases. This disease caused 178 billion dollars in expenses and also caused 108 billion dollars in losses due to disability. The incidence of CAD in the USA, European countries like Finland and other countries were 8%, 5% and lower than 3% of their all population respectively. In the USA, 5 million patients with chest pain were referred to the emergency ward and among them 10% had myocardial infarction (MI). Also among

them, nearly 50% had cardiac ischemia, 10% with non ischemic pain and 30% with non cardiac pain (1, 2). Every year, 12 million dollars are allocated to the admission of patients with chest pain, so rapid diagnosis of acute MI patients is necessary. Due to improvement the health criteria of CAD, MI is among the top causes of mortality in our state and our country. The commonest sign of MI is chest pain. For promising treatment of CAD patients with chest pain, clinical examination and electrocardiogram are needed. Non specific changes of ST segment are present in 50% of MI patients and 20% of silent MI cases, therefore measuring the cardiac markers are necessary for MI diagnosis. Myocardial necrosis causes myocytes destruction and consequently release of special myocardial enzymes. According to WHO standards, these factors confirm MI including the electrocardiogram variation, changes of serum indexes related to myocytes necrosis and chest pain (2).

One of important MI diagnostic tools is serologic diagnosis

of myocytes necrosis (3). Several determined serum indexes are increased after acute MI into different models. Measuring the cardiac enzymes such as LDH, CPK, CKmb are common in all reference medical text books for MI confirmation and the involved extent. Cardiac markers pseudo increased in 10% of patients while the negative pseudo cases are 1- 2% (4, 5).

Non medical opium consumption via smoking is common in many different parts of the third world countries and our country. The aim of this study is to evaluate the opioid effects on cardiac markers and EF of MI patients that are admitted to the CCU ward of Imam Khomeini Hospital, Brojerd, Iran, 2007.

MATERIALS AND METHODS

In this descriptive analytical study, the study participants included all MI patients in the CCU ward of Imam Khoemini Hospital, Brojerd, Iran. Myocardial infarction was confirmed in 60 patients due to complete examination and ECG changes by the same cardiologist. Sixty questionnaires were filled out during an interview with patients and their medical history records. Questionnaire included these variables; age, gender, final diagnosis, diabetes mellitus (DM), hypertension (HTN), smoking, hypercholesterolemia, hyperglycemia, previous medical history, family history, obesity, the maximum of enzymes during hospital time and opium consumption.

Diabetes mellitus was defined as hyperglycemia more than 114 mg/dl fasting blood sugar or diabetes medications, systemic hypertension as blood pressure >140/90 mmHg or antihypertensive medications, hyperlipidemia as LDL>110mg/dl, total cholesterol level > 200 mg/dl, renal failure as creatinin more than 1.3 mg/dl and opium consumption was defined as active smoking during the past 12 month.

The patients divided into two groups according to opium consumption or nonuser. The other CAD risk factors were considered equally between the two groups. Also the maximum amounts of these enzymes (CPK, CKmb and LDH) were recorded during the admission time. We also determined the ejection fraction by ultrasound echocardiography (HP 100 with 2-4 mega HTZ probe) for case and control patients. Statistical analyses were performed using SPSS 11.5 for windows TM version software package (SPSS Inc. Chicago, Illinois, USA, descriptive analytical and T test statistical methods. A two

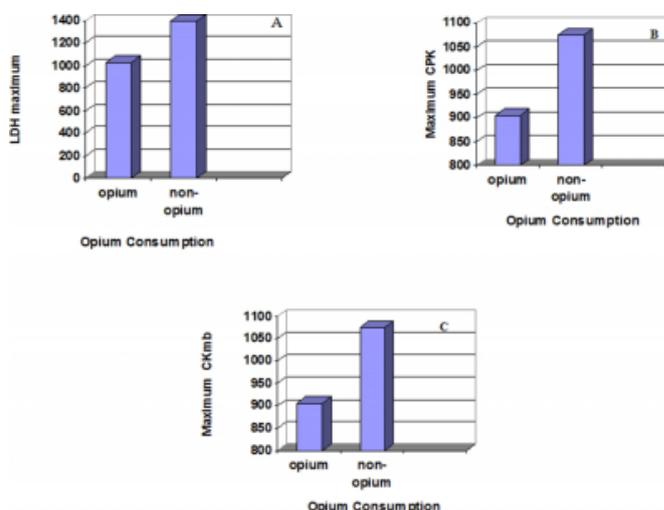
sided P valve <0.05 was considered statistically significant.

RESULTS

There were 43 male (72%) male and 17 female (28%) who were 57.37 ± 1.3 years old and had 35-90 years of age range. Hypercholesterolemia, HTN, DM, hyper Triglycerides and obesity were defined in 60%, 29%, 12.5%, 16.9% and 16.5% respectively. Among our study patients 16 cases (26%) expressed continuously opium consumption and the others (44 cases) were in non opium consumption group. The maximum amount of CPK, CKmb, and LDH enzymes in acute MI patients with continuously opium consumption were 1075, 152 and 1400 respectively while these enzymes in non opium group were 906, 102 and 1029 respectively (Figure 1 & 2). Mean of ejection fraction (EF) in case group was 47% and in control group was 31%. There were statistically significant difference between these enzymes and EF into two respected groups (P= 0.001).

Figure 1

Figure 1: The maximum amount of LDH (A), CPK (B), CKmb (C) enzymes in acute MI patients with continuously opium consumption and non opium consumption.



DISCUSSION

Analyzing our results, the differences between cardiac enzymes of patients in the opium group were significantly higher than in the non opium consumption group (P=0.001). Lower complications of involved myocardial infarction and higher EF levels in the addicted group was a paradox and could be due to high spread collateral circulation in opium user group. This means greater MI rate but lesser complications in this group. Due to CAD as one of the most expensive disease in developing countries, the large investments treated for patient's therapy and its control.

Decreased the risk factors were considered in the developing countries as the major health criterion. Due to rare smoking opium consumption in European and American countries and countries with validate statistical information, there aren't any similar studies for comparison of our results with the other countries. Information about preventive properties of opium from MI exist (5, 6). Although opium consumption causes the alleviating pain and covers CAD obstruction sign, sudden stops of opium consumption in addicted people results in ischemic silent signs and MI.

CONCLUSION

Comparison smoking risk with opium into CAD appearance was hard, however it is recommend due to high frequency of MI patients in our state. Further studies and complete evaluation are recommended for confirmation of the association between opium consumption and cardiovascular diseases. According to the effects of opioid on the cardiac enzymes and probably on the MI extension, opioid

consumption could be preventative for MI complications.

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