TO STUDY THE PRESENCE OF NEUROLOGICAL SOFT SIGNS IN PATIENTS WITH SCHIZOPHRENIA AND BIPOLAR DISORDER AND COMPARE THE VARIOUS SUBSCALES.

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Abstract

Background: The study was conducted at the Mental Health & Hospital, Agra. It is a tertiary referral center and a postgraduate teaching hospital. The hospital has a wide catchments area which includes diagnosis of schizophrenia and bipolar affective disorder.

Result: It included AV integration, Stereognosis, Graphesthesia, Extinction and Right left confusion. On sensory integration subscale of NES schizophrenia group had the highest mean score (4.93 ± 2.74) then were the bipolar group (1.50 ± 1.98) and least score was of control group (0.20 ± 0.66) i.e. on sensory integration subscale of NES bipolar group scores were intermediate between schizophrenia and control group. Results of one way ANOVA revealed significant group differences $F(2, 87) = 45.35, p < .01$. Games-Howell post hoc comparisons revealed significant differences in Schizophrenia vs Bipolar group ($p < .01$), Schizophrenia Vs Control group ($p < .01$) as well as in Bipolar Vs Control group ($p < .01$) i.e. on sensory integration subscale of NES schizophrenia patients scored significantly higher than bipolar and control group. Also bipolar group scored significantly higher than control group.

Conclusion: On "Sensory Integration" subscale of NES, schizophrenia patients scored significantly higher than both the bipolar patients and controls. Bipolar patients scored significantly higher than controls. On "Motor Coordination" subscale of NES, schizophrenia patients scored significantly higher than both the bipolar patients and controls. But bipolar patients did not differed significantly from controls.

Keywords: Neurology, Schizophrenia, Bipolar Disorder & Sign

Introduction:

Over the last several decades, there has been an increasing number of neuroanatomical, neuroimaging, neurophysiological, and neuropsychological studies in pursuit of structural, functional, and cognitive correlates of brain insult(s) that could ultimately lead to unravelling the etiopathophysiology of schizophrenia (Bombin et al. 2005).¹ These studies have implicated multiple brain regions. Indeed, variations in the localization and severity of brain impairments in patients with schizophrenia have been used to hypothesize that schizophrenia is made up of multiple disease entities. A direct, easily administered, and inexpensive way of investigating brain dysfunction in schizophrenia is the study of neurological signs.

Neurological abnormalities include both "hard" signs and "soft" signs. Hard signs refer to impairments in basic motor, sensory, and reflex behaviors. In

contrast, neurological "soft" signs (NSS) are described as nonlocalizing neurological abnormalities that cannot be related to impairment of a specific brain region or are not believed to be part of a well-defined neurological syndrome. This distinction has been argued to be artificial and to reflect the inability to define the brain-behavior relationships that underlie the presence of NSS (Heinrichs DW & Buchanan RW, 1988).² Moreover NSS are frequently clustered in categories attending to their most likely, putative neuroanatomical localization. Although the cluster categories vary among authors, the most common categories are integrative sensory function, motor coordination, sequencing of complex motor acts, and primitive reflexes.³

Material & Method

The study was conducted at the Mental Health & Hospital, Agra. It is a tertiary referral center and a postgraduate teaching hospital. The hospital has a

wide catchments area which includes diagnosis of schizophrenia and bipolar affective disorder. Data was collected over a period from January 2013 to August 2014.

Sample Size:

The sample consisted of 90 subjects in three groups. The sample was purposive. Written informed consent was obtained from patients prior to the study after explaining the procedure in detail.

Inclusion Criteria for Patients:

1. Those who can give written informed consent
2. Age group ranging from 18-60 years
3. Patients diagnosed as schizophrenia and bipolar affective disorder according to ICD-10 (International Classification of Diseases and Related Health Problems-10)
4. Schizophrenia patients with PANSS subscale scores (4 or less in delusion, 4 or less in hallucination, 5 or less in conceptual disorganisation) and clinically symptom free
5. Bipolar disorder patients in remission for at least 1 month, clinically and with YMRS

scores < 6 and HAM-D score < 6

Exclusion Criteria for Patients:

- Neurological disorders such as seizures, movement disorders, cerebral palsy

- Recent or current medical illness that may impair central nervous system function.
- Comorbidity with any other psychiatric disorder.
- History of substance abuse or dependence, except for nicotine and caffeine.
- Use of any pharmacological intervention other than psychotropic drugs.
- Life time history of head injury associated with loss of consciousness, seizures, neurological deficits, or surgical intervention.

Inclusion Criteria for Controls:

- Age and sex matched with cases
- Those who were willing to give a written informed consent for the study.

Exclusion Criteria for Controls:

- History of any psychiatric illness for which treatment was sought for or history of any co morbid long standing physical illness.
- History of substance abuse or dependence, except for nicotine and caffeine.
- Controls were also excluded if they scored >2 on General Health Questionnaire -12 (GHQ-12).

Results

Table 1: Socio demographic profile of the samples

Variables		Schizophrenia		Bipolar		Controls	
		(n = 30)		(n = 30)		(n=30)	
	Male	15	(50.0%)	15	(50.0%)	15	(50.0%)
Gender	Female	15	(50.0%)	15	(50.0%)	15	(50.0%)
	Class 5 th to High	19	(63.33%)	14	(46.67%)	15	(50%)
	School						
Education	Above High School	7	(23.33%)	12	(40%)	10	(33.33%)
	to Graduation						
	Above Graduation	4	(13.33%)	4	(13.33%)	5	(16.67%)

	Unmarried	13	(43.33%)	11 (36.67%)	13	(43.33%)
Marital Status	Married	15	(50.0%)	17 (56.67%)	17	(56.67%)
	Divorced	2 (6.67%)		2 (6.67%)	0 (0.0%)	
Occupation	Professional & Semi	5 (16.67%)		5 (16.67%)		6 (20.0%)
	Professional					
	Others (Clerk, housewives,	7 (23.33%)		11 (36.67%)		12 (40.0%)
	Shop-owner, Students and other.)					
	Manual Worker	14	(46.67%)	10 (33.33%)	11	(36.67%)
Family type	Joint	22	(73.33%)	22 (73.33%)	20	(66.67%)
	Nuclear	8 (26.67%)		8 (26.67%)	10	(33.3%)
Socio-economic status	Low	12	(40.0%)	11 (36.67%)	9	(30.0%)
	Middle	18	(60.0%)	19 (63.33%)	21	(70.0%)

This study was conducted in the Institute of Mental Health and Hospital, Agra. Study included 90 subjects (30 schizophrenia patients, 30 bipolar patients and 30 controls) as per inclusion and exclusion criteria.

Table 01 shows the comparisons of gender, education, marital status, occupation, family type and socio-economic status among the three groups. There were no subjects from higher socio economic background. Religion was not classified as all subjects were Hindus.

Table 2: Mean difference and p values of Games-Howell Post hoc Comparisons of “SENSORY INTEGRATION SUBSCALE”

Variables of NES	Schizophrenia vs Bipolar	Schizophrenia Vs Control	Bipolar VS Control
AV integration	0.83**	1.23**	0.40*
Stereognosis	0.27	0.27	0.00
Graphesthesia	1.40**	2.00**	0.60*
Extinction	0.23	0.30**	0.07
Right left confusion	0.73**	0.97**	0.23
SENSORY INTEGRATION SUBSCALE	3.43**	4.73**	1.30**
*Significant at .05 level;** Significant at .01 level			

SENSORY INTEGRATION SUBSCALE: It included AV integration, Stereognosis, Graphesthesia, Extinction and Right left confusion. On sensory integration subscale of NES schizophrenia group had the highest mean score (4.93 ± 2.74) then were the bipolar group (1.50 ± 1.98) and least score was of control group (0.20 ± 0.66) (Table-2) i.e. on sensory integration subscale of NES bipolar group scores were intermediate between schizophrenia and

control group. Results of one way ANOVA revealed significant group differences $F(2, 87) = 45.35, p < .01$. Games-Howell post hoc comparisons revealed significant differences in Schizophrenia vs Bipolar group ($p < .01$), Schizophrenia Vs Control group ($p < .01$) as well as in Bipolar Vs Control group ($p < .01$) i.e. on sensory integration subscale of NES schizophrenia patients scored significantly higher than bipolar and control group. Also bipolar group scored significantly higher than control group.

Table 3: Mean difference and p values of Games-Howell Post hoc Comparisons of “SENSORY INTEGRATION SUBSCALE”

Variables of NES	Schizophrenia	Schizophrenia	Bipolar VS
	vs Bipolar	Vs Control	Control
AV integration	0.83**	1.23**	0.40*
Stereognosis	0.27	0.27	0.00
Graphesthesia	1.40**	2.00**	0.60*
Extinction	0.23	0.30**	0.07
Right left confusion	0.73**	0.97**	0.23
SENSORY INTEGRATION			
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Discussion

In our study the scores of bipolar group were intermediate between schizophrenia and control group in all the subscale of the NES. But the difference between bipolar and schizophrenia group was significant in all but sequencing of complex motor acts subscale. Between bipolar and control group scores of bipolar group were higher in all the subscales but significant only for the sensory integration, sequencing of complex motor acts and

others subscale of NES. Difference was not significant in the motor coordination and primitive reflex subscales.⁴

There have been few comparative studies between patients with schizophrenia and those with other psychiatric disorders. Patients with schizophrenia have shown more NSS than patients with obsessive compulsive disorder (Bolton et al. 1998)⁵, alcohol dependence (Mohr et al. 1996)⁶, substance abuse and bipolar disorder (Kinney et al. 1999)⁷, nonschizophrenia psychosis (Keshavan et al. 2003)⁸, mood disorders, and mixed psychiatric diagnosis in cross-sectional studies (Scheffer et al. 2004)⁹ and after 5 years of follow-up, although not at baseline (Madsen et al. 1999)¹⁰. The only negative finding is a comparison with affective disorders, in which both disorders had very high prevalence rates. This is again the study with the Nigerian population (Gureje et al. 1988)¹¹.

Conclusion

On “Sensory Integration” subscale of NES, schizophrenia patients scored significantly higher than both the bipolar patients and controls. Bipolar patients scored significantly higher than controls. On “Motor Coordination” subscale of NES, schizophrenia patients scored significantly higher than both the bipolar patients and controls. But bipolar patients did not differed significantly from controls.

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