Article

Study On Harmful Effects Of Opium On Liver And Lungs In Chronic Opium Addicts Of Western Rajasthan

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Abstract

Background: Today opium dependence is widely prevalent in certain states of India, especially Rajasthan, Punjab, Haryana, Madhya Pradesh (MP) etc. In rural areas of western Rajasthan crude opium is consumed with a social acceptance by a notable proportion (8.0%) of adult male population. Later on they become addicted to it. **Objective:** to observe the changes in some liver and lung function parameters in opium addicted subjects of Barmer city of Western Rajasthan. **Methods:** The present study was conducted in district hospital of Barmer, Rajasthan. Total fifty (50) adult male subjects with age ranged from 30 to 50 years were participated in this study. Among them 25 were opium addicted and were considered as study group (Group B) and another 25 apparently healthy adult male of same age group were designated as control group (Group A). Opium addicts were consuming about 5–11 gm/day opium for >2 years. Then liver function tests were evaluated by estimating serum aspartate amino transferase (AST), alanine amino transferase (ALT), alkaline phosphatase and lung function tests by measuring FVC, FEV_1 , FEV_1/FVC% , PEF, $FEF_{25-75\%}$ of both the groups. **Results:** In this study AST, ALT and alkaline phosphatase levels were found significantly ($p<.05$) higher in group B as compared to those of group A. Again, FVC, FEV_1, FEV_1/ FVC were significantly ($p<.05$) lower in group B as compared to those of group A. PEF (L/sec) and $FEF_{25-75\%}$ were also significantly ($p<0.001$) lower in group B as compared to those of group A. **Conclusion:** it is concluded that chronic long term use of opium, increases the risk of hepatic and pulmonary damage.

Key words: Opium addiction ,western Rajasthan, LFT, PFT

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Introduction

Addiction is an alarming issue in all over the world. In India, among the opioid compounds opium has the highest consumption; as India is one of the major opium producing & exporting country. Botanically opium is known as *Papaver somniferum* which is available in chocolate colored gum form prepared by drying the poppy fruit milk on a cotton cloth in the hot sun.

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The opium which is extracted from the juice of poppy capsules (Papaver–somniferum)[1] is used as a raw material for the synthesis of some medicines such as morphine, noscapine and papaverine (10%, 6%, 1% of opium respectively)[2]. Since more than 20 alkaloid[3] and more than 70 ingredients are present in opium[4], its impacts can be different in comparison to pure morphine, noscapine & papaverin.

Since ancient times opium was used by Rajput (warrior) clan of this part of the country

particularly in the desert part mainly to reduce bleeding and allay apprehension during war times. It was also used since long as a mind altering drug and as an analgesic on the Indo-Pakistan sub-continent [5].

Furthermore, in India total number of registered addicts of opium were 1,10,866 in 2001. Opium dependence is gradually increasing in certain states of India, especially Rajasthan, Punjab, Haryana, M.P. etc. In rural areas of Western Rajasthan opium has also being used as ceremonial drink during the vital events, festivals and social functions[6]. Opium dependence is widely prevalent in rural areas of western Rajasthan where crude opium is consumed with a social acceptance by a notable proportion (8.0%) of adult male population. Later on they become addicted to it[7].

Barmer District has highest prevalence rate (8.4%) of opium addiction. In addition, the number of opium addicted subjects is gradually increasing, but little is known about the harmful effect of opium. So, the present study was done to observe the changes in some liver and lung function parameters in opium addicted subjects of Barmer city of Western Rajasthan. The results of this study would help to create awareness among the clinician to give attention on liver and lung function abnormalities in opium addict's patients and in patients prescribed with different doses of opium.

Methods

The present study was conducted in district hospital of Barmer, Rajasthan. Total fifty (50) adult male subjects with age ranged from 30 to 50 years were participated in this study. Among them 25 were opium addicted and were considered as study group (Group B) and another 25 apparently healthy adult male of same age group were designated as control group (Group A). Opium addicts were consuming about 5–11 gm/day opium for >2 years. Then liver function tests were evaluated by estimating serum aspartate amino transferase (AST), alanine amino transferase (ALT), alkaline phosphatase and lung function tests by measuring FVC, FEV_1 , FEV_1/FVC% , PEF, $FEF_{25-75\%}$ of both the groups.

The purpose and expected outcome of the study were explained to each subject. They were encouraged for voluntary participation. Written informed consent was obtained from each subject .Detailed medical and family history was taken and thorough clinical examination was done. Clinically known case of infections that affect liver & lung like viral hepatitis, HIV, pneumonia,chronic obstructive lung disease, tuberculosis and subjects with history of smoking were excluded from the study.

After an overnight fast (5ml), blood samples were taken. Blood sugar level[8] AST[9], ALT[9], total bilirubin[10], Alkaline phosphatase[11] were estimated in both the groups.Various pulmonary parameters were measured using vitalograph.

Statistical analysis was done by Student's "t"–test

Results

Subjects of both the groups were matched for age, height and weight. (Table I)

Table I : Mean± SD Anthropometric parameters of both the groups (n=50).

Parameter	Group A (n=25)	Group B (n=25)	P value
Age (years)	39.5±9.20	39.2±11.14	>.05
Height	165±7.60	163±8.9	>.05
Weight	57±6.39	53±5.86	>.05

Group A = apparently healthy subjects Group B= Opium addicts

Table II: Mean±SD some liver function tests in both the groups (n=50)

Parameter	Group A (n=25)	G+roup B (n=25)	P value
BloodSugar(mg/dl)	78.5±42.46	104.9±61.18	>.05
S. Bilirubin (mg/dl)	0.54±0.32	0.97±0.61	>.05
SGOT(IU/L)	27.5±6.94	47.2±16.54	**<.05**
SGPT(IU/L)	26.0±6.26	80.7±21.96	**<.001**
ALP (IU/L)	158.12±52.31	228.0±60.41	**<.05**

Table III: Mean±SD some pulmonary function tests in both the groups (n=50)

Parameters	Group A (n=25)	Group B (n=25)	P value
FVC(L)	4.20±1.34	3.29±1.62	>.059
FEV_1(L)	4.20±1.41	2.00±1.50	<.001
FEV_1/FVC	92.0±8.93	71.78±12.96	<.001
PEF (L/Sec)	5.80±1.38	3.20±0.82	<.001
FEF (25-75%)(L/Sec)	5.40±1.68	2.95±1.51	<.001

Group A = apparently healthy subjects. Group B= Opium addicts

Blood sugar and serum bilirubin levels were higher in group B in comparison to those of group A but the differences were not statistically significant ($p > 0.05$). AST, ALT and alkaline phosphatase levels were significantly ($p < .05$) higher in group B than those of group A. (Table II)

In this study, FVC, FEV1, FEV1/ FVC% were significantly ($p<.05$) lower in group B than those of group A. Again, PEF and FEF were also significantly ($p<.001$) lower in group B as compared to those of group A. (Table III)

Discussion

In the present study AST, ALT and alkaline phosphatase levels were significantly higher in opium addict group than those of control group. Similar results were observed by other researchers[15-17].

In liver, morphine is biotransformed by hepatic glucoronidation to major but inactive metabolite morphine–3 glucuronide (M3G) and biologically active morphine–6 glucuronide (M6G)[12]. These metabolites increase the secretion of enzymes in liver. Continuous and larger dose of opium can impaired the liver functions. Morphin is metabolized mostly in the liver with prolonged clearance because of enterohepatic circulation which contributes to the maintenance of blood and tissue level of morphine and its metabolites from intestinal hydrolysis of glucuronides [13].

Furthermore, in this study FEV1, FEV1/FVC, PEF & $FEF_{25-75\%}$ were significantly lower in opium

addict group as compared to those of control group. The FVC was also reduced in opium addict group but it was not statistically significant. These results are in consistent with those of some other researchers[19-24].

Morphine directly acts on the respiratory center and decreases respiratory function [18]. Therapeutic doses of morphine in man depress all the phases of respiratory activity in terms of rate, minute volume and tidal volume. Besides centrally mediated respiratory depression overdose of opioids may affect the respiratory system directly by causing non-cardiogenic pulmonary oedema and bronchospasm.[12] Opium also affects parenchyma, pleura or mediastinum. Very high doses of opioids may induce centrally mediated muscle rigidity of chest and abdominal wall.

Conclusion

From this study it is concluded that chronic long term use of opium,(>2yr) increases the risk of hepatic & pulmonary damage.

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*** For corrospondance**

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