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Post-psychotic depression in schizophrenia

Mala Chintalapudi, Parmanand Kulhara, and Ajit Avasthi

Department of Psychiatry, Postgraduate Institute of Medical Education and Research, Chandigarh – 160 012, India

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Summary. Post-psychotic depression (PPD) is defined as the development of depression during the phase of remission of schizophrenia. Two groups of DSM-III-R schizophrenics, one with PPD and the other without PPD (30 subjects in each group) were compared. Significantly more patients in PPD group belonged to nuclear families, had longer duration of psychotic phase of the illness, were hospitalised more frequently and had more sadness and anxiety-somatisation during florid illness phase. The PPD group also had more past history of depression. Although PPD patients had better premorbid personal-social adjustment in comparison with non-PPD group, they perceived themselves to be lacking in social support and had experienced more stressful life events. For patients in the PPD group, stepwise multiple regression analysis revealed age of onset, sadness during florid psychotic state, premorbid adjustment, social support and life events as significant determinants of severity of depression in the post-psychotic phase.

Key words: Schizophrenia – Depression – Post-psychotic depression – Determinants of depression – Post-psychotic

Introduction

A serious depression in the aftermath of schizophrenic breakdown was first decribed by Mayer-Gross (1920) as a denial of future or despair as a reaction to a psychotic experience. Many workers have subsequently researched this aspect of schizophrenic illness and now depression in post-psychotic phase of the disorder is generally termed as post-psychotic depression (PPD).

A variable prevalence of PPD has been reported (Falloon et al. 1978; World Health Organization (WHO) 1979; Roy 1980; Knights and Hirsch 1981), but there is no consensus regarding the interval between schizophrenic psychosis and depression. Numerous models have been proposed for its relationship. PPD is caused by neuroleptics, the so-called "pharmacogenic depression" has been the assertion of many researchers (De Alarcon and Carney 1969; Johnson 1969; Mariot 1969; Ray 1972; Carney and Sheffield 1973; Johnson 1973; Keskiner 1973; Knights et al. 1979). Van Putten and May (1978) documented that treatment with trihexiphenydyl resulted in improvement, both in depression and akinesia, suggesting a relationship between the two, and postulated PPD as an affective manifestation of extrapyramidal reaction caused by neuroleptic use. This was termed as "akinetic depression". Controlled studies by Hirsch et al. (1973), Mandel et al. (1982), Roy et al. (1983) and Berrios and Bulbena (1987) have failed to establish such an association. Shanfield et al. (1970) and Knights and Hirsch (1981) proposed the view that depressive symptoms are an integral part of schizophrenia masked by florid psychotic symptoms during the acute phase and are revealed during remission. Presence of depressive symptoms during the acute phase has been considered as evidence for this notion (Donlon et al. 1976; McGlashan and Carpenter 1976; Planansky and Johnston 1978).

Psychodynamically orientated theorists (Morgan 1972; Stern et al. 1972) have proposed that PPD is a psychological response as the patient gains insight and PPD was thought to be a reactive depression.

Studies aimed at identifying risk factors for the development of PPD have generally failed to find consistent association between PPD and specific variables. Age of onset of psychosis, frequent hospitalisations, longer duration of illness and diagnosis of catatonic or acute undifferentiated type have been linked with PPD by some though not all workers (Berrios and Bulbena 1987; Planansky and Johnston 1978; Siris et al. 1981; Mandel et al. 1982; Roy et al. 1983).

Mandel et al. (1982) found prior history of depression treated with antidepressants, and excitability and hostility to be associated with PPD. Berrios and Bulbena (1987) observed that patients with marked hallucinations were more likely to have PPD. Hogarty et al. (1979) and Kendler and Hays (1983) noted higher rates of family history of affective disorders in PPD patients, but Siris et al. (1978), Roy et al. (1983) and Berrios and Bulbena (1987) did not find any such significant associations.

Correspondence to: P. Kulhara

According to Roy (1980), parental loss before the age of 17 years increases the vulnerability to develop depression in schizophrenia. Studies of premorbid personality of these patients are equivocal (Quitkin et al. 1975; Goldstein et al. 1977; Planansky and Johnston 1978; Mandel et al. 1982; Roy et al. 1983). PPD has also been shown to be associated with increased number of stressful life events (Roy et al. 1983).

It is perhaps clear from this review that there is no consensus about the determinants of PPD and that this lack of agreement among different workers probably arises from lack of use of operationalised criteria not only for the diagnosis of schizophrenia but also due to absence of any acceptable definition of PPD and criteria for its identification. Inclusion of markedly heterogeneous patient populations, failure to eliminate cases of schizo-affective psychosis and use of inadequate assessment procedures are some of the other reasons for the prevailing confusion about PPD. The present investigation endeavours to overcome some of these obvious pitfalls and attempts to evaluate PPD and its determinants in the Indian setting. For the purpose of the present work, PPD is defined as occurrence of a depressive syndrome as in DSM-III-R (American Association of Psychiatry 1987) in a schizophrenic patient during remission from psychotic phase.

The aim of this preliminary work was to study a group of schizophrenic patients who had developed depression during remission to identify variables which differentiated them from schizophrenics who had no depression in the post-psychotic phase. Variables studied were broadly divided in three categories – 1. sociodemographic variables such as age, sex marital status, etc.; 2. clinical variables like age of onset, mode of onset, duration of illness etc. and 3. psychosocial variables including premorbid personality adjustment and social support available to the patient.

Patients and methods

The study sample was chosen from the population of patients attending psychiatric services of our institute and comprised old as well as new cases. The process of inclusion of the patients in the study was selective and purposive, i.e. only those cases who met the selection criteria of the study were included.

Criteria for selection of cases and the key relative

For a patient and the relative to be included in the study, both had to fulfil certain criteria as outlined below. A key relative was included in the study for assessing sociodemographic and clinical variables of the patients, including details of the acute psychotic episode (onset, duration and psychopathology). The relative was also needed to obtain corroborative information regarding social support and life events.

Inclusion criteria for the patients

1. Male or female patient below the age of 60 years.
2. Patient should have been seen in the psychiatric services of the institute during florid psychotic phase and should have met DSM-III-R (American Psychiatric Association 1987) criteria for the diagnosis of schizophrenia.
3. The patient currently should be in remission from a psychotic episode. The criteria for remission were those of the WHO (1978), i.e. following the acute psychotic phase there should be a minimum period of 4 weeks during which the patient is free from psychotic symptoms and florid psychopathology.
4. The patient should be currently staying with a relative and should have stayed with the same relative during the florid psychotic phase of the illness.

Exclusion criteria

1. Patient with schizo-affective psychosis according to DSM-III-R criteria of the American Psychiatric Association (1987).
2. Patients with other concurrent chronic physical illness, organic brain disease or substance abuse.

Inclusion criteria for relatives

1. Any adult relative over the age of 18 years.
2. The relative should be currently staying with the patient and should have been with the patient during the florid psychotic phase.
3. The relative should be healthy, i.e. free from any chronic physical or psychiatric illness.

Patient groupings

The patients fulfilling the study criteria were organised in two groups of 30 patients each.

PPD group

This group included those patients of schizophrenia who had schizophrenic illness by DSM-III-R (American Psychiatric Association 1987) and who were currently in remission as defined by WHO (1978) but had major depression fulfilling DSM-III-R criteria.

Non-PPD group

This group consisted of patients who had a schizophrenic illness by DSM-III-R criteria, were currently in remission (WHO 1978) but did not have depression.

Ideally, the length of current remission and the duration of depression should have been ascertained. Unfortunately, this information was not recorded at the time of evaluating the patients and the patients were assigned to the PPD or non-PPD group on the basis of their satisfying WHO criteria for remission and the DSM-III-R criteria of depression.

Instruments of assessment

1. Hamilton Depression Rating Scale (HDRS) (Hamilton 1960) to assess depression.
2. Presumptive Stressful Life Events Scale (PSLES) (Singh et al. 1984) was used for the assessment of stressful life events in the patients in the year preceding the assessment.
3. Social Support Questionnaire (SSQ) (Nehra and Kulhara 1987) to quantify perceived social support available to the patients.
4. Abbreviated form of Phillips Rating Scale of Premorbid-Adjustment (Harris 1975) was used to assess the premorbid adjustment of the patients.
5. Comprehensive Psychopathological Rating Scale (CPRS) (Asberg et al. 1978) for assessing psychopathology during the florid phase of the illness.
6. For assessing family history, the Research Diagnostic Criteria (RDC) Schedule of Family History of Psychiatric illness (Andreasen et al. 1978) was used.

Table 1. Sociodemographic variables: comparison between the PPD and the non-PPD groups

Variable	PPD ($n = 30$)	Non-PPD ($n = 30$)	Statistics
Age in years:			
Mean	34.33	32.60	$t = 0.78$, $df 58$, P = NS
SD	8.26	8.99	
Sex:			
Male	19	21	$\chi^2 = 0.30$, $df 1$, P = NS
Female	11	9	
Marital status:			
Single	6	8	$\chi^2 = 0.37$, $df 1$, P = NS
Married	24	22	
Occupation:			
Employed	22	17	$\chi^2 = 1.83$, $df 1$, P = NS
Unemployed/housewives	8	13	
Formal education:			
< 10 years	14	13	$\chi^2 = 0.06$, $df 1$, P = NS
> 10 years	16	17	
Religion:			
Hindu	22	23	$\chi^2 = 0.08$, $df 1$, P = NS
Sikh	8	7	
Place of residence:			
Urban	24	21	$\chi^2 = 0.80$, $df 1$, P = NS
Rural	6	9	
Family income per month:			
Up to Rs. 1,000	15	13	$\chi^2 = 0.27$, $df 1$, P = NS
> Rs. 1,000	15	17	
Family type:			
Nuclear	19	6	$\chi^2 = 12.04$, $df 1$, $P < 0.005$
Joint	11	24	

Procedure

The diagnosis of the patients by DSM-III-R criteria (American Psychiatric Association 1987) was independently made by two of the authors (PK and AA). The diagnosis of schizophrenia was arrived at after interviewing the patient and the key informant.

Patients and key relatives so identified were evaluated by one of us (MC) to assess their sociodemographic, clinical and premorbid variables. The patients were also administered various scales, i.e. HDRS, PSLES, Premorbid Personality Adjustment Scale and SSQ. The relatives were also given PSLES and SSQ and were directed to rate the patient's life events and social support as perceived by them. Family history according to RDC was also elicited from the relatives. All assessments by this investigator (MC) were cross-sectional and carried out once only at the time of contact with patient and the key relative.

Statistical analysis

The data were subjected to descriptive and inferential statistics as and when necessary or applicable. For non-parametric variables the chi-square test was applied. Parametric variables were analysed by Student's t test. Linear correlations and stepwise regression were performed to assess the strength and direction of associations between depression scores and sociodemographic and clinical variables.

Results

The PPD group did not differ significantly from the non-PPD group on the variables of age, gender of the patients, marital status, occupation, education, religion, place of residence and family income. However, significantly more patients who had PPD belonged to a nuclear family as opposed to non-PPD group ($\chi^2 = 12.04$, $df 1$. $P < 0.005$). Nuclear family is defined as a family unit comprising the patient, the spouse and their children only or a family unit comprising the patient, parent(s) and sib(s) only of the patient.

The PPD and the non-PPD groups did not show statistically significant differences on clinical variables such as age of onset of psychosis, mode of onset of psychosis and family history of psychosis. However, the duration of the florid psychotic phase was significantly longer in patients with PPD compared to the non-PPD group. Similarly, the PPD group had a significantly greater number of hospitalisations than the non-PPD group. Systematic assessment of psychopathology during the psychotic phase using CPRS (Asberg et al. 1978) revealed that the PPD patients had more somatisations, anxiety and sadness during the florid psychotic phase as compared to the non-PPD group. Past history of depression was also significantly greater in the PPD group. These results are displayed in Table 2.

Premorbid adjustment of the patients was assessed in two areas – personal adjustment and sexual adjustment. Patients with PPD had better adjustment in personal-social areas but not in the sexual area as compared to non-PPD patients. Social support was another variable

Table 2. Clinical variables: comparison between the PPD and the non-PPD groups

Variable	PPD ($n = 30$)	Non-PPD ($n = 30$)	Statistics
Duration of florid psychotic phase in months:			
Mean	64.30	33.40	$t = 2.91$, $df\,58$, $P < 0.01$
SD	50.48	28.84	
Number of hospitalisations:			
Nil	11	21	$\chi^2 = 6.70$, $df\,1$, $P < 0.01$
1 or more	19	9	
Psychopathology on CPRS:			
Sadness			
Present	20	7	$\chi^2 = 11.38$, $df\,1$, $P < 0.001$
Absent	10	23	
Anxiety-somatisation			
Present	17	6	$\chi^2 = 8.53$, $df\,1$, $P < 0.005$
Absent	13	24	
Past history of depression:			
Absent	9	24	$\chi^2 = 13.19$, $df\,1$, $P < 0.001$
Present	21	6	

Table 3. Psychosocial variables: comparison between the PPD and the non-PPD groups

Variable	PPD ($n = 30$)	Non-PPD ($n = 30$)	Statistics
Premorbid adjustment in patients:			
Personal-social			
Mean	2.43	3.23	$t = 3.25$, $df\,58$, $P < 0.002$
SD	1.07	0.82	
Sexual			
Mean	0.60	0.97	$t = 0.86$, $df\,58$, P = NS
SD	1.35	1.92	
Social support:			
Patients' assessment			
Mean	40.70	51.60	$t = 4.96$, $df\,58$, $P < 0.001$
SD	7.54	9.39	
Relatives' assessment			
Mean	41.33	52.13	
SD	6.71	7.71	
Life events:			
Number of events			
Mean	4.57	3.13	$t = 2.80$, $df\,58$, $P < 0.01$
SD	1.91	2.06	
Stress score			
Mean	232.23	129.87	$t = 4.41$, $df\,58$, $P < 0.001$
SD	98.78	80.07	

in which the two groups differed significantly, with the PPD group perceiving itself to be lacking in social support. The PPD group also reported significantly more stressful life events than the non-PPD group. Comparisons of social support as rated by the patient with the ratings of the relatives revealed that in both PPD and non-PPD groups the patients' and relatives' assessments did not differ significantly (for the PPD group $t = 0.34$, $P > 0.05$ and for the non-PPD group $t = 0.24$, $P > 0.05$). These results are shown in Table 3.

An attempt was made to understand the contribution of various sociodemographic variables to depression scores in the PPD group. It was seen that married patients had significantly greater depression score (mean 17.63, SD 2.75) compared with single patients (mean 14.33, SD 2.25) ($t = 2.71$, $df\,28$, $P < 0.02$). Gender of the patient, education, place of residence, family type and religion of the patients did not have significant relationship with depression scores.

For each patient with PPD, correlations between HDRS scores and certain clinical variables were sought. Age of onset of psychosis and age of the patient had significant correlation with depression scores as ascertained on HDRS (r values of 0.73 and 0.41 respectively, $df\,28$, $P < 0.01$) for age of onset and 0.05 for age of the patient. Social support available to the patient had significant

Table 4. Stepwise regression: depression score and patient variables

Independent variable	Step	R	R^2	F value
Age of onset	1	0.535	0.287	32.22
Thought disorder	2	0.631	0.398	23.15
Sadness	3	0.683	0.466	18.69
Premorbid social adjustment	4	0.726	0.527	16.68
Number of life events	5	0.744	0.554	13.97
Social support	6	0.764	0.584	12.48
Dose of antipsychotics	7	0.772	0.600	10.62
Premorbid sexual adjustment	8	0.778	0.605	9.20
Duration of illness	9	0.783	0.613	8.04

df for F value 9, 20 (all F-values significant at $P < 0.01$). Total variance explained = 61.30%

negative correlation with depression score ($r = 0.39$, $df 28$, $P < 0.05$). Number of stressful life events and the weighted stress scores also correlated significantly with depression score (r values of 0.43 and 0.44 respectively, $P < 0.05$). Other variables like the duration of florid psychotic phase, premorbid adjustment and the treatment given did not correlate significantly with HDRS scores.

The results of stepwise regression are shown in Table 4. In these analyses, HDRS score was treated as a dependent variable and others as independent variables. This exercise was performed on the PPD group only.

Discussion

The present study, which is primarily concerned with the post-psychotic phase of schizophrenic illness, has used DSM-III-R criteria both for the diagnosis of schizophrenia as well as depression and has quantified depression by using HDRS, a well-known rating scale for depression. The patients were actually depressed at the time of assessment, although in remission from schizophrenic symptoms. Thus, the present work overcomes some of the flaws of published works in this areas, where either the diagnosis of schizophrenia was not based on rigorous research criteria or the assessment of depression was suspect (Shanfield at al. 1970; Donlon et al. 1976; Strian et al. 1982).

Previous studies have focused on depression as a symptom rather than depression as a syndrome. In fact, Siris et al. (1981) in a chart review study of 50 hospitalised schizophrenic patients found that, although 40% of the patients reported subjective feelings of sadness, only 6% of these had major depression fulfilling RDC criteria. The present study included only those patients who had major depression by DSM-III-R criteria (American Psychiatric Association 1987) during remission; thus, patients with symptoms such as apathy, avolition and anergia which are often mistakenly classed as depressive symptoms were successfully eliminated from entry into the study.

Family type was the only variable of significance to the extent that PPD group had significantly more subjects belonging to a nuclear family, i.e. a single family unit. In the context of Indian sociocultural milieu, this assumes importance as joint family system (living together of more than one family unit under the same roof with or without a common kitchen) with cohesive family ties is still the order of the day. It is quite possible that patients in joint families derive more social support. This, however, is a conjecture, because though PPD as a group has been shown to have significantly less social support than the non-PPD group, this particular variable has not been assessed in relation to the family type.

PPD has been reported to be associated with long duration of the acute phase of the illness and this is corroborated by the present work. Some workers have suggested that repeated hospitalisations, frequent past episodes of depression and family history of schizophrenia predispose a schizophrenic to develop PPD (Planansky and Johnston 1978; Hogarty et al. 1979; Siris et al. 1981; Mandel et al. 1983; Kendler and Hays 1983; Roy et al. 1983; Berrios and Bulbena 1987). However, the present study has failed to find any such association.

Though marital status as a variable behaved identically in the PPD and non-PPD groups, yet within the PPD group, married patients were noted to have significantly more depression than single patients. We have no reasonable explanation for this observation.

The results of stepwise multiple regression showed that a combination of late age of onset of psychosis, lack of thought disorder, presence of sadness during the acute psychotic phase, better premorbid adjustment, excess of stressful life events and lack of social support are influential in determining PPD. In this context, the present study is of clinical importance, as identification of variables which distinguish PPD patients may help in prospective prediction. As a large portion of variance still remains unexplained, the most this sort of study can do is to provide clues which may be associated with development of PPD.

The present work should be at best regarded as exploratory. This study has sought to identify variables associated with PPD; as such it cannot provide answers to questions concerning the temporal relationship between schizophrenia and emergence of depressive syndrome. Moreover, it is a limitation of this study that the variables which could have shed light on this relationship were not recorded at the time of conducting the study. Thus, further research with a larger sample and a prospective design is needed to understand the enigma of depression in the aftermath of schizophrenia.

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