



Opium Consumption and Mid-Term Outcome of Percutaneous Coronary Intervention in Men

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Abstract

Background: Controversy persists over the potential benefits/harms of opium consumption in coronary heart disease. This study investigated the association between 12 months' major adverse cardiac events (MACE) and pre-procedural opium consumption among patients undergoing percutaneous coronary intervention (PCI).

Methods: Retrospectively, 1545 consecutive men who underwent PCI between 21st June 2009 and 20th June 2010 at Tehran Heart Center and were registered in the PCI Databank were entered into this cohort study. The occurrence of MACE, defined as cardiac death, non-fatal myocardial infarction, and need for target vessel revascularization (TVR) or target lesion revascularization (TLR), was compared between two groups of opium consumers and non-consumers in 350 (22.7%) patients.

Results: Sixty-four (0.86%) patients expired within 12 months. After adjustment for potential confounders, analysis revealed that opium consumption had no significant relationship with 12 months' MACE [11(3.1%) vs. 53(4.4%); p value = 0.286, among opium users vs. non users, respectively]. Furthermore, the different components of MACE, including target vessel revascularization, target lesion revascularization, coronary artery bypass graft, and non-fatal myocardial infarction, were not significantly related to opium use.

Conclusion: Pre-procedural opium usage in patients undergoing PCI was not associated with 12 months' MACE.

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Keywords: Opium • Percutaneous coronary intervention • Major adverse cardiac event

Introduction

Opium abuse has been a major problem in many countries, and there is still a controversy about the effects of opium on coronary artery disease (CAD). For all the authors espousing the theory that opium usage is beneficial

in patients with such diseases as CAD, hypertension, and diabetes mellitus,¹ there are those who regard it as a risk factor for coronary heart disease.

A literature review yields a number of studies on the relationship between opium and coronary artery disease.²⁻¹⁰ Nevertheless, to our knowledge, there has been no study

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on the relationship between opium consumption and percutaneous coronary intervention (PCI) outcome. Given the current paucity of data and persistent controversy, we sought to compare 12 months' major adverse cardiac events (MACE) between two groups of patients undergoing PCI: those with and without opium consumption.

Methods

From an initial sample of 2425 patients, 713 females were excluded due to the low prevalence of opium consumption (2.9%) among them. In addition, the patients who underwent plain old balloon angioplasty (POBA) or had primary procedure and those with incomplete data were excluded. Totally, 880 patients were excluded from the study (Figure 1), and there remained 1545 male patients who underwent angioplasty in our center between 21st June 2009 and 20th June 2010 and were eligible to be enrolled in this cohort study. Among these 1545 patients, 350 (22.7%) were addicted to opium.

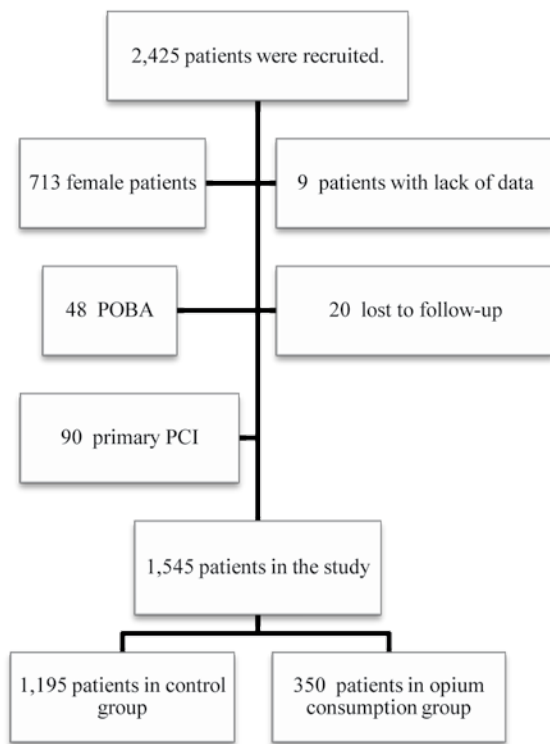


Figure 1. Study profile, describing the patients' recruitment and allocation steps POBA, Plain old balloon angioplasty

Opium consumption was defined as self-report of opium use during the previous month.

The outcomes were defined as 12 months' MACE [cardiac death, non-fatal myocardial infarction, target vessel and

target lesion revascularization (TVR and TLR), in-hospital myocardial infarction, coronary artery bypass graft surgery (CABG)], and 12 months' all-cause mortality. All deaths were considered cardiac unless documented otherwise.

All the patients were visited routinely at the first, sixth, and twelfth months after the procedure. Two trained research nurses contacted the patients who failed to refer to the clinic by telephone.

The outcomes were defined as 12 months' MACE. TVR was defined as all PCIs done on the same vessel or CABG. TLR was defined as repeated revascularization of the target lesion due to ischemia only by PCI.

The continuous data are described as mean \pm standard deviation (SD) and were compared between the patients with and without opium consumption via the Student test or the Mann-Whitney U test. In Figure 2, the categorical variables are presented through frequencies (percentages) and are compared between the two groups using the chi-squared or the Fischer exact test. The Kaplan-Meier method was applied to estimate the survivor curves, and the log-rank test was employed to compare the two groups.

The effect of opium consumption on MACE was analyzed after adjusting the effect of detected possible confounders, including ejection fraction, diabetes mellitus, and history of myocardial infarction using the Cox proportional hazards model. For the statistical analyses, the statistical software SPSS version 15.0 for Windows (SPSS Inc., Chicago, IL) was used, and a p value \leq 0.05 was considered statistically significant.

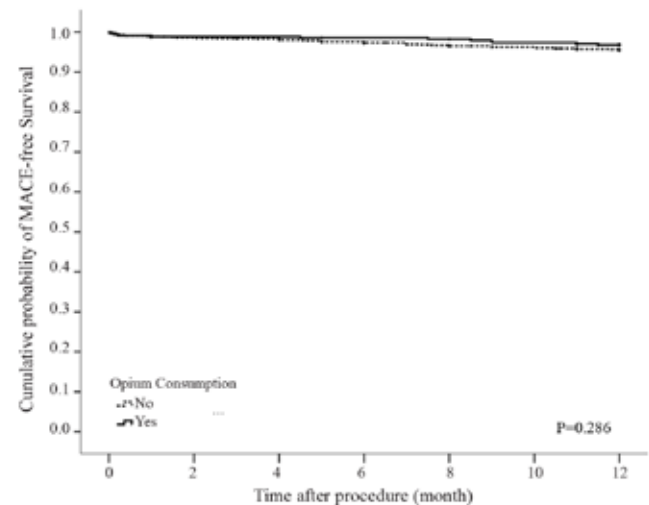


Figure 2. The Kaplan Meier survival curves of major adverse cardiac events in the two groups

Results

The patients were categorized into two groups according to opium consumption history. One group included 350 (22.7%)



patients who consumed opium and the second group consisted of 1195 (77.3%) patients who were not opium users.

The baseline, clinical, and procedural characteristics of the two study groups are summarized in Table 1. The proportion of the smokers (current and former) was greater in the group with addiction (p value < 0.001), who was also significantly younger than the group without addiction (55.7 ± 9.2 years vs. 58.4 ± 10.8 years; p value ≤ 0.001). The two groups had no statistically significant differences in terms of other risk

factors, lesions, and procedural characteristics, including hypertension, hyperlipidemia, diabetes mellitus, stent type, and ejection fraction, with the exception of the proportion of the left anterior descending artery as the target vessel and the frequency of diabetes mellitus, both of which were higher in the group without addiction [723 (60.5%) vs. 175 (50%); p value ≤ 0.001 and 297 (24.9%) vs. 69 (19.7%); p value = 0.047, respectively].

Overall, 64 (4.1%) patients had MACE during the 12

Table 1. Characteristics of the patients

Risk Factors	Opium consumption		P value
	Yes (n=350)	No (n=1195)	
FH	54/347 (15.6)	184/1189 (15.5)	0.969
HLP	195 (55.7)	681 (57)	0.672
Cigarette smoking			< 0.001
No	60 (17.1)	628 (52.6)	
Former	74 (21.1)	224 (18.7)	
Current	216 (61.7)	343 (28.7)	
HTN	134 (38.3)	518 (43.3)	0.092
DM	69 (19.7)	297 (24.9)	0.047
History of MI	204/348 (58.6)	656/1187 (55.3)	0.267
History of PCI	30 (8.6)	118 (9.9)	0.466
History of CABG	21 (6)	73 (6.1)	0.94
Stent Type			0.152
BMS	131 (37.4)	411 (34.4)	
DES	179 (51.1)	676 (56.6)	
Mixed	40 (11.4)	108 (9)	
Procedural numbers			0.347
1	264 (75.4)	868 (72.6)	
2	66 (18.9)	270 (22.6)	
3	16 (4.6)	50 (4.2)	
4	4 (1.1)	7 (0.6)	
Age (y)	55.7 (9.2)	58.4 (10.8)	< 0.001
BMI (Kg/m ²)	26.8 (4.1)	27.2 (4)	0.095
Abdominal circumference (cm)	98.7 (10.4)	99.9 (9.8)	0.052
EF (%)	50.1 (9.4)	49.5 (9.6)	0.269
RVD mean (mm)	3.33 (0.49)	3.31 (0.48)	0.534
Lesion length (mm)	21.12 (9.11)	20.88 (9.1)	0.674
Type C	207 (59.1)	689 (57.7)	0.620
Ostial	36 (10.3)	134 (11.2)	0.626
LAD	175 (50)	723 (60.5)	< 0.001
SVG	9 (2.6)	23 (1.9)	0.455
Stent diameter (mm)	3.23 (0.45)	3.21 (0.44)	0.609
Stent length (mm)	22.7 (7.23)	22.59 (6.96)	0.794

*Data are presented as n (%) or proportion (%)

FH, Family history; HLP, Hyperlipidemia; MI, Myocardial infarction; HTN, Hypertension; DM, Diabetes mellitus; PCI, Percutaneous coronary intervention; CABG, Coronary artery bypass graft; BMI, Body mass index; EF, Ejection fraction; RVD, Reference vessel diameter; LAD, Left anterior descending; SVG, Saphenous vein graft

months' follow-up. The results demonstrated that opium consumption had no statistically significant effect on total MACE over the 12-month period. The unadjusted hazard of one year's MACE in the group with addiction versus the group without addiction was 0.704 (95%CI: 0.367 - 1.347; p value = 0.289). After adjustment for the detected potential confounders, i.e. ejection fraction (EF), diabetes mellitus (DM), and history of non-fatal myocardial infarction, this measure was changed to 0.715 (95%CI: 0.372 - 1.371; p value = 0.312). The different components of MACE, including TVR, TLR, CABG, mortality, and non-fatal myocardial infarction, were not statistically different between the two groups as well (Table 2).

Table 2. Comparison of clinical 12 months' outcomes between the opium consumption and control groups

	Opium consumption		Log-rank test p value
	Yes (n=350)	No (n=1195)	
MACE	11 (3.1)	53 (4.4)	0.286
TVR	9 (2.6)	27 (2.3)	0.75
TLR	3 (0.9)	11 (0.9)	0.909
CABG	5 (1.4)	11 (0.9)	0.421
Non-fatal MI	3 (0.9)	14 (1.2)	0.617
All-cause mortality	2 (0.6)	20 (1.7)	0.144
Cardiac death	2 (0.6)	14 (1.2)	0.337

MACE, Major adverse cardiac event; TVR, Target vessel revascularization; TLR, Target lesion revascularization; CABG, Coronary artery bypass graft; MI, Myocardial infarction

Discussion

The results from the present study revealed that the preoperative use of opium in patients undergoing PCI was not correlated with a significant difference in the 12 months' outcome. Table 1 depicts the clinical, lesion, and procedural characteristics of the two study groups.

Given the established effects of cigarette smoking on CAD, we did not exclude cigarette smokers from the final analysis. What is more, other studies have reported the difficulty of focusing solely on non-cigarette smoking opium consumers.^{2, 3, 5} We, therefore, adjusted cigarette smoking and other possible confounders in the present study.

A retrospective study by Sadeghian et al.⁴ on 2405 patients and a case-control study by Masoomi et al.¹¹ concluded that opium consumption was an independent risk factor for CAD. One study demonstrated a relationship between opium consumption and outcome of myocardial infarction.¹² Mohammadi and colleagues¹³ posited the atherogenic effects of opium in animal models. The results of one study showed that opium increased the risk of CAD in opium users by raising the serum levels of lipids.¹⁴ In contrast, Fatemi et al.¹⁵

showed that serum lipids were decreased by opium use.

In our study, there was no significant difference in the rate of hyperlipidemia between the two groups. This finding is echoed by another study conducted in our hospital insofar as it reported no significant effect of opium on lipid levels.⁶ Shirani et al.⁶ studied 1339 patients candidate for CABG in their retrospective investigation and reported that opium was not cardioprotective. Another study carried out in 2005 found no relationship between opium and myocardial infarction.¹⁶ Be that as it may, there are other studies that do not chime in with our results. Prominent among this group of studies is the one by Marmer et al.,¹⁵ (2004) who studied the effect of opium among autopsy samples and showed a decreased CAD rate and its consequences. In the present study, the rate of previous myocardial infarction was not different between the two groups.

The similarity in terms of patient characteristics between the two groups in our study may support the notion that opium consumption in patients undergoing PCI most probably does not influence cardiac risk factors and coronary angioplasty outcome.

The present study was a historical cohort analysis of data in a single referral center. Moreover, data collected on opium usage were self-reported and information on the duration, dosage, and route of opium consumption was not available. Furthermore, the impurity of opium in use, which is an issue of significance, was not taken into consideration in the current study.

Conclusion

Pre-procedural opium consumption in patients undergoing PCI was not associated with its 12 months' outcome. Our results showed that opium consumption did not correlate with MACE. Our study may generalize the invalidity of the popular belief regarding the potential beneficial effects of opium usage on CAD. Well-designed randomized clinical trials will help us to assess more accurately how opium use affects the outcomes of PCI.

Although the withdrawal effects in post-cardiac procedure CAD patients have yet to be investigated, it may be advisable for this group of patients to postpone quitting opium to a later time.

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