Perioperative Status and Complications in Opium Addicts in Western Rajasthan

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Abstract Opium addiction is rampant in Western Rajasthan and probably has the highest number of opium addicts in the world. The study envisages upon the presentation, diagnosis and various postoperative complications in surgically ill opium addicts vis-à-vis non addicts. The study is purported to benefit clinicians dealing with opium addict patients. The prospective cohort study was conducted at Mahatma Gandhi Hospital, Jodhpur between December 2004 and February 2006 and included cohorts of 71 opium addict and 50 non-addict patients admitted in various surgical wards. The study focused on presentation and the post-surgical complications encountered in these patients vis-à-vis others. The results thus obtained were evaluated statisti-

cally (mean±SD, SEM, two tailed *t* test, chi-square test), *p* value of <0.05 was considered as significant. A thorough comparative analysis revealed that opium addict patients had a significantly higher incidence of postoperative respiratory, cardiovascular, systemic and local complications. The requirement of analgesics and duration of hospital stay were also significantly higher as compared to control group. The work concludes that opium addicts suffer a much higher degree of postoperative morbidity as compared to non-addicts.

Keywords Opium addiction · Social custom · Opium initiation ceremony · Opiate withdrawal syndrome · Sphincter of oddi dysfunction (SOD)

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Introduction

The word ‘Opium’ is derived from Greek, meaning ‘Juice’. It is obtained from the milky exudate of the incised unripe fruit of the poppy plant *Papaver somniferum* [1]. The milky exudate when dried in air forms a brownish gummy mass which is then further dried and powdered to make opium which contains a number of alkaloids. In rural areas of western Rajasthan opium is consumed in social gatherings, marriages and even at condolence. Opium initiation ceremonies are held in various rural communities such as Vishnoi, Seervi, Jat, etc. and offerings are made to Lord Shiva.

It is also believed that prevalence of opium addiction is high in TB and COPD cases as where it is used to suppress cough. Opium is consumed as medicine and is used in countless remedies for many ailments; this widespread careless use has produced an inevitable amount of overdose accident of addiction. India is not only among the world’s

Table 1 Percentage distribution of subjects according to postoperative complications

Complications	Opium addicts		Non-addicts	
	N=71	%	N=50	%
Respiratory complications	44	62.0	20	40.0
Cardio vascular complications	63	88.7	22	44.0
Local complications	34	47.9	12	24.0
Systemic complications	26	36.6	10	20.0
Death	11	14.5	4	8.0

largest consumer of illicit opiates but also one of the largest illicit opium producers. In contrast to all other illicit producers, India owes the distinction of being one with illicit diversion from licit cultivation. India's experience suggests the difficulty of preventing substantial leakage, even in a relatively well-governed nation [2]. Under license, the Government of India has allowed opium control sale.

The study envisages upon the presentation, diagnosis and various postoperative complications in surgically ill opium addicts vis-à-vis non addicts.

Material and Methods

The prospective cohort study was conducted at Mahatma Gandhi Hospital, Jodhpur, between December 2004 and February 2006 and included cohorts of 71 opium addict and 50 non-addict patients admitted in various surgical wards. The study focused on presentation and post-surgical complications encountered in these addict patients vis-à-vis others. The results thus obtained were evaluated statistically (mean±SD, SEM, two tailed *t* test, chi-square test), *p* value of <0.05 was considered as significant.

Results

Majority (97.2%) of the patients was from rural areas of western Rajasthan, predominately elderly males (5th–7th

decade) with a history of opium addiction lasting well over 16 years (39.4%); longest duration was 50 years. The youngest addict was 33 years old and the oldest was 80 years of age.

An overwhelming 62% were initiated into opium addiction by social customs prevalent; 26.8% got addicted to it seeking relief from some form of pain while 9.9% took to addiction for suppression of chronic cough. Associated tobacco (smoking/chewing) and/or alcohol addiction was also noted in over 60% of patients (60.6%).

About a quarter of these patients (22.5%) had coarse crepitations in chest; 38% had pedal oedema and 14.1% were anaemic. Almost three quarter of patients (73.2%) presented with GI tract diseases. Gallbladder was involved in 7% (cholelithiasis 4%, empyema 1.4%, perforation 1.4%) while 66.2% had disease of G.I. Tract elsewhere, majority (30.9%) presenting with peptic perforation. 11.3% patients were diagnosed as having hernia (inguinal 9.8%, para umbilical 1.4%); 8.5% had diseases of urogenital tract while 9.9% were suffering from other illnesses.

Surgical procedures performed included exploratory laparotomies (55.9%), cholecystectomies (7%), hernia repair (8.4%) and others (28.7%).

Postoperative complications were uniformly higher in opium addict group compared to controls. The incidence of postoperative respiratory complications was one and a half times and cardiovascular complications twice as high in addict group vis-à-vis control. Even systemic complications were one and a half times as common in addicts as compared to controls. What was surprising was the four times higher incidence of local complications in this group vis-à-vis control.

Incidence of postoperative respiratory complications is high (61.9%) in opium addicts as compared to controls (40%) and these included pneumonitis in 60.6% vs 36%, pleural effusion 18.3% vs 6% and ARDS 4.6% vs 0% (significant). 22.5% of opium addicts had coarse crepitations on auscultation. Incidence of postoperative respiratory complications is higher in opium addicts as compared to controls irrespective of routine and emergency surgical procedures (not significant).

Incidence of postoperative cardiovascular complications is higher (88.7%) in opium addicts as compared to 44% in

Table 2 Postoperative respiratory complications

Complications	Routine				Emergency			
	Opium addicts		Non-addicts		Opium addicts		Non-addicts	
	N=28	%	N=25	%	N=43	%	N=25	%
Respiratory complications	14*	50.0	6	24.0	30**	69.8	14	56.0
Pneumonitis	13	46.4	6	24.0	30	69.8	12	48.0
Pleural effusion	2	7.1	0	0.0	11	25.6	3	12.0
ARDS	1	3.6	0	0.0	3	7.0	0	0.0

p*>0.05; *p*>0.2

Table 3 Postoperative cardiovascular complications

Complications	Routine				Emergency			
	Opium addicts		Non-addicts		Opium addicts		Non-addicts	
	N=28	%	N=25	%	N=43	%	N=25	%
Cardiovascular complications	24*	85.7	7	28.0	39**	90.7	15	60.0
Hypertension	12	42.9	6	24.0	8	18.6	6	24.0
Hypotension	10	35.7	1	4.0	30	69.8	9	36.0
Arrhythmias	2	7.1	3	12.0	3	7.0	2	8.0

* $p < 0.0003$; ** $p < 0.003$

control group (significant) and included hypertension in 28.2% vs 24%, hypotension in 56.3% vs 20% and cardiac arrhythmias in 5% vs 5%. Incidence of postoperative cardiovascular complications is higher as compared to control group, irrespective of routine and emergency surgical procedures (significant).

Incidence of postoperative systemic complications is higher (36.6%) in opium addicts as compared to 20% in control group and includes opiate withdrawal syndrome, cerebrovascular accidents, acute renal failure, septicaemia and shock (significant). Incidence of postoperative systemic complications is higher as compared to control group in routine 32.1% vs 12% (not significant) and emergency surgical procedures 39.5% vs 28% (not significant).

Incidence of postoperative local complications is high (47.9%) in opium addicts as compared to 12.4% in control group (significant). Incidence of postoperative local complications is higher as compared to controls in routine [46.4% vs 8% (significant)] and emergency surgical procedures [48.8% v/s 40% (not significant)]. Wound dehiscence / burst abdomen was seen in 31% cases and biliary leak / external fistula in 17.1%.

Associated addiction/s significantly increased the incidence of postoperative complications whether respiratory, cardiovascular or systemic. While the incidence of postoperative respiratory complications in opium addicts was

53.3%, it increased to 83.3% in those who were smokers as well and 81.3% in smoker as well as alcohol abusers.

Similarly the incidence of postoperative cardiovascular complications increased from 75% to 96.9% in opium addicts who smoked tobacco and it was cent per cent in those who smoked and abused alcohol as well.

Incidence of systemic complications in opium addicts was 32.1% which significantly rose to 59.4% and 66.7% respectively in those who abused tobacco as well as and tobacco plus alcohol.

Duration of opium addiction had no bearing on the development of postoperative respiratory complications. Although the incidence of complication was 75% in those taking opium for less than 5 years and it rose to 88.2% in those who were on opium for more than 25 years; the in between group reported an incidence of only 58.7%.

The study suggested that the requirement of analgesics in postoperative period was higher than in the control group and 73.2% required more than 2 drugs (NSAIDs+tramadol+butorphenol / buprenorphine). The mean duration of hospital stay was higher (23.3 ± 10.4 days) in opium addicts as compared to controls (11.9 ± 10.2 days).

The mortality in opium addicts was seven times higher during elective surgery as compared to non addicts [7.1% vs 0% (significant)]. However it was only marginally greater during emergency surgical procedures [20.9% vs 16% (not significant)].

Table 4 Postoperative systemic complications

Complications	Routine				Emergency			
	Opium addicts		Non-addicts		Opium addicts		Non-addicts	
	N=28	%	N=25	%	N=43	%	N=25	%
Systemic complications	9*	32.1	3	12.0	17**	39.5	7	28.0
Opiate withdrawal syndrome	8	28.6	0	0.0	11	25.6	0	0.0
Acute renal failure	0	0.0	0	0.0	2	4.7	0	0.0
Cerebrovascular accidents	0	0.0	1	4.0	0	0.0	0	0.0
Septicemia	4	14.3	2	8.0	14	32.6	7	28.0
Shock	2	7.1	0	0.0	9	20.9	5	20.0
Death	2	7.1	0	0.0	9	20.9	4	16.0

* $p < 0.05$; ** $p > 0.2$

Table 5 Postoperative local complications

Complications	Routine				Emergency			
	Opium addicts		Non-addicts		Opium addicts		Non-addicts	
	N=28	%	N=25	%	N=43	%	N=25	%
Local complications	13*	46.4	2	8.0	21**	48.8	10	40.0
Stitch abscess	5	17.9	2	8.0	2	4.7	4	16.0
Wound dehiscence	7	25.0	0	0.0	13	30.2	5	20.0
Burst abdomen	0	0.0	0	0.0	2	4.7	1	4.0
Bile leak	3	10.7	0	0.0	2	4.7	0	0.0
Fistula formation	1	3.6	0	0.0	9	20.9	2	8.0

* $p < 0.006$, ** $p > 0.48$

Discussion

Abuse of narcotics and narcotic analgesics for relief of pain may be a global phenomenon but initiation into opium consumption as part of social custom is exclusive to rural areas of western Rajasthan giving it the unenviable distinction of being home to the largest number of opium addicts in the world.

The total number of registered addicts all over India was 80,809 in 1975, (Reports of Expert Committee Drug Abuse in India, 1976) [3]. According to Purohit et al (1988), 12.67% of adult males in villages of Rajasthan are opium dependent. In another study, 11.81% of adult males were opium dependent in village Joliyali in Jodhpur district and 23% hospitalized pulmonary tuberculosis patients were opium dependent [4]. The Western Rajasthan region is known for its traditional use of raw opium in the form of amal or doda. The ethnographic information suggests that opium use is in many ways integrated into the sociocultural fabric of the local community [5]. Mathur et al carried out a study in 19 villages in Jodhpur district and concluded that 7.1% of adult males in villages of Rajasthan are opium dependent [6]. Opium (morphine) and other derivatives exert their action by interacting with specific receptors in neurons in CNS and in the peripheral tissues [7].

The all male series may be deceptive with social taboos coming in the way of eliciting and reporting of opium addiction in females. The absence of malnutrition and anaemia in majority of patients is an indication of social acceptability amongst upper socio economic strata of rural population in this region.

Postoperative respiratory complications were seen in 62% cases compared to 40% in the control group ($p < 0.02$, Table 1). 50% cases in the study group encountered postoperative respiratory complications in routine settings compared to 24% in the control group (* $p > 0.05$, ** $p > 0.2$, Table 2). 69.8% cases in the study group encountered postoperative respiratory complications in emergency settings compared to 56% cases in the control group.

Postoperative cardiovascular complications in routine settings were observed in 88.7% cases compared to 44% cases in the control group ($p < 0.001$, Table 1). 85.7% cases in the study group encountered postoperative cardiovascular complications in routine settings compared to 28% cases in the control group; 90.7% cases in the study group encountered postoperative cardiovascular complications in emergency settings compared to 60% cases in the control group (* $p < 0.0003$, ** $p < 0.003$, Table 3).

Helm et al [8] reported that morphine and opioids have been shown to cause functional obstruction of common bile

Table 6 Percentage distribution according to postoperative analgesic requirement

Analgesic requirement	Opium addicts		Non-addicts	
	N=71	%	N=50	%
No drug	0	0.0	0	0.0
NSAIDs alone	0	0.0	13	26.0
Tramadol alone	1	1.4	2	4.0
NSAIDs+tramadol	17	23.9	35	70.0
Tramadol+butorphanol	1	1.4	0	0.0
NSAIDs+tramadol+opium oral or P/R	32	45.1	0	0.0
NSAIDs+tramadol+butorphanol	18	25.4	0	0.0
NSAIDs+tramadol+buprenorphine	2	2.8	0	0.0

duct and sphincter of Oddi spasm. Most patients are seen with the classic clinical picture of SOD with marked long-term improvement in symptoms after endoscopic sphincterotomy [9]. Yap et al [10] studied 16 opium addicts with biliary symptoms and found that none of them had gallstones. Our study found only a few patients with cholelithiasis. Chuah et al [11] studied the common bile duct pathology in opium addicts. Opium addiction is one of the factors that causes extrahepatic bile duct dilatation [12]. Patients in both the study as well as control groups were operated upon for the respective etiology.

Friedman et al [13] reported about severe intra-operative hypertension and exaggerated stress response to surgery in methadone treated patients. Macutkiewicz et al [14] studied patients with complicated inflammatory bowel diseases who had undergone repeated surgical procedures. Postoperative withdrawal of opiate analgesics on two separate occasions led to clinical syndrome strongly suggestive of intestinal obstruction, the signs and symptoms of which settled rapidly on re-introduction of opiates. Asgary et al noted that regardless of the period and route of administration of opium, the level of HbA1C, CRP, factor VII, Fibrinogen, apo B, Lpa, SGOT, and SGPT were significantly higher in subjects as compared with controls and HDL-cholesterol and apo A were significantly lower [15]. The compensatory potentials of the myocardium are reduced in drug abuse [16]. A case control analysis of matched pairs showed significant association between opium addiction and pulmonary tuberculosis (Odd's ratio=2.61 and attributable risk=0.099) [17].

Postoperative systemic complications in routine settings were observed in 32.1% cases compared to 12% cases in the control group ($*p<0.15$, $**p>0.33$, Table 4). 39.5% cases in the study group encountered postoperative systemic complications in emergency settings compared to 28% cases in the control group. Vas [18] studied intra- and postoperative anaesthetic management of opium addicts and found that what initially appeared to be withdrawal syndrome was later concluded to be physiological manifestations of anaesthetic and surgical technique, as well as an effect of opium. Opiate withdrawal syndrome may resemble severe flu. The syndrome is characterized by rhinorrhea, sneezing, yawning, lacrimation, abdominal cramping, leg cramping, piloerection (gooseflesh), nausea, vomiting, diarrhoea, and dilated pupils. Nicolas et al [19] noticed opiate withdrawal syndrome in 26.8% patients (19 cases). Since the development of the first opiate withdrawal scale in the mid 1930s, many different opiate withdrawal scales have been used in clinical and research settings. Wesson and Ling in their article on the clinical opiate withdrawal scale (COWS) emphasized on eleven common opiate withdrawal signs and symptoms [20].

Encountered Postoperative local complications in routine settings were observed in 46.4% cases compared to 8% in the control group; 48.8% cases in the study group encountered postoperative local complications in emergency settings compared to 40% cases in the control group ($*p<0.006$, $**p>0.48$, Table 5); 47.9% cases in the study group encountered postoperative local complications Compared to 24% in the control group. This increase in local complications in study group can be due to confounding factors and hence cannot be truly validated. In opium non-addicts, postoperative analgesic requirements were limited to NSAIDs and/or tramadol while in opium addicts a significantly high percentage of patients required opium either orally or per rectally as supplement along with NSAIDs and tramadol (Table 6).

Conclusions

A thorough comparative analysis revealed that opium addicts had a significantly higher incidence of postoperative respiratory, cardiovascular, systemic and local complications. The requirement of analgesics during this period and duration of hospital stay were also significantly higher as compared to controls. The work concludes that opium addicts suffer a higher degree of postoperative morbidity as compared to non-addicts.

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