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To Evaluate The Cognitive Functioning In Bipolar Disorders

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Abstract

Aim: To evaluate the cognitive functioning in bipolar disorders
Materials and methods: 80 people with bipolar I illness who are in remission at the present time, 80 people who are considered to be healthy served as controls. Participants fulfilled DSM IV-TR criteria for bipolar I disorder, were euthymic at the time of the interview, were between the ages of 18 and 60, could read and write, and provided informed consent. Patients who already had a diagnosable psychiatric or neurological condition were also eliminated. A psychiatrist documented the patient's clinical status using a semi-structured proforma that asked about the patient's socio-demographics, as well as their history of psychiatric symptoms and the results of a comprehensive physical examination.
Results: The mean MMSE score of patients with euthymic Bipolar disorder I was 28.03±3.22, compared to 30.11±1.63 in the control group. We found that 5% of euthymic Bipolar disorder I patients showed neurocognitive abnormalities on the MMSE compared to 0% controls, which was statistically significant (P=0.001). The average time for completion of TMT-A for patients with euthymic Bipolar disorder I was 71.63±11.85 seconds, compared to 41.69±9.31 seconds in the control group. The average time for TMT-B completion in euthymic Bipolar disorder I was 189.52±25.19 seconds, compared to 92.85±11.67 seconds in the control group. The euthymic Bipolar disorder I group's mean FAB score was 14.12±3.03, compared to 17.02±2.11 for the control group.
Conclusion: Patients insight into their condition and their compliance with treatment may be gleaned from their level of cognitive functioning, which also reflects their socio-occupational functioning and ability to live independently.

Keywords: Cognitive, Bipolar disorders.

Introduction

Cognitive impairment in various neuropsychological areas is seen in bipolar individuals during both hypomanic and hypermanic episodes. Different studies have shown widely varying degrees of cognitive impairment; this is owing in part to differences in study design and the wide range of diseases and individual differences among patients that are seen in clinical practise. Well-known social and vocational issues in bipolar patients seem to be partially related to cognitive impairment, prompting some practitioners to seek neuropsychological evaluations. [1,2] The fact that many people with bipolar disorder do not get the best care possible contributes to the condition's high death and morbidity rates. Over two-thirds (69%) of patients said they were given the wrong diagnosis. On average, people with bipolar disorder experience mood

symptoms for eight to ten years before getting an accurate diagnosis. Maintaining compliance is always a significant challenge. Half of patients seek therapy, but only a third of those who do really take their medication as prescribed. This significantly reduces the number of people who may actually benefit from treatment. [3,4]

Individuals with bipolar illness may struggle with a variety of cognitive difficulties, including those related to executive functioning (e.g., inhibitory control), attention, processing speed, language learning, and declarative memory. Between affective episodes, all patients exhibit clinical improvement, but only approximately a third improve functionally.[5] Because of the impact on occupational performance, people with mood disorders may struggle to have typical social lives when cognitive impairment is present. Further relapses may occur because it hinders the patient's understanding and makes it harder for them to stick to their treatment plan. Recuperation prospects increase with enhanced neurocognitive functioning. Therefore, there is an urgent need to develop therapies targeting cognitive deficits to improve recovery rates and quality of life in people with bipolar illness, even when appropriate symptom management has been achieved. Schizophrenia patients have been the primary focus of research on neurocognitive impairments. Neurocognitive deficiency in individuals with bipolar illness is seldom studied, particularly in the Indian community.[6] Mood state regulation was not accounted for, there was no differentiation between unipolar and bipolar states, and several of the research didn't use an understandable neuropsychological test. Concerned with these issues, the current research compared the neurocognitive abilities of euthymic individuals with Bipolar I Disorder to those of a control group using a variety of measures (Mini-Mental Status Examination, Frontal Assessment Battery, Trail Making Test A and B).

Materials and methods

After obtaining approval from the appropriate institutional review board, this research was conducted in the..... In addition to 80 people with bipolar I illness who are in remission at the present time, 80 people who are considered to be healthy served as controls. Participants fulfilled DSM IV-TR criteria for bipolar I disorder, were euthymic at the time of the interview, were between the ages of 18 and 60, could read and write, and provided informed consent. Patients who already had a diagnosable psychiatric or neurological condition were also eliminated. A psychiatrist documented the patient's clinical status using a semi-structured proforma that asked about the patient's socio-demographics, as well as their history of psychiatric symptoms and the results of a comprehensive physical examination. 80 participants who met DSM-IV TR criteria for Bipolar disorder I were chosen for the research. Scores of 8 or less on the Hamilton Depression Rating Scale (H.D.R.S.) and 6 or less on the Young's Mania Rating Scale were used to determine remission (Y.M.R.S.).

Methodology

The Neurocognitive Battery (Mini-Mental Status Examination, Frontal Assessment Battery, Trail Making Test) was given to bipolar I euthymic patients and compared to 80 healthy controls.

Neuropsychological Measures

The Neurocognitive Battery measures listed below were used to determine the patient's neurocognitive profile. The task was assigned in the same sequence as the rest of the sample.

Mini-Mental Status Examination (M.M.S.E.):

To measure general neurocognitive performance and the level of cognitive impairment at a specific moment in time, as well as to track an individual's cognitive changes over time, making it a useful tool to record an individual's reaction to therapy.

Frontal Assessment Battery: This is a bedside battery used to determine the prevalence and severity of a dysexecutive condition that affects both cognitive and motor behaviour. It is divided into six subsets (scores 0–3), each of which investigates frontal lobe functions such as conceptualization and abstract reasoning, mental flexibility, motor programming and executive control of action, resistance to interference, self-regulation, inhibitory control, and environmental autonomy. To determine the frequency and severity of a dysexecutive condition impacting cognitive as well as motor activity.

Trail Making Test: Visual conceptualization and visuomotor tracking will be evaluated (involves motor speed and attention function). It is divided into two sections: Trial Making A and Trial Making B. Making A- The participant was asked to draw lines connecting 80 consecutively numbered spheres that were randomly arranged. Completion time is given in seconds. Trail Making B- The subject was asked to draw lines to link 80 spheres that had been sequentially numbered and lettered by alternating between two sequences.

Statistical Analysis

SPSS Version 25.0 was used to analyse the data. The chi-square test, ANOVA, and Pearson's correlation coefficient were employed to analyse correlation. For all statistical analyses, a two-tailed p-value was produced, and a score of p 0.05 was regarded statistically significant.

Results

The mean MMSE score of patients with euthymic Bipolar disorder I was 28.03±3.22, compared to 30.11±1.63 in the control group (Table 1). We found that 5% of euthymic Bipolar disorder I patients showed neurocognitive abnormalities on the MMSE compared to 0% controls, which was statistically significant (P=0.001).

Table 1: Mini-Mental State Exam

MMSE	Mean
Bipolar	28.03 ± 3.22
Control	30.11 ± 1.63

Trail Making Test (T.M.T.)

TMT A- The average time for completion of TMT-A for patients with euthymic Bipolar disorder I was 71.63±11.85 seconds, compared to 41.69±9.31 seconds in the control group. (Table 2). On TMT-A, 30% of euthymic Bipolar disorder I patients had neurocognitive deficits, compared to none of the controls.

Table 2: TMT A

MMSE	Mean
Bipolar	71.63 ± 11.85
Control	41.69 ± 9.31

TMT B- The average time for TMT-B completion in euthymic Bipolar disorder I was 189.52±25.19 seconds, compared to 92.85±11.67 seconds in the control group. (Table 3)

Table 3: TMT B

MMSE	Mean

Bipolar	189.52 ± 25.19
Control	92.85 ± 11.67

Frontal Assessment Battery (F.A.B.)

The euthymic Bipolar disorder I group's mean FAB score was 14.12±3.03, compared to 17.02±2.11 for the control group (Table 4). In our research, we discovered that 35% of euthymic Bipolar disorder I patients exhibited a neurocognitive deficiency on FAB, compared to 0% of the control group.

Table 4: FAB

MMSE	Mean
Bipolar	14.12± 3.03
Control	17.02 ± 2.11

Table 5: Influence of Various Factors on Neurocognitive Profile of Euthymic Bipolar I Disorder Patient

Factors		MMSE	FAB	TMT-A	TMT-B
Age of patient	**Pearson Correlation**	-0.52	-0.63	0.52	0.74
	Significance	P<0.001	P<0.001	P<0.001	P<0.001
Age of onset	**Pearson Correlation**	-0.41	-0.53	0.36	0.51
	Significance	0.007	0.02	0.06	0.002
Duration of illness	**Pearson Correlation**	-0.29	-0.51	0.44	0.51
	Significance	0.03	0.00	0.00	0.00
Total Episodes	**Pearson Correlation**	-0.18	-0.45	0.41	0.42
	Significance	0.31	0.003	0.03	0.02
Manic Episodes	**Pearson Correlation**	-0.22	-0.52	0.44	0.52
	Significance	0.12	0.001	0.02	0.003
Depressive Episodes	**Pearson Correlation**	-0.04	-0.44	0.13	0.14
	Significance	0.61	0.03	0.41	0.33
Family History of Bipolar disorder	**Pearson Correlation**	0.07	-0.14	0.01	-0.02
	Significance	0.61	0.33	0.81	0.52

Discussion

The new study's findings corroborate previous research showing that people with bipolar illness have considerable deficits in their cognitive abilities. My low scores on the Trail Making Test B reflect deficits in the executive functions of cognitive flexibility and setshifting, both of which are impaired in people with bipolar illness. This demonstrates individualised, rather not systemic, impairments in cognitive performance, and hence may serve as a characteristic or vulnerability flag. These results are consistent with earlier research revealing TMT-B abnormalities in Bipolar Disorder I. [7] Patients in the euthymic phase of Bipolar I have been shown to have executive dysfunction, which is thought to be a susceptibility flag.

Conceptualization and abstract thinking are examined in FAB, along with mental flexibility, motor programming, executive control of action, resistance to distraction, self-regulation, inhibitory control, and environmental autonomy. Our results showed that 35% of individuals with euthymic Bipolar disorder I exhibited a neurocognitive impairment on FAB, whereas none of the controls did. Our results add to the growing body of evidence that suggests impairment in executive processes, cognitive flexibility, resistance, interference, and planning. [8]

Despite the lack of imaging tools to back up our findings, cognitive impairments may be understood in light of prior research that has shown a link between neuroanatomical abnormalities and cognitive failure. Reduced thalamic and hypothalamic volumes were seen in euthymic individuals with Bipolar Disorder I, according to structural MRI investigations by Videbech et al. [9] Poor psychomotor speed with white matter hyperintensities, impaired executive functions in Bipolar disorder I and Depression attributed to frontal lobe dysfunction, and so on have all been suggested by other studies of patients with bipolar disorder. Subcortical nuclei may also play a role in cognitive processing, especially in working memory and behavioural planning. [10] Using the Mini-Mental State Exam (MMSE), the Trail Making Test (TMT-A), the Trail Making Test (TMT-B), and the Functional Ability Battery (FAB), we may infer that individuals with Bipolar I illness who are now in remission phase nevertheless exhibit some neurocognitive dysfunctioning. The cognitive abilities of euthymic individuals with bipolar I illness are affected by a number of circumstances, some of which are listed below.

Conclusion

Patients' insight into their condition and their compliance with treatment may be gleaned from their level of cognitive functioning, which also reflects their socio-occupational functioning and ability to live independently.

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