Original Article

Schizophrenia and Comorbid self reported Cannabis Abuse: impact on course, functioning and services use

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Abstract

Objective: To examine the impact of cannabis abuse on the short term outcome in terms of relapses, use of services, compliance and functioning in patients with schizophrenia.

Methods: A case control study was conducted in the Department of Psychiatry PGMI Lady Reading Hospital, Peshawar from January 2004 to October 2004. Fifty schizophrenic patients with co-morbid misuse of cannabis were selected. Fifty schizophrenic patients who were not using cannabis were selected as control group for the study. Data regarding socio-demographic detail, relapse, compliance to drugs and service utilization was collected with the help of a Performa. Problem cannabis use in the past year and social assessment of functioning were assessed with the help of Schedule for Clinical assessment in Neuropsychiatry (SCAN) and Global Assessment of Functioning (GAF) scale respectively.

Results: Schizophrenic patients with cannabis use were younger on admission and had younger age at onset of illness. They had more number of relapses and more contacts with psychiatric services including the police. Patients with comorbid cannabis use had poor drug compliance and their relapses were preceded by poor drug compliance Cases and control did not differ significantly on score of Global assessment of functioning.

Conclusion: Comorbidity of cannabis seems to have adverse effects on almost all domains of the illness including course, service use and drug compliance (JPMA 57:60;2007).

Introduction

Problems of substance abuse produce dramatic costs to all societies in terms of productivity, family and social disorder, and of course excessive utilization of health care.

The comorbidity of mental illness and substance abuse has been the focus of attention in recent years. Many studies have shown that the rate of substance use in subjects with severe mental illness is high; estimates of recent or current abuse for community samples range from 20% to 40%.[1] These rates are higher than those for the general population[2], and patients with comorbid mental illness and substance abuse disorders have been a cause for concern because even low levels of substance abuse or dependence represent a risk factor for serious complications, including suicide, poor compliance with treatment, more inpatient stays, violence, and a poor overall prognosis.[3]

Evidence from the United States suggests that half of all patients with schizophrenia also have a substance misuse disorder.[2] This comorbidity is associated with poor prognosis and heavy use of expensive inpatient care through recurrent "revolving door" admissions.[4] The phenomenon has also been recognised in the United Kingdom. One survey observed inpatient admission rates among comorbid patients that were almost double those of patients with psychosis alone.[5] This high prevalence, the problems of clinical management,[6] and continued rises in the general rate of drug misuse make comorbidity a major public health issue. Extensive manual and electronic literature search didn't reveal research pertaining to the subject however studies have shown that after bhang (a beverage containing cannabis) ingestion, patients have exhibited grandiosity, excitement, hostility, uncooperativeness, disorientation, hallucinatory behavior and unusual thought content which understandably leads to more use of mental health services.[7]

The present study is aimed to examine the relationship between cannabis abuse and its impact on the short term outcome in terms of relapses, use of services, compliance and functioning in patients from schizophrenia. We also assessed the amount, frequency and duration of cannabis use in schizophrenic patients.

Methods

This case control study was conducted at department of psychiatry PGMI Lady Reading Hospital, Peshawar from January 2004 to October 2004. All patients aged between 15-60 years with a diagnosis of schizophrenia (after discussion with a senior investigator) based on the ICD-10 research diagnostic criteria (W.H.O. 1993) and meeting the following inclusion and exclusion criteria were approached for informed consent:

Inclusion criteria

1. Patients who self reportedly used cannabis in the last year.
2. Patients aged between 15-60 years.

Exclusion criteria

1. Patients using other psychoactive drugs along with cannabis.
2. Patients who were grossly uncooperative for a meaningful complete intake interview (e.g., mentally subnormal, in acute intoxication or withdrawal, mute, with severe formal thought disorder preventing meaningful communication)

Fifty schizophrenic patients with self reported comorbid misuse of cannabis in the last year were selected as cases for study. Fifty schizophrenic patients who reportedly were not using cannabis were selected as control group. Information about the following variables was obtained by interview with the patients and their relatives, using a structured Performa: Socioeconomic details, age at onset, duration of illness and duration of untreated psychosis (defined as the period between the onset of psychotic symptoms and initiation of treatment). Relapse was defined as contact with psychiatrist over a one year period with clear evidence for decline in functioning from the previous level after improvement in treatment of index episode or exacerbation in psychotic symptoms requiring change or increase in the treatment. The number of relapses and their precipitants was recorded over the last two years.

Service use was estimated by recording contacts with primary care staff, out-patient services, general hospitals, emergency departments, police services within the past year. Numbers of psychiatric admissions and days spent in hospital over the preceding 2 years were also recorded.

Compliance was defined as the extent to which a person's behavior coincides with the medical advice given. The definition of non-compliance included premature termination of therapy and incomplete implementation of instructions. The patients were asked to rate their current and past compliance using 4-point scale that was developed for another study.[8]

Patients were asked whether they had taken their medication at least 90% of the time, between 50% and 90% of the time, between 10% and 50% of the time, or less than 10% of the time during last one month.

The information about the amount of cannabis used in the last month was obtained from the patients in terms of frequency and number of cigarettes used on a 1-6 scale.

Schizophrenic patients with comorbid cannabis misuse were interviewed using section 12 of Schedules for Clinical Assessment in Neuropsychiatry (SCAN) (World Health Organization 1994). All the questions of interview were translated into Pushto by a bilingual expert and retranslated by another expert who was blind to the first translation.

Social functioning was assessed with the help of Global Assessment of Functioning (GAF) scale. The scale considers psychological, social and occupational functioning on a hypothetical continuum of mental health illness. It did not include impairment in functioning due to physical or environmental limitation. Rating was for the current period of admission. It consisted of range of codes from 100 to 0 in descending order.

The data was collected and analysed with the help of statistical programme SPSS, version 10. Chi-square test for categorical data and independent t-tests for continuous variable were used to asses the degree of association between different variables. The statistical significance was calculated at $P< 0.05$.

Results

Socio-Demographic

The cases and controls did not differ significantly in terms of dwelling, marital status, socioeconomic condition, living arrangement and employment except age on index admission and age at onset of illness and years of education. Comparison of cases and control's age at the time of index admission, at onset of illness and the total duration of illness are given in Table 1.

The cannabis users were younger on index admission than non users (25.82 years v 30.57 years), p=0.001 95% CI of mean difference -7.54 to -1.96. The age at onset of illness was earlier in cases than controls (21.43 years v 25.39 years, p=0.005). The duration of illness at the time of admission was shorter for cases as compared to controls

Table 1. Comparison of age on admission, at onset of illness and duration of illness.

	Case n=50	Control n=50	Mean difference	p-value	95% CI of mean difference	
	Mean (sd)	Mean (sd)				
Age of patient on index admission (years)	25.82 (5.06)	30.57 (8 .55)	-4.75	0.001	-7.54	-1.96
Age of patient at onset of illness (years)	21.43 (4.62)	25.39 (8.47)	-3.96	0.005	-6.66	-1.25
Duration of illness (months) till index admission	52.56 (45.68)	64.25 (56.48)	-11.69	0.258	-32.08	8.71

sd: Standard deviation CI: confidence interval
Numbers in parenthesis are Standard deviations

time of admission was shorter for cases as compared to controls (52.56 months v 64.25 months) (p=0.258).

The patients in cannabis abuse group had significantly less numbers of years of education compared to control group (Table 2).

Pearson x2 = 17.260 df=5 p=0.004).

Table 2. Comparison of education between cases and controls.

	Case	Control	Total
Uneducated	15	15	30
Primary- middle	26	19	45
Secondary- graduation	09	16	25
Total	50	50	100

Pearson chi square Value17.260 p-value.004

Relapses

Sixty two patients had one or more relapse during their course of illness. The patients using cannabis had more relapses as compared to schizophrenic patients who were not using cannabis. (2.46 v 1.22 Mean difference 1.24 p=0.011 and 95 % CI of difference 0.21to 2.19). When the cases were further subdivided on the basis of severity of cannabis use according to SCAN algorithm (see below) it was found that the two groups differed significantly in the number of relapses in the last 2 years (1.00 vs 2.95 mean difference of -1.95 p=0.002 & 95% CI of mean difference -3.16 to -0.73).

Out of 38 patients, who had no relapses, 15 patients 39.5% (8 cases and 7 controls) had their first episode of illness on index admission while 23 patients 60.5% (10 cases and 13 controls) did not show any improvement in their illness and had continuous course.

Among those patients who had a continuous course the total duration of illness was shorter for cases as compared to controls (53.80 months vs 77.77 months) (p= 0.274).

All schizophrenic patients irrespective of cannabis use started their treatment approximately within one year of onset of illness (12.86 months for cases 11.86 months for control). The mean period of untreated psychosis was much longer in this population of continuing illness, with cases having received their first psychiatric treatment after 31.90 months as compared to 15.23 for controls (p=0.141).

Out of 62 patients who relapsed in the past, 32 cases and 30 controls had their past relapses preceded by poor compliance. Cases had a larger number of past relapses preceded by poor compliance as compared to controls (2.78 v 1.40 p=0.02 mean difference=1.38 95% CI of 0.5-2.26). Out of 32 cases, who relapsed, 27 (84.4%) patients have current episode preceded by poor compliance as opposed to 21 controls out of 30 (70%). Pearson's x2=62.00 p=.000

Service Use

Cases were more likely to be admitted to hospitals (number of admission 1.04 vs 0.52 p=0.05). They also spent more days in hospitals (19.7 v 7.22 p=0.047). Cases had greater number of contacts with police (1.70 v 0.20 p=0.000).

Controls made more contacts with private psychiatric clinics than cases (7.00 v 3.96 p=0.002) Cases were no more likely than controls to made use of emergency services and Out door patient department. Table 3.

Table 3. Comparison of services use (Number of admission and days spent in hospital, visits to private clinics and contact with police).

	Case	Control	Mean difference	p-value	95% CI of mean difference	
	Mean (sd)	Mean (sd)				
Number of Admission In Hospital	1.04 (1.63)	0.52 (0.86)	0.48	0.05	.03	1.04
Number of days spent in Hosp.	19.10 (36.91)	7.22 (19.37)	11.88	0.047	0.18	23.58
Number of visits to Private Psych clinics	3.96 (6.07)	7.00 (6.81)	-3.81	0.02	-5.60	-0.48
Number of contact with police.	1.70 (1.89)	0.20 (0.40)	1.50	0.001	0.96	2.04

sd: Standard deviation CI: confidence interval
Numbers in parenthesis are Standard deviations

Table 4. Comparison of drug adherence in last month between cases and control.

		Drug adherence in the last month				Total
		90 % of the time	50-90 % of the time	10-50 % of the time	less than 10 % of the time	
Case	% (n)	19.5%(8)	7.3%(3)	19.5%(8)	53.7%(22)	100%(41)
Control	% (n)	41.9%(18)	9.3%(4)	7.0%(3)	41.9%(18)	100%(43)
Total	% (n)	31.0%(26)	8.3%(7)	13.1%(11)	47.6%(40)	100%(84)

Pearson's x2 =6.618 df=3 p=0.085

For drug adherence in the last month, data was analysed for 84 patients (41 cases and 43 controls). Data for 16 patients was missing as they were either drug naïve or had first episode of illness on their index admission. The compliance with medication was significantly poorer in patients using cannabis than patients who were not using cannabis (Table 4).

Global Assessment of functioning: Cases and controls did not differ significantly on score of Global assessment of functioning. (28.70 v 27.08).

Discussion

Socio-demographic

In this study it was found that cases were of younger age on index admission and had younger age at onset of illness. These finding supported the finding of Veen et al[9], Cantwell et al[10] and Bersani et al.[11] This could be a chance association and with the understanding that cannabis has no influence on risk or age at onset and that younger patients are more likely to use this substance before the first psychotic episode. A second possibility is that cannabis hastens the onset of psychosis in subjects who are predisposed to develop the illness.

Third, it is possible that cannabis makes manifest schizophrenia in young subjects who are genetically at risk for developing the disorder.

This study has shown that cases had less number of education years as compared to controls. A number of prospective longitudinal studies have indicated that early cannabis use may significantly increase risks of subsequent poor school performance and, in particular, early school leaving[12] possible underlying mechanism proposed for such association can be "amotivational syndrome" or that cannabis use causes cognitive impairments or the link arises because of the social context in which cannabis is used. However there appears to be little empirical support for these hypotheses.

Relapses

The study also found that users have more relapses since their illness started. This finding is consistent with that of Gupta et al.[13] Johns[14]; Tomassan and Vaglum,[15] that cannabis use generally provoke relapses. This finding is very significant keeping in mind that cannabis users also had younger age at admission. They probably are more likely to relapse in future.

It is a well known finding in the literature that the prognosis in schizophrenia tends to become poor with each relapse. The increased relapses in patient with dual diagnosis cannot be wholly ascribed to cannabis use only as it might be mediated through poor or non compliance.

Cases' relapses were significantly more likely to be preceded by poor drug compliance than controls. Although this does not prove any causal link, the association points towards the possibility that increased number of relapses might be mediated through non compliance rather than cannabis use. Another possibility is that cases were of younger age and that being young and male are also known as risk factors for noncompliance.[16]

It was seen that 38 patients did not have any relapse in their course of illness. This suggests that these patients either did not have any improvement in their symptoms or presented in early course of their illness.

Services use

Cases were more likely to be admitted to hospitals and for long periods as compared to controls. Linszen[17], Menezes[5] and Caspari[18] also had similar results. Frequent admissions were more likely due to relapses. In this study cases made more contacts with police. Cantwell also found increase service use (contact with police, psychiatrist).[10] This reflected on the greater reporting of crimes against the participants due to violent behavior, and police contact for other reasons, (possession, wandering, handing over to police by family members because of behavioral disturbance). Increase contact with private psychiatric clinics by the schizophrenic without comorbid cannabis abuse is understandable because of their uncomplicated presentation.

Global Assessment of functioning

Schizophrenic patients with comorbid substance abuse were no more likely to show any difference in assessment of social functioning as compared to those without it, though both groups showed decline on the scale 28.70 v 27.08 p=0.566. This lack of difference in the two groups seems to be due to the intrinsic quality of the scale itself, as the measure declines for users because of their violent behaviour and for non users by decreasing the ability to maintain their personal hygiene or their impairment in communication.

Limitations of the study

This study was conducted in a hospital based population with a small sample size. Both groups were not controlled for age and patients' allocation to the groups was not randomized. Further studies are needed with validated instruments and larger and representative sample while controlling for age.

Conclusion

Comorbidity of cannabis seems to have adverse effects on almost all domains of the illness including course, service use and drug compliance.

The youngest cannabis users are most at risk perhaps because, their cannabis use becomes longstanding. This should encourage policy and law makers to concentrate their effort on delaying the onset of cannabis use. At the same time, further research is needed on the long-term impact of frequent cannabis use that begins at an early age and on the possible mechanisms by which cannabis use can lead to psychosis.

During assessment of schizophrenia cannabis abuse needs to be evaluated. Patients and their relatives need to be educated about the impact of cannabis and its adverse

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