Anhedonia in acute schizophrenia

Anhedonia, the lack of interest and withdrawal from all usual and pleasurable activities, which is a genetically transmitted defect found in both schizophrenia patients and their first degree relatives, is proposed as a cardinal symptom.[1] Chapman et al. proposed two self report scales, the Physical Anhedonia Scale (PAS) and the Social Anhedonia Scale (SAS) for evaluation of anhedonia in schizophrenia.[2] Physical anhedonia is the inability to experience physical pleasures like taking food, receiving sensations, whereas social anhedonia is the inability to experience pleasure in interpersonal situations like mixing with people, talking and interacting with them. Earlier research proposed that anhedonia was related to primary negative symptoms of schizophrenia[1] and depressive symptoms such as motor retardation, lack of energy and easy fatigability.[3] However, several controversies exist regarding the theoretical construct of anhedonia. Although anhedonia often overlaps with depression in schizophrenia, it appears to be different entity. It has been proposed that anhedonia is a measure of negative schizotypy and an enduring trait in schizophrenia[1]; whereas others state that anhedonia is present in the prodromal, acute as well as chronic phases of schizophrenia.[4] We studied the correlation between anhedonia and depression in patients with acute schizophrenia after controlling for factors such as medication side effects and psychopathology.

This was a cross-sectional, hospital-based study carried out at the Central Institute of Psychiatry, Ranchi, India. The study was approved by the internal review board of our Institute. Forty male inpatients, aged between 18 to 50 years, with a diagnosis of schizophrenia as per ICD-10 Diagnostic Criteria for Research and having given written informed consent were included in the study. Patients with organic conditions, mental retardation, comorbid diagnosis of depression or anxiety, and catatonia were excluded. All the patients were assessed during the acute symptomatic stage i.e. within two weeks of their admission. The Positive and Negative Syndrome Scale (PANSS)[5] and Simpson-Angus scale (SAS)[6] were used to assess psychopathology and drug-induced parkinsonism, respectively. To measure anhedonia, the 61-item Physical Anhedonia Scale - revised (rPAS) and 41-item Social Anhedonia Scale - revised (rSAS)[2] were used. The 11-item Calgary Depression Scale for Schizophrenia (CDSS)[7] was used to measure severity of depression. The CDRS has less overlap with positive symptoms as compared with the HAM-D and does not include items that address weight change or initial sleep disturbance which are influenced by medication. The antipsychotic dosages were estimated as chlorpromazine equivalents.

Statistical analysis was carried out using SPSS version 10.0 (SPSS Inc., Chicago, IL, USA). To test normality of data the Shapiro-Wilk test statistic was used. Pearson's correlations were undertaken to study the association between anhedonia scores with psychopathology, extrapyramidal side effects and depression scores. These were followed by partial correlations to study the relationship between anhedonia and depression scores after controlling for psychopathology and extrapyramidal side effects. The level of significance (alpha level) was $p<.0.05$.

Socio-demographic and clinical characteristics of the sample are shown in Table 1. The mean age of the patients was

Table 1: Socio-demographic and clinical characteristics (N=40)

		Mean	*SD*
Age (years)		30.30	6.21
Education (years)		8.52	5.13
Age of onset (years)		25.55	5.92
Duration of illness (years)		5.20	4.74
Duration of untreated psychosis (months)		14.77	5.19
Antipsychotic dose (chlorpromazine equivalent) mg/day		313.00	124.07
rPAS		23.07	7.11
rSAS		19.25	4.11
SAS		4.27	2.17
CDSS Total score		4.97	1.64
CDSS Items	Depressed mood	1.55	0.60
	Delusions of guilt	1.17	0.55
	Hopelessness	0.82	0.64
	Self depreciation	0.15	0.36
	Guilty ideas of reference	0.15	0.36
	Pathological guilt	0.32	0.47
	Observed depression	0.27	0.50
	Morning depression	0.20	0.46
	Loss of weight due to poor appetite	0.22	0.42
	Early awakening	0.05	0.22
	Suicide	0.10	0.30
PANSS Positive		34.60	5.36
PANSS Negative		20.97	4.39
PANSS General		50.87	7.96
		n	*%*
Marital status	Married	24	60
	Unmarried	16	40
SES	Low	16	40
	Middle	20	50
	High	4	10
Employment	Employed	22	55
	Unemployed	18	45
Domicile	Urban	16	40
	Rural	24	60
Family type	Nuclear	11	27.5
	Joint	29	72.5
Schizophrenia subtype	Paranoid	25	62.5
	Non-paranoid	15	37.5

Note: rPAS: Physical Anhedonia Scale - Revised; rSAS: Social Anhedonia Scale - Revised; SAS: Simpson Angus Scale; CDSS: Calgary Depression Scale for Schizophrenia; PANSS: Positive and Negative Syndrome Scale

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30.30 (SD 6.21) years and mean duration of illness 5.20 (SD 4.74) years. Paranoid subtype was diagnosed in 62.5% patients. All patients were on oral antipsychotics (both typical and atypical) with a mean antipsychotic dose of 313 (SD 124.07) mg chlorpromazine equivalent per day.

Significant positive correlations existed between scores of the rSAS with the PANSS Negative (r= .415, p= .004) and with CDSS item score of early awakening (r=.381, p= .008). On partial correlation of physical and social anhedonia scores with CDSS scores, after controlling for PANSS and SAS, there was a significant positive correlation (one-tailed) between rSAS with three CDSS items i.e. observed depression (r=.36, p=.016), early awakening (r=.30, p=.038) and suicide (r=.31, p=.031). No significant correlation was found between the rPAS with any of the CDSS items.

Previous studies examining the association between depression and anhedonia in schizophrenia have yielded inconclusive results, mostly due to the use of inaccurate tools and heterogeneous samples. Our study shows a significant positive correlation between the rSAS score and PANSS-Negative scale score (r = .415), similar to the study by Loas et al.[8] In contrast, our study found no significant correlation between anhedonia (both physical and social) and positive symptoms or general psychopathology scores of the PANSS. The present finding suggests that there is overlap between negative symptoms of psychopathology and social anhedonia in acute schizophrenia.

A significant positive correlation was obtained between the CDSS item score of early awakening and SAS score (r = .381). In order to examine this relationship further, a partial correlation was done between CDRS items and anhedonia items after controlling for psychopathology and EPS. This yielded a significant positive correlation between observed depression (r = .359), early awakening (r = .299) and suicide (r =.315) with SAS scores. Similar findings were reported by Kollias et al.[4], who found a significant positive correlation between CDSS items of self depreciation, guilty ideas of reference, pathological guilt, early awakening, suicidality and observed depression with rSAS scores. Previous studies have consistently found overlap between social anhedonia and depression in both acute and chronic schizophrenia[9], thus sometimes making it difficult to differentiate between these two constructs.

In the present study no significant correlation was found between rPAS and CDSS scores even after controlling for psychopathology and side effects of antipsychotics. According to some, physical anhedonia is independent of factors like mood or anxiety and thus represents a core reduction in ability to experience pleasure with greater specificity for schizophrenia.[1] Similar findings were reported by Kontaxakis et al.[10] in which both positive and negative symptoms were associated with physical anhedonia. Although Kollias et al.[4] concluded that both physical and social anhedonia overlaps with depression in acute schizophrenia, they failed to rule out psychopathology and antipsychotic side effects.

Limitations of the study include small sample size, assessment in only acute phase of illness and inclusion of male participants, thus limiting its generalizability. Therefore future research should focus on assessment of physical anhedonia in drug naïve patients, as well as amongst chronic and remitted schizophrenia patients. Further, studies on first degree relatives of schizophrenia patients would elucidate the genetic underpinnings of anhedonia and identify possible endophenotypes. The association of interview based anhedonia assessment or other self report measures of anhedonia with CDSS could be a further area for future research.

In summary, social anhedonia overlaps with some symptoms of depression as well as negative symptoms of schizophrenia. Physical anhedonia, on the other hand, does not appear to have any relationship with depression, psychopathology or drug side effects. Hence, physical anhedonia may be a cardinal symptom in acute schizophrenia.

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