The study of primary psychotic disorders with concurrent substance abuse in terms of their diagnostic stability

Ankit Singal, P. S. Bhat1, K. Srivastava2, Jyoti Prakash3
Psychiatrist, Military Hospital, Meerut, Uttar Pradesh, 1Professor & Head Psychiatry, INHS Asvini, Mumbai, 2Scientist F & Clinical Psychologist, Armed Forces Medical College, Pune, Maharashtra, 3Professor & Head Psychiatry, Command Hospital Eastern Command, Kolkata, West Bengal, India

ABSTRACT

Background: Co-morbid substance use is common among individuals presenting with symptoms of psychosis. There is a paucity of research in this area.

Aim: To study the longitudinal follow-up of patients over 1-year of first episode psychosis with concurrent substance use in terms of their diagnostic stability.

Materials and Methods: Fifty patients having at least one symptom of psychosis at first admission at a General Hospital Psychiatric Unit along with concurrent substance abuse were included and followed up for 1-year. International Classification of Disease-10, diagnostic criteria were used for diagnosis. Semi-structured sociodemographic performa to assess the sociodemographic profile. Brief Psychiatric Rating Scale and Alcohol Use Disorder Identification Test as rating scales were used for the assessment at 6 and 12 months.

Results: Of 50 patients, 31 patients who had a diagnosis of primary psychosis retained their diagnosis at follow-up. The mean age of cases in substance-induced psychosis group was 37.47 years, which was significantly higher than in primary psychosis group at 31.52 years. However, 7 patients of the substance-induced psychosis group required a change in diagnosis to primary psychosis group. The primary psychosis group patients were significantly younger, less educated, had less family support, had greater family mental illness, had more severe symptoms, and less hallucinations.

Conclusion: The present study is a forerunner in this area. Salient differences indicated in the study can help in differentiating the diagnosis and in the management of cases. This is particularly relevant in the management setting and for long-term intervention purpose.

Key words: Diagnostic stability, psychosis, substance-induced psychosis

INTRODUCTION

The widespread abuse of substances with psycho-mimetic properties has produced neuropsychiatric disorders that place new demands on the substance abuse and mental health service systems. The association between substance use and psychotic symptoms, however, is not simply due to substance-induced psychosis. The rate of substance abuse among people with severe mental illness far exceeds that in the general population, even at the first onset of psychosis. One of the challenges in diagnosing substance use disorders...
The distinction between a substance-induced psychosis and a primary psychotic disorder is an important because they require fundamentally different approaches to treatment. Despite this, very little is known about longitudinal diagnostic stability and change in early phase psychosis co-occurring with psychoactive substance use. Hence, the present study was planned to evaluate the diagnostic stability over a period of 1-year and to analyze the differences in key demographic, family, clinical, and laboratory parameters between the two groups.

**MATERIALS AND METHODS**

This study was carried out in a General Hospital Psychiatry Unit of a large hospital at Pune. All consecutive cases presenting with first episode psychosis (FEP) and concurrent substance abuse admitted between January 1, 2010 and June 30, 2011 were taken into this study. Subjects were in the age range of 18–45 years of age and were English or Hindi speaking.

Informed consent was taken and Ethical Committee approval was taken. Inclusion criteria were the presence of at least one psychotic symptom during admission and use of alcohol or other psychoactive substance within preceding 30 days. The patients with a head injury and organic psychotic disorder were excluded.

A specially designed semi-structured sociodemographic Performa was used to obtain demographic, family, and clinical data. Brief Psychiatric Rating Scale (BPRS) was used for evaluating psychiatric symptoms and Alcohol Use Disorder Identification Test (AUDIT) questionnaires was used to evaluate alcohol use at baseline, at 6 months, and at 1-year. Laboratory evaluation of substance use and urine drug screen for opioids, amphetamines, cannabis, benzodiazepines, and cocaine was also done at these points.

A total of 50 patients entered the study. The diagnosis was made by an independent evaluation by two psychiatrists using ICD-10. Diagnostic stability was defined as having the same category (primary or substance-induced psychosis) at baseline and at follow-ups. The diagnostic change was defined as a change of diagnosis from the baseline substance-induced psychosis to the primary psychosis or from the primary psychosis to the substance-induced psychosis at either the 6 months or at 12 months follow-ups. Subjects with primary psychosis were compared to those with substance-induced psychosis on the demographic, family, clinical, and social domains. The group differences were tested using either Chi-square, two-tailed, unpaired t-tests, or others depending on the type of variable.

**RESULTS**

Of the 50 cases, during the study, 31 cases were diagnosed with primary psychosis and 19 cases were diagnosed with substance-induced psychosis. After initial management, all were placed on medications and followed monthly. Primary Psychosis group had 14 cases of schizophrenia, 9 cases of depression with psychosis, 4 cases of unspecified psychosis, 2 cases of persistent delusional, and 2 cases of mania with psychosis, whereas substance-induced psychosis group had 16 cases of alcohol-induced psychosis and 3 cases of cannabis-induced psychosis.

The mean age, socioeconomic background, and family history in both primary and substance-induced psychotic disorder is as brought out in Table 1. The majority of cases (89%) in substance-induced psychosis group had an education till higher secondary as compared to 64% in primary psychosis group. Forty-two percent of cases in substance-induced psychosis group had poor family support as compared to 29% cases in primary psychosis group. The most common substance of abuse was alcohol in 80% cases and the rest had used cannabis. Distribution of auditory and visual hallucination in both primary and substance-induced psychotic disorder is as brought out in Table 2. Only 25% cases in primary psychosis group...
had suicidal ideations in comparison to 50% in the substance-induced group.

The severity of psychopathology (BPRS) and alcohol use (AUDIT) in both primary and substance-induced psychotic disorder is as brought out in Table 3.

All 31 cases of primary psychosis at baseline retained their diagnostic status at 6 months and 12 months follow-ups.

### Table 1: Distribution of demographic variables in primary psychotic and substance-induced psychotic disorder

| Parameters                              | Primary psychotic disorder (n=31) | Substance-induced psychotic disorder (n=19) | Z    | P     |
|-----------------------------------------|----------------------------------|------------------------------------------|------|-------|
| Mean age±SD (years)                     | 31.52±6.76                       | 37.47±7.50                               | 2.83 | <0.01 (S) |
| Socioeconomic background n (%)          |                                  |                                          |      |       |
| Rural                                   | 15 (48.3)                        | 16 (84.2)                                | 6.88 | <0.05 (S) |
| Urban                                   | 14 (45.1)                        | 2 (10.5)                                 |      |       |
| Sub-urban                               | 2 (7.6)                          | 1 (4.3)                                  |      |       |
| Family history n (%)                    |                                  |                                          |      |       |
| Present                                 | 6 (19.4)                         | 2 (10.5)                                 | 0.68 | >0.05 (NS) |
| Absent                                  | 25 (80.6)                        | 17 (89.5)                                |      |       |

S – Significant; NS – Not significant; SD – Standard deviation

### Table 2: Distribution of hallucinations at baseline in cases of primary psychosis, substance-induced psychosis, and change disorder

| Hallucinations         | Primary psychosis (%) (n=31) | Substance-induced psychosis (%) (n=19) | Z    | P     |
|------------------------|-----------------------------|--------------------------------------|------|-------|
| Auditory hallucinations|                             |                                       |      |       |
| Yes                    | 18 (58.1)                   | 12 (100)                             | 7    | 10.77 |
| No                     | 13 (41.9)                   | 0                                    | 0    | <0.005 (S) |
| Visual hallucinations  |                             |                                       |      |       |
| Yes                    | 3 (10.7)                    | 8 (66.6)                             | 0    | 15.31 |
| No                     | 28 (89.3)                   | 4 (33.4)                             | 4    | <0.0001 (S) |

S – Significant; NS – Not significant

### Table 3: Distribution of BPRS and AUDIT score in primary and substance-induced disorder groups

| Scales                  | Primary psychotic disorder group (n=31) | Substance-induced psychotic disorder group (n=19) | Z    | P     |
|-------------------------|----------------------------------------|-------------------------------------------------|------|-------|
| BPRS score (mean±SD)    |                                        |                                                 |      |       |
| Baseline                | 57.4±6.51                              | 45.6±12.7                                       | 3.78 | <0.001 (S) |
| 6 months                | 45.35±6.65                             | 33.1±12.5                                       | 3.96 | <0.001 (S) |
| 12 months               | 35.35±8.44                             | 27.5±12.2                                       | 2.48 | <0.05 (S) |
| AUDIT at baseline n (%)  |                                        |                                                 |      |       |
| <8                      | 22 (71)                                | 6 (31.5)                                        | Fisher exact |
| 8-13                    | 9 (29)                                 | 8 (42.1)                                        | P=0.0019 (S) |
| More than 13            | 0 (0)                                  | 5 (26.4)                                        |      |       |

S – Significant; NS – Not significant; SD – Standard deviation; BPRS – Brief psychiatric rating scale; AUDIT – Alcohol use disorder identification test

However, by the end of study follow-up, of the 19 cases of Substance-induced psychotic disorders, 7 (36%) required a change of diagnosis to primary psychosis, 5 at 6 months, and another 2 at the end of 1-year. All of these cases had a baseline diagnosis of alcohol-induced psychosis. The revised diagnosis was schizophrenia in 5 cases and persistent delusional disorder in 2 cases.

### DISCUSSION

The mean age of the cases in primary psychosis group was 31.52 years, whereas it was significantly higher in the substance-induced psychotic group at 37.47 years. Caton et al.\[14\] in their study of 2005 reported that the mean age of cases in primary psychosis was 25 years as compared to 29 years in substance-induced psychosis.

The majority of cases (89%) in substance-induced psychosis group had an education till higher secondary as compared to 64% in primary psychosis group. This finding suggests that the cases of primary psychosis group probably had problems even during the education leading to less years of formal education in this group.

Forty-two percent of cases in substance-induced psychosis group had poor family support as compared to 29% cases in primary psychosis group. This could be due to more severe psychopathology possibly related to the substance abuse in the former group leading to family problems. However, the study by Caton et al.\[14\] had found approximately equal distribution of poor family support among the two groups.

About 20% cases in primary psychosis group had a family history of psychotic illness as compared to only 10% cases in the substance-induced group indicating the importance of family history in assessing the diagnosis at baseline. The most common substance of abuse was alcohol in 80% cases and the rest had used cannabis. Alcohol use was prevalent in 77% of cases in primary psychosis group and 84% in substance-induced psychosis group. A systematic review by Archie and Gyömörey\[19\] in 2009 showed that at baseline, substance use disorder occurred in up to 53% of FEP patients. The most common types of substance use disorder were alcohol and cannabis. Poly-substance misuse was uncommon ranging from 1.5% to 2.5%.

All the cases of substance-induced psychosis had auditory hallucinations in comparison to 58% cases in the primary psychosis group and similar results were found when comparing the presence of visual hallucinations. Caton\[14\] had also reported visual hallucination to be more common in the substance-induced group (23.7% vs. 14.7%).

Considering the presence of suicidal ideations among the groups, only 25% cases in primary psychosis group...
had suicidal ideations in comparison to 50% in the substance-induced group. However, the primary psychosis group had more severe symptoms and the severity was more at all the points of assessment. Similar finding has been reported by Caton et al.\textsuperscript{16}

Comparing the AUDIT scores to identify substance use/abuse, 68% cases in substance-induced psychosis group had alcohol use suggestive of abuse/or dependence as compared to 29% cases in the primary psychosis group. Alcohol dependence was predictive of psychotic experience in a general adult population survey in Great Britain.\textsuperscript{17} It reported two-fold higher risk independent of other risk factors for psychotic symptoms, suggesting that alcohol dependence \textit{per se} doubles the risk of psychotic symptoms.

Similar findings have been reported by Caton et al.\textsuperscript{14} when they assessed 400 participants are presenting with first psychotic episode concurrent with substance use. Their sample was taken from five psychiatric emergency departments. The study reported that 44% participants were diagnosed with substance-induced psychosis. The analysis identified three key predictors as being greater in participants of the substance-induced psychotic group: Parental substance abuse, diagnosis of any drug dependence, and visual hallucinations.

At 1-year follow-up, 37% of the substance-induced psychotic disorder had converted to primary psychosis. Aggarwal et al.\textsuperscript{17} found the change of diagnosis to be 20% in their retrospective study on Indian substance-induced psychotic disorder sample. Johns et al.\textsuperscript{18} in their study found that 11% cases required a change in diagnosis. On comparison of the characteristics of the participants in the change disorder group with primary psychosis group, the change disorder group had lower scores on baseline psychopathology and more suicidal ideations. When the change group was compared to stable substance-induced psychotic disorder group parental mental illness was found more in change group. Reasons for a change from substance-induced psychotic disorder to a primary psychotic disorder over time might be due to few possibilities like first, there is no change in diagnostic status over time and cases diagnosed as substance-induced psychosis at baseline might have been primary psychotic disorder at baseline but due to cross-sectional assessment diagnosis might have been missed and a second possibility is that substance-induced psychotic disorder might be marker for an emerging psychosis that was not yet manifest at first admission. Such individuals might be especially vulnerable to the psycho-mimetic properties of the substances. The third possibility is that the FEP might be part of a process of moving toward an autonomous psychotic disorder in those chronically misusing drugs. However, this study with a longer follow-up is recommended to be conducted for robust evidence of understanding of the stability of FEP with concurrent substance use.

**CONCLUSION**

The present study is one of the few studies carried out especially in reference with diagnostic stability. It is pertinent to mention that differential diagnosis between a primary and a substance-induced psychotic disorder at baseline is important from the clinical, prognostic, and follow-up perspectives. Our research found out a significant difference in clinic-psycho-social paradigm between the primary psychotic disorder group and substance-induced psychotic disorder group. The primary psychotic disorders group is relatively stable over time, but the diagnosis in substance-induced psychotic disorders group changed over time. These have a significant therapeutic connotation and needs to be kept in mind.

**Financial support and sponsorship**

Nil.

**Conflicts of interest**

There are no conflicts of interest.

**REFERENCES**

1. Ling W, Compton P, Rawson R, Wesson DR. Neuropsychiatry of alcohol and drug abuse. In: Schiffer RB, Rao SM, Fogel BS, editors. Neuropsychiatry. 2nd ed. Baltimore, MD: Lippincott, Williams and Wilkins; 2003. p. 893-933.
2. Barnes TR, Mutsatsa SH, Hutton SB, Watt HC, Joyce EM. Comorbid substance use and age at onset of schizophrenia. Br J Psychiatry 2006;188:237-42.
3. Green B, Young R, Kavanagh D. Cannabis use and misuse prevalence among people with psychosis. Br J Psychiatry 2005;187:306-13.
4. Mauri MC, Volonteri LS, De Gaspari IF, Collasanti A, Brambilla MA, Cerrulli L. Substance abuse in first-episode schizophrenic patients: A retrospective study. Clin Pract Epidemiol Ment Health 2006;2:4.
5. Drake RJ, Dunn G, Tartter N, Haddock G, Haley C, Lewis S. The evolution of symptoms in the early course of non-affective psychosis. Schizophr Res 2003;63:171-9.
6. Grech A, Van Os J, Jones PB, Lewis SW, Murray RM. Cannabis use and outcome of recent onset psychosis. Eur Psychiatry 2005;20:349-53.
7. Schwartz JE, Fennig S, Tanenberg-Karant M, Carlson G, Craig T, Galambos N, et al. Congruence of diagnoses 2 years after a first-admission diagnosis of psychosis. Arch Gen Psychiatry 2000;57:593-600.
8. Zammit S, Allebeck P, Andreasson S, Lundberg I, Lewis G. Self reported cannabis use as a risk factor for schizophrenia in Swedish conscripts of 1969: Historical cohort study. BMJ 2002;325:1199.
9. Semple DM, McIntosh AM, Lawrie SM. Cannabis as risk factor for psychosis: Systemic review. J Psychopharmacol 2005;19:187-94.
10. Mc Lellan AT, Woody GE, O’Brien CP. Development of psychiatric illness in drug abusers. Possible role of drug preference. N Engl J Med 1979;301:1310-4.
11. Rounsaville BJ. DSM-V research agenda: Substance abuse/psychosis comorbidity. Schizophr Bull 2007;33:947-52.
12. Overall JE, Gorham DR. The Brief Psychiatric Rating Scale (BPRS): A comprehensive review. J Oper Psychiatry 1991;148:472.
13. Babor TF, De la Fuente JR, Saunders J, Grant M. AUDIT the Alcohol Use Disorder Identification Test: Guidelines for Use in Primary Health. WHO/ MNH/DAT 89.4. Geneva: World Health Organisation; 1989.
14. Caton CL, Drake RE, Hasin DS, Domínguez B, Shroot PE, Samet S, et al. Differences between early-phase primary psychotic disorders with concurrent substance use and substance-induced psychoses. Arch Gen Psychiatry 2005;62:137-45.
15. Archie S, Gyömörey K. First episode psychosis, substance abuse and prognosis: A systematic review. Curr Psychiatry Rev 2009;5:153-63.

16. Caton CL, Hasin DS, Shrout PE, Drake RE, Dominguez B, First MB, et al. Stability of early-phase primary psychotic disorders with concurrent substance use and substance-induced psychosis. Br J Psychiatry 2007;190:105-11.

17. Aggarwal M, Banerjee A, Singh SM, Mattoo SK, Basu D. Substance-induced psychotic disorders: 13-year data from a de-addiction centre and their clinical implications. Asian J Psychiatr 2012;5:220-4.

18. Johns LC, Cannon M, Singleton N, Murray RM, Farrell M, Brugha T, et al. Prevalence and correlates of self-reported psychotic symptoms in the British population. Br J Psychiatry 2004;185:298-306.