Opium consumption and lipid and glucose parameters in diabetic patients with Acute Coronary Syndrome; A survey in northern Iran

La consommation de l'opium et des lipides et des paramètres de glucose chez les patients diabétiques atteints du syndrome coronarien aigu; Une enquête dans le nord de l'Iran

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RÉSUMÉ

Prerequis: Une croyance traditionnelle est fréquente chez les personnes des pays du Moyen-Orient concernant l'effet anti-diabétique et antidyslipidémiques de l'opium.

Objectif: évaluer l'association entre la consommation de l'opium et de lipides et de glucose paramètres chez les patients diabétiques du Nord de l'Iran.

Méthodes: Quatre-vingt- sept patients diabétiques admis à l'unité des soins intensifs (CCU) de Rouhani et hôpitaux Shahid Beheshti 2006-2007 ont été inclus dans cette étude transversale. Quarante-huit patients atteints de la consommation d' opium régulier de trois jours par semaine pendant plus de 6 mois ont été considérés comme un groupe de cas. Un non - opium patient diabétique admis dans le même hôpital a été considéré comme un contrôle pour chaque toxicomane malade de l'opium. Le cholestérol total , triglycérides , LDL , HDL , FBS , le taux d'HbA1c ont été mesurés chez tous les patients. T - test de Student , Mann -Whitney , test du chi - carré et la corrélation de Spearman ont été utilisés pour l'analyse des données.

Résultats : L'âge moyen des patients était de 64,32 ± 11,47 années. Il n'y avait pas de différences significatives entre le niveau de lipides et de glucose indices entre les deux groupes (P > 0,05) sérum.

Conclusions : L'effet de la consommation de l'opium sur le diabète et la dyslipidémie sont pas de protection.

Mots-clés
Syndrome coronarien aigu, la toxicomanie, le diabète sucré, l'opium

SUMMARY

Background: A traditional belief is common among people of the Middle East countries regarding anti-diabetic and anti-dyslipidemic effect of opium.

Aim: To assess the association between opium consumption and lipid and glucose parameters in diabetic patients of northern Iran.
Methods: Ninety-seven diabetic patients admitted to Critical Care Unit (CCU) of Rouhani and Shahid Beheshti hospitals from 2006 to 2007 were enrolled in this cross-sectional study. Forty-eight patients with regular opium consumption of three days a week for more than 6 months were considered as case group. A non-opium diabetic patient admitted in the same hospital was considered as control for each opium addict patient. Total cholesterol, Triglyceride, LDL, HDL, FBS, HbA1c were measured in all patients. Student t-test, Mann-Whitney U, Chi-square test and Spearman correlation were used for data analysis.

Result: The mean age of patients was 64.32±11.47 years. There were no significant differences between the serum level of lipid and glucose indices between the two groups (P>0.05).

Conclusion: The effect of opium consumption on diabetes and dyslipidemia are not protective.

Key-words
Acute Coronary Syndrome, Addiction, Diabetes Mellitus, Opium

Despite the decrease in the rate of mortality and morbidity of Coronary Artery Disease (CAD) in the developed countries, its incidence and complications are increasing in the developing countries[1, 2]. The outcome of patients with CAD is influenced by several variables including concomitant metabolic disorders such as diabetes mellitus (DM). DM is an independent risk factor for CAD and is responsible for 14 to 50 percent of new diagnosed cardiovascular disease worldwide. Moreover, high blood glucose in acute phase of CAD is a potential risk factor for adverse outcome [3, 4].

Lowering the glucose level of serum aside from its protective role on DM complications, is associated with better control of lipoprotein levels including Triglyceride (TG) and High Density Lipoprotein (HDL) Cholesterol, another well known serum factor linked to CAD. Although DM does not lead to increase in serum level of Low Density Lipoprotein (LDL) Cholesterol, LDL-cholesterol molecules are more atherogenic in patients with DM. Hence, dyslipidemia in diabetic patients is more important than in non-DM patients.

While there are several ways for controlling lipid and glucose profile in diabetic patients, a traditional belief is common among patients in developing countries especially Iran regarding anti-diabetic and anti-dyslipidemia role of opium[5, 6]. This belief leads to widely consumption of opium among patients despite of serious adverse effects of opium including CAD[7]. The goal of this study was to assess the association between opium consumption and the lipid and glucose profile of diabetic patients with Acute Coronary Syndrome (ACS).

PATIENTS AND METHODS

Patients' characteristics and study design

After the ethical approval of the local Ethics Committee that was affiliated to Babol University of Medical Sciences, the written informed consent was obtained from the participants, a total of 97 diabetic patients with ACS admitted to Critical Care Unit (CCU) of Rouhani and Shahid Beheshti Hospitals from 2006 to 2007 were enrolled in this cross-sectional study. All patients had history of diabetes for more than 6 months. Based on the history of opium consumption, the patients were divided into two groups. Forty-eight patients with regular opium consumption of three days a week for more than 6 months were considered as the case group. A non-opium diabetic patient admitted in the same hospital was considered as control for each opium addict patient. Simple sampling method was used in both groups. The groups were matched according to age, Body Mass Index (BMI) and diabetes duration. The demographic and anthropometric characteristics, smoking history and drug history of all patients were entered in special checklists. The exclusion criteria were the recent diagnosis of DM, type I diabetes, non-ingestion opium consumption and other substance abuse.

Serum markers measurement

Blood glucose measurement was done in all patients at the time of admission. After admitting to CCU and 14 hours fasting, total cholesterol, Triglyceride (TG), LDL, HDL and FBS and glycated hemoglobin (HbA1c) were measured in all patients. Lipid and glucose profile were measured using enzymatic assay (ParsAzmun, Made in Iran). HbA1c was measured with chromatography using Biosystem kit (Made in Spain).

Statistical Analysis

Data were analyzed by SPSS software version 12 (Chicago- IL.). Student T-test, Mann-Whitney U and Chi-square testes were used for comparison of baseline characteristics of patients between two groups. Mann-Whitney U test was used for the comparison of the serum level of measured factors. Spearman correlation was used for the assessment of correlation between dose and duration of opium dependency with the serum level of measured factors.

RESULTS

The baseline characteristics of patients were shown in Table 1. The mean duration of dependency to opium was 10.04+8.32 years (median 8 years) in case group. The mean dose of consumption of opium was 0.72+0.37 gram per day (median 0.5 gram per day).

Tableau 1 : Baseline Characteristics of patients (n=97)

Patients characteristics	Case group (n=48)	Control group (n=49)	P value
Age (mean±SD)	64.31±11.51	64.33±11.54	0.995
Gender			
Male (%)	22 (45.8)	12 (24.5)	0.028
Female (%)	25 (54.2)	37 (75.5)	
BMI (Kg/m2)	24.65±5.22	25.79±3.5	0.153
Smoking (%)	13 (27.1)	7 (14.3)	0.119
Past Medical History			
Duration of diabetes (years)	11.31±6.33	10.39±7.91	0.212
HTN (%)	28 (58.3)	28 (57.1)	0.906
HLP (%)	29 (60.4)	33 (67.3)	0.477
CAD (%)	27 (56.3)	34 (64.9)	0.181
Drug History (%)			
Sulfonylureas agents	29 (60.4)	28 (57.1)	0.743
Bigunides agents	10 (20.8)	12 (24.5)	0.667
Insulin	7 (14.6)	12 (24.5)	0.219
-Glucosidase agents	1 (2.1)	3 (6.1)	0.317
Statins	10 (20.8)	13 (26.5)	0.509
Fibric Acid agents	4 (8.3)	2 (4.1)	0.385
β-blocker agents	19 (39.6)	23 (46.9)	0.465
Calcium Channel Blockers	8 (16.7)	4 (8.2)	0.203
Nitrates	17 (35.4)	19 (38.8)	0.732
Aspirin	27 (56.3)	17 (34.7)	0.033
Digoxin	2 (4.2)	1 (2)	0.545
ACE inhibitor agents	10 (20.8)	6 (12.2)	0.254
Angiotensin Blocker agents	7 (14.6)	8 (16.3)	0.812

HTN: Hypertension, HLP: Hyperlipidemia, CAD: Coronary Artery Disease, ACE: Angiotensin Converting Enzyme

The measured serum markers were shown and compared between two groups in Table 2. As it is shown, total cholesterol, HDL-cholesterol and LDL-cholesterol were higher and glycaemia on admission, FBS, HbA1c and TG were lower in opium addict patients compared to non-opium addict patients. However, none of the differences were statistically significant (P>0.05). Moreover, there was no significant association between the serum markers' level and opium addiction after subgroup analysis based on patient's gender.

Tableau 2 : Comparison of lipid and glucose parameters between two groups (n=97)

Serum Maker	Case group (milligram/deciliter)	Control group (milligram/deciliter)	P value
Glycaemia on admission	244.6±100.74	272.76±131.50	0.419
FBS	172.98±76.73	177.57±54.05	0.787
HbA1c	7.61±1.92	8±1.84	0.168
Total cholesterol	182.27±53.23	174.88±47.89	0.307
TG	164.46±84.65	173.49±127.61	0.751
HDL	39±10.4	37.47±9.24	0.477
LDL	113.6±39.25	104.86±42.1	0.171

FBS: Fasting Blood Glucose, TG: Triglyceride, HDL: High Density Lipoprotein, LDL: Low Density Lipoprotein

There was a significant negative correlation between the duration of dependency to opium and the serum level of TG in opium dependent diabetic patients (P=0.019, r=-.0337). But there was no significant correlation between the duration of dependency to opium and the level of other serum markers. There were also no significant correlation between the dose of opium consumption and serum level of measured factors.

DISCUSSION

The people of Middle Eastern countries used opium from long time ago. Pain relief, feeling of pleasure and treatment of diarrhea and insomnia were the major purposes of opium consumption in the past[8, 9]. However, the majority of diabetic patients use this substance for its presumptive lowering effect on blood glucose and lipid. Our study showed that there are no significant differences in the serum level of lipid and glucose indices between opium addict and non-opium addict patients. Thus, this study provides evidence regarding non-realistic of the common belief in the Middle Eastern countries toward the anti-diabetic and anti-dyslipidemic effect of opium.

In this study, all glycaemia indices including glycaemia on admission, FBS and HbA1c was lower in opium addict patients compared to control group, however, the difference was not statistically significant. In a study by Azod et al. which was performed on diabetic patients, the mean FBS and 2-hour post-prandial blood glucose level was reported to be significantly lower in opium addict compared to non-opium addict patients, while no significant difference was seen in HbA1c level[10]. Shirani et al. reported the same findings in patients who were candidate for Coronary Artery Bypass Graft (CABG) surgery regardless of history of diabetes except for HbA1c that was significantly higher in opium addict group compared to control group[11]. In another study by Asgary et al. HbA1c reported to be significantly higher in otherwise healthy opium addicts compared to non-opium addicts. In that study, FBS was lower in the former group but the difference was not statistically significant[12]. While our findings were similar to other studies, the certain conclusion regarding the effect of opium on blood glucose cannot be assumed. In fact, the presumptive mechanism of opium effect on glucose comes from animal studies. These studies mostly investigated the role of morphine (one of the alkaloid components of opium) on the glucose metabolism. However, opium is not a pure substance and other alkaloids consisting about 25% of its weight[13]. Hence, these components alter the effect of opium on glucose metabolism from pure morphine. On the other hand, another potential reason for different findings in other studies is the confounding effect of co-morbidities such as acute stress, pulmonary edema, concomitant infection and fever. Although, the difference in fasting period before blood glucose measurement can influences the serum level of glucose in each study.

The serum level of total cholesterol, HDL-cholesterol and LDL-cholesterol were higher and the serum level of TG was lower in opium addict patients compared to non-opium addict patients. However, none of the differences were statistically significant. Karam et al. in their study stated that HDL-cholesterol was significantly lower in male diabetic patients with opium addiction comparing to non-opium addict male diabetic patients. No significant difference was reported between other serum lipid indices regarding opium addiction status of patients [5]. Another study by Fatemi et al. on otherwise healthy opium addict people reported that there were no significant differences in the serum level of HDL, LDL and TG between two groups, however in people with BMI within 18 to 25 kg/m2 range, the total cholesterol level was significantly lower than the control group[14]. Also, a lower serum level of TG was reported in opium addict group in the study of Azod et al. and no significant difference in serum lipid indices was seen between opium addict and control group[10]. However, several descriptive studies including the present study showed lower serum level of lipid indices especially TG in opium addict patients, no certain causative relation could be concluded because of various conditions that can modify the lipid indices such as dietary habits of opium addicts and their loss of appetite[14]. Moreover, animal studies with the goal of assessment of opium effect on lipid had opposite findings with the mentioned descriptive studies [15, 16].

There are some limitations in the current study. Not considering the dose of drug history in each patient may be a reason for higher level of glucose and lipid indices in diabetic patients with opium addition because this group of patients usually uses higher doses of anti-diabetic agents. Furthermore, addicts usually use other substances in private situation and are not honest about their information; therefore the confounding effect of these substances must be taken into consideration.

In conclusion, there were no significant differences in the serum level of glucose and lipid indices in diabetic patients with or without opium consumption. Hence, the effect of opium on diabetes and dyslipidemia are not protective.

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