ISSN 2515-8260 Volume 9, Issue 3, Winter 2022

To findout prevalence of effect of opiumonpulmonary function tests in Western Rajasthan

Chaurasia Pramod,Barupal KishanGopal, SagarAmit,Barupal Raghunath

DepartmentofMedicine,Dr.S.N.MedicalCollege,Jodhpur

***CorrespondingAuthor:**Barupal Raghunath

Abstract

Introduction- Opium is one of the most common substance abuse in Asian countries.In this cross sectional study we clarify the effects of opium on respiratorysystem and possible mechanism of respiratory involvement **,Method**: The casecontrol study was done on two groups of men between the ages of 30-50 years. Thecase group was of 100 opium addicts. Thecontrol Group was of 100 healthy nonopium addicts. All of the 200 men underwent spirometryand the results comparedwith each other. **Result**: In the opium addicts the mean FVC was 3.10± 0.62L whichis significantly lower than normal value (4.2L in males).In controls, the mean FVCwas 3.60±0.54L.P value for FVC was <0.001 which shows a significant resultstatistically.InourstudyopiumaddictsmeanFEV1was2.93±0.57Lwhichwasnearabout normal than the standard normal values ruling out an obstructive defect. Meanvalues of FEV1/ FVC was 94.0 ±0.13 %, highly suggestive of restrictive pulmonarydefects. **Conclusion**: Opium abuse causes restrictive type of effect on pulmonaryfunction.

Key words: opium addiction , pulmonary function test

Introduction

Human beings have looked for substances or have practiced methods tomake life more pleasurable and to avoid or decrease pain ,discomforts andfrustration. For this he looked for the subject around him especially theplant kingdom which leads to the discovery of many valuable medicinalplants like opium in china and western Rajasthan. The primitive men knowthe psychotropic effects of such drugs. In rural areas of western RajasthancrudeopiumisconsumedassocialcustombynotableproportionofpopulationanditsaddictionismuchwiderspreadinareasofwesternRajasthanspeciallyJodhpur,Jalore,Jaisalmer,Barmer,Pali.Opiumisconsumed by most of the person in oral form. Opium and other opiumderivatives exert their action by interacting with specific receptors exampleopiod receptors present in neurons in the central nervous system and in theperipheraltissues.[1]

Opiodreceptorsare:μ(Mu)Receptor, κ(Kappa)Receptor, δ(Delta)receptorOpium which is extracted from the juice of poppy capsule (papaversomniferum)[2] is used as raw material for synthesis of some medicines likemorphine,NoscapineandPapaverin[3].Asweknowinopiumtherearemorethan 20 alkaloids and 70 ingredients are present so their impact can bedifferentincomparisontopuremorphine,noscapineandpapaverin[4,5.]

Opium is primary and continuous depressant of respiration at least in partby virtue of its direct effect on the brain stem respiratory centers. Therespiratory depression is discernible even with doses too small to disturbconsciousnessandincreasesprogressivelyas thedoseisincreased.

Therapeutic doses of opium depress all phase of respiratory activity (Rate,Minutevolume&Tidalexchange).Respiratorydifficultyoccursasaresultof bronchoconstriction due to release of histamine by opium and its centraleffects.this study ia aimed tofindoutprevalenceofeffectofopiumonpulmonaryfunctiontestsintheopiumaddicts in

western Rajasthan.

Materials&methods

The present study was carried out at different villages situated in thedifferentareasofWesternRajasthanandpatientsattendingtheoutdoorand admitted in indoor Department of Medicine, Dr.S.N. MedicalCollege,Jodhpur.

StudyDesign:

Thestudywasacrosssectionalstudy.

Studypopulation

Ourstudycontainedtwogroupsofsubjectsbelongingtowestern
Rajasthan by geographical distribution-case and control groups. Case groupcontained opium addicts. All opium addicts were males and belonged tovariedagegroupsandallwerenonnicotinesmokers.Healthycontrolswereselected on random basis from the people coming to the hospital asattendants of the patient after ruling out any significant respiratory diseaseswhich might affect our study results. This study was planned to determinethe effects of opium smoking on pulmonary function tests. The case-controlstudywasdone on two groups ofmen between theages of 30 –50years.
The case group was of 100 opium addicts. The control Group was of 100healthy non opium addicts. All of the 200 men underwent spirometry andtheresults comparedwith eachother.

Inclusioncriteria

Opiumaddictswhowerenonnicotinesmokersandwithnocardiopulmonaryillness.

Exclusioncriteria

1. Anycardiopulmonaryillnesslikelytoaffectourresults.
2. Subjectswhohadsmokednicotineduringtheirlifetime
3. Subject who was unable to hold the mouthpiece of spirometer due to any localoro-lingualpathology

RESULTS

Table1.Durationofopiumaddiction.

Duration(yr)	Case	Percentage
0-5	21	21%
6-10	40	40%
11-15	19	19%
16-20	14	14%
> 20	6	6%

Table2.Spirometricpatterninstudypopulation(durationofexposure).

Pattern	Opiumaddictionduration(years)					Control
	0-5	6-10	11-15	16-20	> 20	N=100
	n (%)	n (%)	n (%)	n (%)	n (%)	n(%)
Normal	19 (90.47 %)	16 (40%)	0	0	0	80 (80 %)
Mild	2	24	14	3	0	20

Restriction	(9.53 %)	(60%)	(73.69%)	(21.42%)		(2 0 %)
Moderate Restriction .	0	0	5 (26.31%)	11 (78.58%)	3 (50%)	0
Mod to SevereRes.	0	0	0	0	1 (16.66%)	0
Mixed	0	0	0	0	2 (33.34%)	0

Table3.FVCcomparisoninRelationtodurationofExposuretoopium

	Control	**A**	**B**	**C**	**D**	**E**
		0-5	**6-10**	**11-15**	**16-20**	**> 20**
Mean	3.61	3.62	3.29	2.91	2.55	1.96
S.D.	± 0.55	±0.52	±0.45	± 0.35	± 0.35	± 0.58
S.E.M .		0.12	0.08	0.06	0.10	0.24
T		0.07	3.55	10.56	9.76	6.78
P		>0.9	<0. 00 1	<0.001	<0.00 1	<0.001

Table-4FEV_1/FVCcomparisoninRelationtodurationofExposuretoopium

	Control	**A**	**B**	**C**	**D**	**E**
		0-5	**6-10**	**11-15**	**16-2 0**	**> 20**
Mean	0.93	0.93	0.92	0.96	1.04	0.96
S.D.	± 0.13	± 0.06	±0.08	± 0.05	±0.24	± 0.28
S.E.M		0.01	0.01	0.01	0.06	0.11
T		0	0.55	1.73	1.68	0.26
P		0	> 0.6	> 0.1	>0.2	> 0.9

Majorityof cases 40% from the 6-10 years of duration of opium addiction. Only 6%werefrom>20 years.(Table 1)

Spirometric pattern in opium addict in the 0-5 yrs ofopiumaddiction was90.47%havenormalpatternand9.53%haveMild-restrictive pattern.

In>20yrsofopiumaddictionmajority(50%)ofopium addicts showed mod restrictive pattern followed by mod to severrestrictivepattern(16.66%)followedbymixedpattern(33.34%).Amongcontrolgroupdominantpatternwasnormalpatternin80%followedby mild restriction in 20%.(Table 2)

MeanFVCinopiumaddictof0-5yrsdurationwas3.62 ± 0.52 with P value of > 0.9 which is statistically insignificant. MeanFVCinopiumaddictof6-10yrsdurationwas3.29±0.45withaPvalueof<0.001whichisstatisticallyverysignificant.MeanFVCinopiumaddictof 11-15 yrs duration was 2.91± 0.35 with a P values of < 0.001 which isstatisticallyvery significant.MeanFVCinopiumaddictsof16-20yrsduration was 2.55 ± 0.35 with a P. Value of < 0.001 which is statisticallyverysignificant.MeanFVCinopiumaddict>20yrsdurationwas1.96±0.58withPvalue

of<0.001which isstatisticallyverysignificant.(Table 3)MeanFEV_1/FVCinopium addictsof0-5yrsdurationwas
0.93±0.13withaP.Valueof0whichisindicatethereisnosignificantlydifferencebetween study andcontrolgroup.Mean FEV_1/FVC in opium addict of 6-10 yrs duration was 0.92±0.08 with a P valueof > 0.6 which is indicate there is no significantly difference between study andcontrol group. Mean FEV_1/FVC in opium addict of 11-15 yrs duration was 0.96±0.05with a P value of > 0.1 which is indicate there is no significantly difference betweenstudyand controlgroup.(Table 4)

DISCUSSION

Ourstudypopulationcomprisedatotalof200subjects,100opiumaddictsand100controls.Amongo piumaddicts, themajority(40 outof100 i.e.40%) of the study population belonged to the age group 41-50 yrs followedby 32% opium addicts from the age group 31-40 yrs.The mean age ofopium addicts was 39.31±8.65 Yrs and that of the control group was40.19±7.97 Yrs. This shows that our opium addict and control group werecomparable in terms of age distribution. Duration of the exposure to opiumaddictionistheimportantdeterminantonthehealthofopiumaddicts.Inthe opium addiction majority of opium addicts were those to have beenaddictedfor6-10yrs.Therewasa6opiumaddictoflongdurationofopium addiction i.e. >20 yrs. Mean duration of opium addiction was10.24±5.66 yrs. As discussed, the long duration of opium addiction was ininsignificantnumbers,significanteffectsonrespiratorysystemswerefoundonlyin asmall number of persons.

In the opium addicts the mean FVC was 3.10± 0.62L which issignificantly lower than normal value (4.2L in males).In controls, themean FVC was 3.60±0.54L.P value for FVC was <0.001 which shows asignificant result statistically. In our study opium addicts mean FEV1
was2.93±0.57Lwhichwasnearaboutnormalthanthestandardnormalvaluesrulingoutanobstructi vedefect.Meanvalues ofFEV1/FVC was94.0±0.13 %, highly suggestive of **restrictive** pulmonary defects. In opiumaddicts, PEFR was found to be 8.39±2.13 L/sec with a mean %pred valueof 97.76±21.71 %, both of these values being within normal values. Forall the opium addicts (n=100) the mean value of FVC was 3.10±0.62Lwith a control value of 3.60±0.54 with a P value of < 0.001. The P valuefor % pred FEV1 was also <0.001. This suggests there was a significantdifferencebetweentheopiumaddictsandcontrolpopulation.Thispatternofrestrictivep ulmonarydefectsuggeststhatopiumaddictswerehaving significant exposure to opium addiction leading to opium addictionrelated restrictive pulmonary changes. Mean cumulative value for FEV1and%predFEV1was2.93±0.57Land89.65±14.47respectively.Bothofthese parameters are indicative of restrictive changes. Normal value ofthese parameters thus suggests that there were no obstructive airwaychangesamong all theopiumaddicts.

PEFandFEF25-
75(MMFR)werealsowithinnormallimitsthussuggestingunlikelyofanobstructiveairwaydisease amongtheopiumaddicts. The p valuefor FEF 25-75% and % pred FEF 25-75%was > 0.5and >0.9. The value of FEV1/FVC, which is an important indicator ofdifferentiatingrestrictiveandobstructivechanges,was94.0±0.13Lwhichisabovenormalstanda rdvalue.Thisvalueishighlysuggestiveofarestrictivepulmonarypattern.P
valueofthesamewas>0.3whichissuggestiveofveryinsignificantdifferencebetweenopiumaddict andcontrolsubjects.

Theproperexplanationforthesamecouldalsobeimpropereffortonspirometry as the major limitation of the spirometry being the individualdependant procedure. Age wise analysis of the opium addict showed thatmean values of the virtual capacities (FVC and FEV1) were

maximum inthe age group 21-30 yrs (3.49±0.45L) and were declining with advancingage. These values were minimum in the age group >50 yrs (2.11 ± 0.57L).This showed that there was a progressively declining trend of lung functionwith advancing age of the opium addicts. The mean values of FVC and %pred FVC were below the normal standard values among all the exposuregroup,suggestingthatalltheopiumaddictswerehavingrestrictivepulmonary changes. The mean values of FEV1/FVC were above normalstandard values among all the opium addicts suggesting that all of themwere having restrictive pulmonary defects. Other parameters of spirometrysuggestingobstructiveairwaychangeswerewithinnormallimits,thusruling out any smaller or larger airway obstructive changes in isolation.Analysis of the Spirometric pattern in opium addicts shows that most of theopium addicts had mild restrictive pattern followed by normal pattern andmoderate restrictive pattern. Analysis of correlation coefficient of the studypopulationshowsthattherewasprogressivedeclineinlungcapacities(FVC& FEV1) with advancingageof opiumaddicts.

Asfarasweknownosuch previousstudyhadbeenconductedin opiumaddictsotheresultscannotbecomparedadequately.Howeverthenumberof subjects in the present study was small (n=100) so a large study isrequiredtoevaluate the resultsofthe presentstudy.

From the present study it is clear that statistically impairment ofpulmonaryfunctionsoccursinopiumaddictsandtheimpairmentincreaseswith the duration of opium addiction. This study is consistent with someotherstudies.

Conclusion

Mean total duration of exposure in opium addicts was 10.24±5.66 yrs.Mild restrictive pattern was most common in all the opium addicts, beingobserved in 43% and normal Spirometric pattern was observed in 24% ofthe study population. Moderate restrictive patterns were observed in 19%of the opium addicts. Obstructive pattern was not observed in the studypopulation. Mixed Spirometric patterns were found only in 2%of theopiumaddicts.

REFERENCES

1. KDTripathi:OpiodAnalgesics: Essentialsof medicalpharmacology:6thedition:2008:34:462.
2. KalantH.Opiumrevisited:abriefreviewofitsnature,composition,non-medicaluseand relativerisks.Addiction 1997;92(3):267-77.
3. Hanson G. Analgesic, antipyretic and anti-inflammatory drugs. In: Gennard AR,Editor.Thescienceandpracticeofpharmacy.19thed.NewYork:MackPublishingCompany; 1995. p. 1197-8.
4. Venturella VS. Natural Product. In: Gennard AR, Editor. The Science and PracticeofPharmacy.19thed.NewYork:MackPublishingCompany;1995.p.400-2.
5. BuchbauerG,NikiforovA,RembergB.Headspace.Constituentsofopium.PlantaMed1994;60 (2):181-83.
6. DavisTM.Adeverseeffectofopiodonliverandlungs.BrJPatho1999;59:61-67.
7. Bates.Benefitsassessmentofopioids.DrugSaf2000;21:283-296.
8. EnrightPL.Respiratorysensitivityoftheinfantsandaddictstomeperdineandmorphine.ClinPh armocolTher 2000;454-461.
9. MCOSA.Comparativeanalysisoftheeffectofalcoholismandopiumaddictsonliverfunction. FiziolZh 2004;47 (2):81-6.
10. Govaresh.Influenceofpulmonaryfailureonthedispositionofmorphine,M-3-GandM-6-

G.Am J Med 2007;120:145-190.

11. PhatakMS : Lipid peroxidation, peroxyl radical scavenging system of palasmaand liver pathalogy in adolescence heroin and morphine users. Voper. Med.Khim,200845;501-506.

12. Akiyama,Y.Role ofendogenousopioidsinrespiratorycontrol systemand dyspnea sensation in healthy adult humans. Hokkaido lgakuZasshi-HokkaidoJournal ofMedical Science. 67(1);131-40,1992.

13. Akiyama Y., Nishimura, M., Suzuki, A., Yamamoto, M., Kishi, F.,Kawakami,YNaloxoneincreasesventilatoryresponsetohypercapnichypoxia in healthy adult humans. American Review of ReparatoryDisease.142(2):301-5, 1990.

14. Gamble, G.D., Milne, R.J. Hypercapnia depresses nociception:endogenousopioidsimplicated.BrainRes