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Original Article

Lipid Profile Comparison between Opium Addicts and Non-Addicts

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Abstract

Background: *This study was done to test the notion that opium can reduce serum lipids and decrease the risk of ischemic heart disease (IHD) in opium addicts; we made a comparison between the lipid profiles of opium addicts and non-addicts.*

Methods: *In this study, we compared 100 male opium addicts (according to the ICD-10 criteria) who had referred to addiction treatment centers with 75 healthy male non-addicts. The subjects filled out our research questionnaire and had their fasting serum lipid profile (total cholesterol, low density lipoprotein, high density lipoprotein, and triglyceride) evaluated.*

Results: *Among those with a body mass index (BMI) between 18 and 25, the total cholesterol level in the opium addicts was less than that in the control group; there was, however, no difference in terms of LDL, HDL, and TG between the case and control groups. There was a significant difference in BMI between the two groups, which requires further studies to investigate the reason.*

Conclusion: *Opium does not seem to have any impact on triglyceride, low density lipoprotein, and high density lipoprotein. Despite the lower total cholesterol levels in opium addicts (as a known side effect of opium on different body systems), it is not advisable that opium and its extracts be recommended to decrease the risk of IHD.*

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Introduction

Ischemic heart disease (IHD) is the most frequent cause of death in most countries and is responsible for one million deaths yearly in the United States of America. There are several risk factors for IHD. Hyperlipidemia is one of the main risk factors in that it aggravates atherosclerosis and may lead to IHD.[1] Controlling hyperlipidemia by nutritional regimens, exercise, and physical activity and use of anti-hyperlipidemic agents may be effective in the prevention of IHD. A change in life style is, therefore, the main step to prevent hyperlipidemia.[1,2]

Traditional concepts without a scientific basis in some cultures may create wrong habits. For instance, in Iran

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opium users believe that opium decreases serum lipids and prevents IHD. There is not an abundance of related research in the existing medical literature, but some researchers have studied the effects of opium on diabetes[3] and depression.[4]

The present study compared the serum lipid profiles between opium users and a control group so as to detect any difference between these two groups for further interventions.

Methods

This case-control study recruited some male opium addicts who had referred to the addiction treatment centers in Mashhad, Iran and a control group comprised of men who did not use opium. Cluster randomized sampling was done, and 170 questionnaires were filled out in the case group and 140 questionnaires in the control group initially. However, the case and control groups were thereafter limited to 100 and 75 cases each.

Opium addiction was defined according to the ICD-10 criteria, and our study was conducted before the withdrawing plans. An epidemiologic questionnaire containing personal characteristics and lipid profile in fasting condition [total cholesterol, low density lipoprotein (LDL), high density lipoprotein (HDL), and triglyceride (TG)] was filled out and subsequently evaluated by a private clinic laboratory (Imam Reza Hospital). A similar procedure was also preformed for the control group. The inclusion criteria included being male and 20-50 years of age, and the exclusion criteria were a history of underlying diseases such as thyroid diseases, diabetes mellitus, end-stage renal disease, or obesity (BMI>30). The data were analyzed using SPSS software. The tables and curves were designed via the T test, and the one-way ANOVA test with covariates was utilized for data analysis.

Results

Both case and control groups were in the 20-50 year-old range. Other factors such as cigarette smoking were almost similar in both groups. The case group was comprised of opium addicts mainly (70.8%), the rest being addicted to opium extracts (20.8%) or both (8.4%).

The method of opium usage was by inhaling in 50%, eating in 33%, and both ways in 17%. Opium concentration was used by eating method mostly.

Forty eight percent of the cases were trying opium withdrawal for the first time, and 52% had tried it at least once before. No other medication was used simultaneously in 86% of the cases, but benzodiazepines were used in 9.8% and other sedative agents usage was reported in 4.2%.

The lipid profiles were compared between the case and control groups; and according to the T test, only the difference between the cholesterol levels of the two groups was significant (P=0.026) and the difference between the LDL levels was borderline and TG and HDL were almost similar in both groups.

In order to study the effect of BMI on lipid profile, we compared the BMI of the case and control groups. BMI was 22.27±3.25 in the case group and 24.52±2.86 in the control group, which means that the BMI of the addicts was significantly less than that of the non-addicts (P=0.001). If we do not take pseudo-correlation into account, then we can explain the lower BMI in the opium addicts. We would, accordingly, suggest the hypothesis that the low cholesterol level in the addicts was probably due to their lower BMI in comparison with the non-addicts.

We used the one-way ANOVA test to omit the effects of BMI. We focused our study on male opium addicts between 18 and 25 years of age and compared their mean cholesterol level with the control group. The mean cholesterol level in the case group was also significantly less than that of the control group (P=0.017). As a result, it could be argued that opium may decrease total cholesterol indirectly aside from weight loss in addicts. Table 1 depicts the comparison between the lipid profiles of the case and control groups.

Table 1. Comparison between the lipid profiles of opium addicts and non-addicts*

Lipid profile	Opium addicts	Non-addicts	P value
Cholesterol	178.01±31.62	190.90±35.44	0.026
TG	107.84±36.78	112.40±42.78	0.527
LDL	110.07±32.61	120.14±34.30	0.057
HDL	45.59±9.01	45.93±8.95	0.818

*Data are presented as mean±SD mg/dl
TG, Triglyceride; LDL, Low density lipoprotein; HDL, High density lipoprotein

We also studied lipid profile in the opium addicts with respect to the type of addiction and observed a significant difference between those who used opium and those who used its extracts. The only exception was HDL, which was almost similar in both groups (Table 2).

Table 2. Lipid profile in addicts to opium and addicts to its extracts*

Lipid profile	Opium addiction	Opium extract addiction	P value
Cholesterol	177.81±32.54	201.11±35.79	0.003
TG	107.75±36.57	129.22±42.35	0.025
LDL	105.74±29.03	121.76±23.75	0.017
HDL	45.58±9.03	43.5±6.77	0.278

*Data are presented as mean±SD mg/dl
TG, Triglyceride; LDL, Low density lipoprotein; HDL, High density lipoprotein

Discussion

According to our findings, there was a 20mg/dl decrease in the cholesterol level of the opium addicts with BMI in the range of 18-25 compared to the healthy subjects. The decrease in the cholesterol level was more significant in those addicted to opium compared to those addicted to its extracts. These findings, however, are not sufficient to make an exact judgment about the direct effect of opium on serum lipids because many other factors may influence lipid profile such as dietary habits, which are different between addicts and healthy people. As a result, our findings may be partly because of malnutrition among the opium addicts.

TG, LDL, and HDL levels were almost the same in both groups of our study, but a lower HDL level among addicts was previously reported in an article from Rafsanjan (2004).[5] It is worthy of note that the difference in the HDL level between the two groups was not significant in our study.

There was a significant difference between the BMI of the addicts and non-addicts in our study. We are not able to provide a convincing explanation for the main cause. Be that as it may, the fact that drug addicts are liable to expend a considerable portion of their income on drugs renders their nutritional regimens different from those of the healthy people. The loss of appetite combined with drowsiness due to insufficient intake of opium could lead to weight loss. The direct effects of opioids and their alkaloids on weight and lipid profile require further investigations.

Wilgard et al. omitted the effects of age, sex, and cigarette smoking and reported a significant correlation between BMI and HDL or TG.[6] Our findings also showed a significant correlation between TG and BMI in both case and control groups.

Opioids indubitably impact many body organs. Indeed, several opium derivative alkaloids such as lysine, urnitin, phenylalanine, tyrosine, tryptophan, and histidin are known to wreak havoc on the central nervous system.[7] Furthermore, addiction to opioids imposes an extremely heavy financial burden on both the individual and the community. For instance, the cost of drug abuse during the mid 1990s in the United States of America was estimated at 110 billion dollars (International planning for drug addiction control. United National Foundation. Universal report, 2000). If these vast sums of money were, for example, allocated to the prevention of coronary artery diseases, we would witness a remarkable improvement in health indices.

Conclusion

In conclusion, our findings showed that opium had no impact on TG, LDL, and HDL. Our opium addicts had a lower total cholesterol level by comparison to the non-addicts; nevertheless, it is not advisable that opium and its extracts be recommended for effecting a decrease in the risk of IHD.

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