Relationship of Opium Dependency and Stroke

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Abstract

Background: Stroke is the third cause of mortality and not only leads to dependency, which is a great social, individual and cultural problem, but also can affect the physiology, immune system and coagulation system such as plasma fibrinogen, and it may potentially increase the risk of stroke. This study investigated the relationship of opium dependency and stroke.

Methods: This case-control study was carried out in 2003-2004 in Shefa Hospital in Kerman, Iran. The case group included 105 stroke patients and control group included the same number of patients from urology ward. There were 55 females and 50 males in each group. Patients' data were collected through their medical history, physical examinations, and diagnosis procedures recorded in specific questionnaires. Data were analyzed using chi-square test.

Findings: 31 patients (29.5%) in the case and 11 (10.5%) in the control group were opium dependent and the difference was significant ($P = 0.001$). The relationship of cigarette smoking and stroke was also significant ($P = 0.0001$). To find the independent effect of each of these two factors, a logistic regression analysis was done, which showed that the independent relationship of each of these two was significant (Odds ratio = 2.207, $P = 0.012$ and Odds ratio = 2.36, $P = 0.040$ for cigarette and opium dependency respectively).

Conclusion: Opium dependency can be regarded as an independent risk factor for stroke. As this corresponds to previous findings as to opium dependency can increase plasma fibrinogen and development of atherosclerosis, it is important for prophylactic manages.

Key words: **Drug dependency, Opium, Stroke**

Introduction

Stroke is the most common cause of hospitalization in neurology wards and is the third leading cause of death.[1,2] The prevalence of stroke is higher among people older than 65 years and the risk becomes double each 10 years after 55 years of age.[1,3,4]

According to the epidemiology studies, the prevalence of stroke is higher in non-developed countries. Stroke is a common cause of disability in adults and leads to a huge cost of health care and rehabilitation.[3,5] Stroke leads to various complications including palsy, numbness, psychiatric disorder and even death. In many cases, the disorders caused by stroke cannot be fixed to return the patient to the primary functioning state.[5,6]

Therefore, it is important to prevent the stroke by identifying those at risk reported as the cause of stroke incidence some of which are not preventable and changeable such as age,[3,7,8] sex,[7,9] race,[10,11] family history,[12,13] and genetics.[13,14] However, some of these factors are preventable and changeable, and researchers have been working to identify and control them. One of these preventable factors is opium dependency.[3,8]

Some of the effects of opium or morphine on the physiology of the body include weakening immune system,[15,16] increasing the risk of infections and the resulted mortality,[15] biochemical and hormonal changes, decreasing the total oxygen consumption,[15,16] increasing the plasma fibrinogen,[3,17] increasing coagulation,[18,19] increasing the risk of arteriosclerosis,[20,21] and depression.[22] These effects of opium suggest the possibility of its relationship with stroke. A study on the relationship of opium dependency and ischemic heart diseases carried out in Kerman showed a relationship between opium dependency and cardiovascular diseases.[17] Since the mechanisms of stroke and heart attack are quite similar, there is a possibility that opium dependency has similar effects on brain vessels, which the present study aimed to investigate.

Methods

In order to determine the correlation of the opium dependency and the risk for ischemic thrombotic diseases, this case control study was conducted for 18 months during 2003 to 2004 in Shefa Hospital in Kerman, which is a reference center for stroke cases.

All patients diagnosed for stroke based on the international clinical diagnosis[8,22] and CT Scan entered the case group. After interviewing them, Physical examinations were performed by a neurologist and patients with previous history of stroke, impossible cases to obtain a clear history of patients or their families, cases caused by trauma, vascular thromboembolism, and using anticoagulation drugs, cases with vascular infarction and age of under 35 years, cases with metabolic disorders and suspected metastases or other space-occupying lesions in CT scan, and patients who ceased opium more than a year before the study were excluded.

For the control group, the patients were selected from urology ward and were matched by sex and age (± 5) to those in case group. Patients with a history of stroke were excluded.

In both case and control groups, patients with DSM-IV-TR diagnosis who had continuous use of opium for more than a year were identified as opium addicts.

Data were collected through patients' medical history, physical examinations and diagnosis procedure and recorded in specific questionnaires included questions on history of opium dependency, the extent of cigarette smoking, the date of opium cessation if any, and the method of consumption. Descriptive scales and Chi-Square test and logistic regression were used for data analysis.

Results

There were 55 females and 50 males in each group. The mean age was 67.2 ± 9.3 for the case and 66.6 ± 11.4 for the control group. There was no significant difference between the mean age of the two groups (P = 0.67). The problem was ischemic in 78 patients (74.3%) hemorrhagic in the rest patients in case group.

The lesion was on the right side in 41 patients (39%), on the left side in 59 patients (56.2%), and in both sides in 2 patients (1.91%). The opium dependent patients were 31 (29.5%) in the case and 11 (10.5%) in the control group; and the difference was significant (P < 0.001, Table 1).

Since there was a possibility of concomitant effects of cigarette smoking and opium on these values, the relationship of cigarette smoking and stroke was also calculated and 60 patients (57.1%) in the case and 33 patients (31.4%) in the control group had cigarette smoking dependency (P < 0.0001, Table 2).

Table 1. Comparing opium dependency in patients with stroke with control group

Opium dependency	Groups [Number (%)]		
	Case	Control	Total
No	74(70.5)	94(89.5)	168(100)
Yes	31(29.5)	11(10.5)	42(100)
Total	105(100)	105(100)	210(100)

Table 2. Comparing cigarette smoking dependency in patients with stroke with control group

Cigarette smoking dependency	Groups [Number (%)]		
	Case	Control	Total
No	45(42.9)	72(68.6)	117(100)
Yes	60(57.1)	33(31.4)	93(100)
Total	105(100)	105(100)	210(100)

Table 3. Multivariate logistic regression comparing cigarette smoking and opium dependency with stroke

Dependency	B	SE	WALD	df	P value	EXP (B) Odds Ratio
Cigarette smoking dependency	0.791	0.361	6.290	1	< 0.012	2.207
Opium dependency	0.861	0.419	4.225	1	< 0.040	2.366
Fix value	0.192	0.192	7.036	1	< 0.008	70.601

Since both cigarette smoking and opium dependency can be related to stroke, logistic regression test was used to analyze their independent effects and the results are presented in table 3. Both these risk factors had significant correlation with stroke (Odds ratio = 2.207, P = 0.012 and Odds ratio = 2.36, P = 0.040 for cigarette and opium dependency compared to non-smokers and non-addicts respectively).

Discussion

Identifying the risk factors for stroke, which is a disabling disease, has always had research and economic significance.[3,23] Many risk factors have been determined for stroke, on some of which there is consensus. These include age,[1,2,13] blood pressure,[2,3,5,24] diabetes,[25-27] and cardiovascular disorders.[3,8,28] Other preventable factors with no consensus include hyperlipidemia,[3,8,27] cigarette smoking,[3,7,9,16] severe alcohol dependency,[2,3,7] high level of serum uric acid,[8,29] OCP use,[30] cocaine and other narcotics use,[8,13] high plasma fibrinogen,[2,3,7] increasing serum hemocysteine,[3,7,31] increasing serum anticardiolipin level,[3,7,8] increase of hematocrit level,[2,6,8] lack of physical exercise,[3,7,8] hemoglobinopathies,[3,7,8] low plasma folate,[7,8,29] migraine,[8,24] geographical conditions and seasonal changes,[7,8] infections,[7,8,29] type A personality,[8,24] depression,[32] economic conditions,[3,7] and obesity.[3,7,8]

Preventing stroke is more important than its treatment.[26,33] Therefore, researchers have tried to determine risk factors as well as appropriate interventions for preventions. Studies showed that there is some indirect relationships between opium dependency and stroke,[12,17,20] but there is no report available concerning an independent relationship between the two. This study aimed to investigate if there is any independent relationship between them.

It is not clear if intentionally added substances such as arsenic to the opium effect stroke.[34]

In the present study, the prevalence of opium dependency was 10.5% and 29.5% in control and case groups, respectively and the difference was significant (P < 0.001). The prevalence of cigarette smoking was 33% and 57.1% in case and control groups, respectively and the difference was also significant (P < 0.001).

The results of this study correlates with the previous ones. Opium dependency can increase plasma fibrinogen[3,17] which is a major and independent risk factor for incidence and development of atherosclerosis in coronary

arteries, peripheral and cerebral vessels and sometimes can lead to stroke.[18,19]

Also it is stated in psychiatric references that opium dependency can lead to depression[22] and depression is an independent risk factor for stroke.[32] Moreover, opium dependency weakens immune system,[15,16] which leads to infection that is a risk factor for stroke.[7-9] We can, therefore, conclude that opium dependency is a risk factor for stroke independent of smoking. Researchers assume that other factors such as added substances like arsenic to the opium may have a role in stroke,[34] which needs further investigations.

Since some risk factors such as increase in

plasma fibrinogen,[17] infections,[7-9] and depression[32] has a role in incidence of stroke and opium dependency can lead to these risk factors;[24,29,31] therefore, opium dependency plays some role in incidence of stroke. Further studies are recommended on the field to determine mutual effects of these variables by controlling interfering factors.

Acknowledgment

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بررسی احتمال افزایش ریسک سکته مغزی در وابستگان به تریاک

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چکیده

مقدمه: سکته مغزی، به عنوان سومین علت مرگ و میر، به عوامل مختلفی وابسته است. تریاک، صرف نظر از ایجاد وابستگی که خود یک مشکل عمده اجتماعی، فردی و فرهنگی است، می‌تواند اثرات مختلفی روی فیزیولوژی بدن، سیستم ایمنی و انعقادی از جمله فیبرینوژن پلاسما داشته باشد و بالقوه ممکن است بر میزان ابتلا به سکته مغزی تأثیر گذار باشد. این مطالعه برای بررسی رابطه وابستگی به تریاک با ابتلا به سکته مغزی انجام شد.

روش‌ها: این مطالعه به صورت شاهد—موردی در طی سال‌های ۱۳۸۲–۸۳ در بیمارستان شفای کرمان بر روی ۱۰۵ بیمار مبتلا به سکته مغزی در گروه مورد و همین تعداد از بخش اورولوژی به عنوان گروه شاهد انجام شد. در هر گروه ۵۵ زن و ۵۰ مرد قرار گرفتند. داده‌های به دست آمده از بیماران، طی شرح حال، معاینه فیزیکی و اقدامات تشخیصی، در پرسش نامه‌های خاص ثبت و سپس با استفاده از آزمون مجذور کای آنالیز شد.

یافته‌ها: در گروه مورد ۳۱ نفر (۲۹/۵٪) و در گروه شاهد ۱۱ نفر (۱۰/۵٪) وابسته به تریاک بودند که اختلاف آنها معنی‌دار بود ($P < ۰/۰۰۱$). از آن جایی که احتمال اثر هم زمانی مصرف سیگار و تریاک بر این مقدار وجود داشت، رابطه مصرف سیگار با سکته مغزی نیز محاسبه گردید ($P < ۰/۰۰۰۱$). بر این اساس هر دو عامل با ابتلا به سکته مغزی رابطه معنی‌داری داشتند، لذا برای جداسازی اثرات مستقل این دو عامل خطر آنالیز لجستیک رگرسیون انجام شد که باز هم نشان دهنده رابطه معنی‌دار مستقل هر کدام از این دو عامل بود. Odds Raito محاسبه شده برای وابستگی به سیگار ۲/۲۰۷ ($P < ۰/۰۱۲$) و برای وابستگی به تریاک ۲/۳۶ ($P < ۰/۰۴۰$) بود.

نتیجه‌گیری: وابستگی به تریاک می‌تواند به عنوان یک عامل خطر مستقل برای سکته مغزی مطرح باشد. این یافته از آن جا که با یافته‌های دیگر در مورد افزایش فیبرینوژن پلاسما با مصرف تریاک و افزایش خطر آترواسکلروز است، اهمیت پیشگیری زیادی پیدا می‌کند

واژگان کلیدی: وابستگی به مواد، تریاک، سکته مغزی