

# The Incidence of Different Kinds of Cardiac Arrhythmia after Myocardial Infarction in Smokers and Opium Abusers Hospitalized in Imam Ali Hospital, Zahedan, 2016

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## Abstract:

Myocardial infarction is one of the most common reasons for hospitalizing patients in industrial countries. The arrhythmia arising from myocardial infarction is one of the most important causes of death among smokers and opium abusers. For this reason, the present study aims at comparing different kinds of post-myocardial infarction arrhythmias among smokers and opium abusers hospitalized in Imam Ali Hospital in Zahedan. The present study is a descriptive-analytical one conducted on 200 patients (100 smokers and 100 opium abusers) suffering from myocardial infarction and hospitalized in the CCU of Imam Ali Hospital in Zahedan in 2016. Convenience sampling was used to select the samples. The data were collected through using questionnaire and they were then analyzed by using SPSS version 18. Sinus tachycardia, atrial flutter, ventricular premature beats, ventricular tachycardia, and ventricular fibrillation of the smokers' group were more than those of the opium abusers' group were. Given the findings of the present study, patients with myocardial infarction with a smoking history are more likely to suffer from arrhythmia than opium abusers with myocardial infarction history. Thus, patients referring with myocardial infarction or diagnosed to suffer from myocardial infarction and their medical history indicates that they have a smoking history should be under surveillance by doctors or the nursing staff with respect to different kinds of arrhythmia especially ventricular arrhythmia.

**Key Words:** Cardiac Arrhythmia, Myocardial Infarction, Smokers, Opium Abusers.

## INTRODUCTION

Myocardial infarction is one of the most common reasons for hospitalizing patients in industrial countries so that in the United States annually 1.1 million people are affected by this disease; nearly 30 percent of these individuals die as a result of the complications arising from this disease [1]. The most important cause of ischemic heart diseases, especially myocardial infarction, is atherosclerosis of the coronary arteries [2]. The risk factors of atherosclerosis are divided into two groups: non-modifiable risk factors such as sex, age, and family history, and modifiable risk factors such as high level of blood lipid, high blood pressure, diabetes, drug abuse, obesity, physical inactivity, stress, mental excitement, inappropriate diet, and using contraceptive pills [3]. Smoking and using opium are the most modifiable factors of coronary heart diseases and the main preventable causes of death. The prevalence of addiction to opium and cigarette is significant in the developing countries such as Iran. According to the study conducted by BARTNIK et al 2003, the serum level of the biochemical risk factors for the coronary artery disease such as alpha-lipoprotein and CRP is clearly higher in patients addicted to opium, and these factors are the main determinant of atherosclerosis [4]. However, the study conducted by Gross et al 2004, indicated that peptide lipid is effective in keeping Myocardium against ischemia [5].

Through increasing hemoglobin and hematocrit, smoking cigarette increases blood viscosity; this will bring about an increase heart activity and will lead to increased tissue hypoxia. Moreover, increased carbon monoxide in the state of hypoxia brings about reduced oxygen pressure. In smokers, after the myocardial infarction, when compared to non-smokers, since they have stopped smoking; their venous blood oxygen pressure is higher than that of the non-smokers, while this is the other way round before the myocardial infarction. One of the most important complications of myocardial infarction is cardiac arrhythmia. Moreover, myocardial infarction arrhythmia is the cause of sudden death. The study conducted by Peter et al indicates that smokers' rate of ventricular arrhythmia, premature ventricular contraction, and ventricular tachycardia after myocardial infarction are higher than non-smokers. For this reason, the present study aims at comparing different kinds of post-myocardial infarction arrhythmias among smokers and opium abusers hospitalized in Imam Ali Hospital in Zahedan.

## MATERIALS AND METHODS

The present study is a descriptive-analytical one conducted on 200 patients (100 smokers and 100 opium abusers) suffering from myocardial infarction and hospitalized in the CCU of Imam Ali Hospital in Zahedan in 2016.

**Table 1.** Absolute vs. relative frequency distribution of different kinds of post-myocardial infarction arrhythmias among smokers and opium

Groups Arrhythmia	Frequency				P-value
	Smokers' Group		Opium abusers' Group		
	Number	Percent	Number	percent	
Ventricular Tachycardia	20	20	28	28	P<0.05
Ventricular Fibrillation	12	12	5	5	P<0.05
Ventricular premature beats	12	12	9	9	P<0.05
Intra-ventricular Conduction Disorders	18	18	12	12	P>0.05
Second Degree and third Degree Ventricular Block	16	16	3	3	P<0.05
Junctional Arrhythmia	7	7	5	5	P>0.05
Arterial Fibrillation	11	11	6	6	P>0.05
Atrial Flutter	13	13	4	4	P<0/05
Sinus Tachycardia	16	16	3	3	P<0/05
Attack-arterial Tachycardia	8	8	6	6	P<0/05

Convenience sampling was used to select the samples. Data collection was conducted through using a questionnaire including demographic variables and recording the physiological variables of the kind of arrhythmia and the myocardial infarction diagnosed by the cardiologist. The diagnosis was conducted by the cardiologist based on the patient's medical history and the typical ECG changes. The exclusion criteria of the present study are myocardial history, the presence of chronic pulmonary diseases simultaneously, electrolyte disorders, taking medications like tricyclic antidepressants that can cause cardiac arrhythmia, symptoms of heart failure, and EF<40. The necessary information was obtained about the history of the disease, medicinal treatment, and risk factors of cardiovascular disease such as high cholesterol, familial history of cardiac problems, blood pressure, and diabetes. The data collected were analyzed through using SPSS 18 and statistical tests such as T-test and Fisher's test [6-9].

#### FINDINGS

In opium abusers and smokers, the highest frequency was 55% respectively, and 59% of the samples studied were in the age group of 55-65 years. The mean age of the smokers' group was 52.24±6.22, and the mean age of the opium abusers' group was 58.16±7.14 (P>0.05). As for the educational level of the smokers and opium abusers, 45 percent of the smokers and 55 percent of the opium abusers were illiterate or less literate. With respect to gender, 88 percent of the smokers and 72 percent of the opium abusers were male. The blood pressure mean was 125±15.40 millimeter of mercury in the opium abusers' group and 145±25.12 millimeter of mercury in the smokers' group (p<0.01). The infarctions of 62 percent of the opium abusers and 74 percent of the smokers were anterior, and

the rest were posterior (P<0.01). Sinus tachycardia, atrial flutter, ventricular premature beats, ventricular tachycardia, and ventricular fibrillation of the smokers' group were more than those of the opium abusers' group were.

#### DISCUSSION

The prevalence of cardiovascular disease in the developing countries, including Iran, is increasing, and it will result in significant consequences [10]. From the total of 700 to 800 daily deaths in Iran, 317 cases occur as a result of cardiovascular diseases, and from this number 166 cases are reported to be for myocardial infarction [11]. Myocardial infarction causes inability and the loss of working ability and daily activity among the individuals and it will impose heavy costs on the entire society. The present research was conducted to study and compare post-myocardial infarction arrhythmias among smokers and opium abusers. The main outcome of the present study was stressing on the relationship that post-myocardial infarction ventricular arrhythmias are significantly more prevalent in smokers than opium abusers; with respect to post-myocardial infarction problems, smokers are more likely to be at risk. In the present study, addiction to opium would more frequently result in ventricular premature complexes and ventricular tachycardia; the incidence of other kinds of arrhythmias arising from atrium was less frequent. Opioid receptors in atrium are likely to play an important role in creating different kinds of arrhythmia. As it was said earlier, it seems like that M-type receptor is likely to increase heart beat and bring about changes in the cardiac rhythm; it will accelerate post-myocardial infarction arrhythmias. It has been also observed that opioid peptides cause stimulated autonomic nervous system, increased heartbeat, and systolic blood pressure, and this can be

regarded as another cause of post-myocardial infarction arrhythmia. Kett et al have stated that, through delta receptors, opioids stimulate Gi receptors and reduce CAMP, and this will result in reduced heartbeat [12]. Another finding of the present study is the preventive effect of opium for sinus tachycardia; in comparison to the smokers' group, sinus tachycardia was significantly less in the opium abusers' group. Moreover, the incidence rate of some types of arrhythmia such as sinus tachycardia, atrial flutter, ventricular premature beats, ventricular tachycardia, and ventricular fibrillation in the smokers' group (in comparison to opium abusers) were significantly different after the myocardial infarction. The findings of the study conducted by Inglis indicates that the samples studied in his study suffered from fibrillation and atrial flutter; a great percentage of these individuals had a smoking history in their medical records, and they had a history of at least one myocardial infarction [13]. The present study had some limitations. The sample size of the study was relatively small for confirming the findings especially for the population of Iran where addiction to opium and cigarette is quite prevalent. Moreover, the low consumption of opium and cigarette needs to be taken into serious account for confirming this hypothesis.

#### CONCLUSION

Given the findings of the present study, patients with myocardial infarction with a smoking history are more likely to suffer from arrhythmia than opium abusers with myocardial infarction history. Consequently, this will lead to more sudden deaths and arrhythmia among cigarette addicts. Thus, patients referring with myocardial infarction or diagnosed to suffer from myocardial infarction and their medical history indicates that they have a smoking history should be under surveillance by doctors or the nursing staff with respect to different kinds of arrhythmia especially ventricular arrhythmia. Thus, given the low consumption of opium and cigarette, it is recommended to conduct more researches with larger sample sizes to study the various effects of addiction to opium and cigarette.

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