

## A Case-Control Study of Effect of Opium Addiction on Myocardial Infarction

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**Abstract:** Ischemic Heart Disease (IHD) and Myocardial Infarction (MI) are one of the most important disease which cause mortality and morbidity. Opioid peptides and exogenous opioid such as morphine are known to exert an important cardiovascular effect. To study effect of opium addiction to incidence of MI. A Case-Control study was designed in Kerman university. 150 patients with MI was admitted to CCU and 150 matched patients admitted in surgical wards evaluate from cardiovascular risk factor and opium addiction. Analysis of data suggested no difference between two groups ( $P>0.05$ ). But smoking OR = 2.45, hypertension OR = 2.65, Diabetes mellitus OR = 1.82 and Hypercholesterolemia OR = 3.16 were a risk factor for MI. Effect of opium in IHD has controversial. But recent of study defined that opioid peptides have a cardioprotective effect. Many exact and longitudinal studies should design for this purpose.

**Key words:** Opioid, opium addiction, myocardial infarction, risk factor

### INTRODUCTION

Myocardial Infarction (MI) happened after atherosclerosis phenomena in the coronary heart artery. It is one of the most common diseases with high mortality and morbidity in human beings. There are many known risk factors in Coronary Artery Disease (CAD) like; old age, male gender, cigarette smoking, hypertension, diabetes mellitus and hyperlipidemia<sup>[1-4]</sup>.

At over increasing of drug abuse in the world, one question appears; Is substance abuse as a result of the appearance of Ischemic Heart Disease (IHD).

The Japanese brought up the endorphins and endogenous opioids had an important role in MI<sup>[5]</sup>. Backmund reported at 22 years old case that had MI after using of methadone and dihydromorphine<sup>[6]</sup>. An experimental study on the animal model revealed that exogenous opioid, not only was relief pain after MI but also decrease the size of infarct area and cell death<sup>[7]</sup>. In Iran, opium is the most frequent substance abuse<sup>[8,9]</sup>. There is not any survey on the effect of opium as a risk factor for MI. We decided to reveal the relationship between opium addiction and appearance of MI.

### MATERIALS AND METHODS

A matched case-control study was designed. The data were gathered from 150 subjects as a case group from Cardiac Care Unit (CCU) that all of them had a MI. MI was confirmed by electrocardiography study and evaluation of cardiac enzyme. Another 150 patients as a control group were selected by other internal and

surgical wards. All cases and controls were matched in age, gender, occupation, marital status and living place. History and physical exam were taken from all patients and laboratory exam was requested. Diabetes mellitus was confirmed by evaluation of fasting blood sugar more than 120 mg/ml two times or registered in past medical history. Total cholesterol and triglyceride more than 200 mg/ml were known as hyperlipidemia. Hypertension was revealed by the last definition of it<sup>[10,11]</sup>.

Data analysis was carried out using the EPI-6 program. Chi square and Fisher's exact test were used for nominal data. Kruskal-Wallis test was used for ordinal and non-parametric variable. Continuous variable was tested by ANOVA. Odds Ratio (OR) with 95% confidence interval was calculated and Mantel-Haentzel test was used for OR correction and crude OR.

### RESULTS AND DISCUSSION

All cases and controls were matched. The overall mean $\pm$  SD was 48.2  $\pm$  3.6 years. Opium addiction rate in case group was 22% and in the control group was 16.6%. There was no relationship between case and control group in opium addiction. OR was 1.4 but it was not significant (Fig. 1). The cigarette smoking, high cholesterol level, diabetes mellitus and hypertension were risk factors for MI (Table 1). Crude OR was calculated 2.5 with 95% CI= (1.86-3.28).

Effect of morphine and its derivatives on the cardiovascular system were controversial. Chen and co-workers perceived elevated level of beta-endorphin -an exogenous opioid peptide- after MI.

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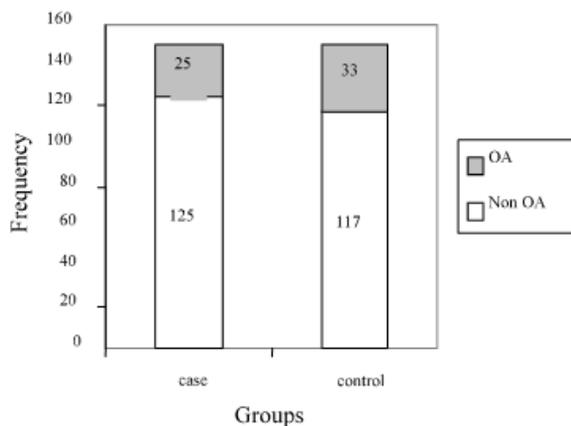


Fig. 1: Frequency of opium addiction in cases and control

Table 1: Frequency of IHD risk factors in cases and controls

Variable	Case	Control	P. value	OR (CI 95%)
CS -	115	86	0.0003	2.45
CS +	35	64		1.44 - 4.25
HTN -	130	105	0.0007	2.65
HTN +	20	45		1.44 - 4.93
DM -	125	110	0.03	1.83
DM +	25	40		1.01 - 3.31
HCH -	129	99	0.0005	3.16
HCH +	21	51		1.72 - 5.84
HTG -	144	137	0.097	--
HTG +	6	13		
FHX -	147	141	0.07	--
FHX +	3	9		
CVA -	148	144	0.27	--
CVA +	2	6		

They explained this peptide had an important role in the IHD pathophysiology<sup>[5]</sup>. Ermakovich's survey in 114 IHD patients demonstrated endogenous opioids like, beta-endorphin, lucin-encephalin had an important role in pain relief in MI. Although, the serum level of these peptide increase after MI, they can't judicate about effect of exogenous morphine among IHD and MI incidence<sup>[12]</sup>. An exhaustive survey of Schults and gross in the animal models found many different opioid receptors in the heart. They demonstrated opioid drugs like morphine had cardioprotective effects. These drugs not only decrease the pain due to MI but also minimize infarct size<sup>[7]</sup>.

It seems, cardiac risk factors have been diversifying with the rapid growth of cities, change of lifestyle and general social changes. Naming substance abuse for instance has differed all around the world. Surveys which find relation between opium and MI are few. Opium in Iran is the most frequent substance that abuses. Effects of opium in IHD are an intact view of research.

It is considerable that opiates affect on IHD appearance, however we could not find any relation between them, But it's need more exact study with control of other risk factors and usage of multiple variable models like Logistic regression.

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