Original Research Article

International Journal of Medical and Health Research
ISSN: 2454-9142
Received: 27-05-2020; Accepted: 18-06-2020; Published: 28-06-2020
www.medicalsciencejournal.com
Volume 6; Issue 6; 2020; Page No. 175-177

The study of impact of biological rhythm disturbance in patients with bipolar mood disorder current episode depression

Dr. Shravan Kumar[1*], Dr. Rakesh Kumar Gaur[2], Dr. Suhail Ahmed Azmi[3]

[1] Senior Resident, Department of Psychiatry, Jawaharlal Nehru Medical College, Aligarh Muslim University, Aligarh, Uttar Pradesh, India

[2, 3] Professor, Department of Psychiatry, Jawaharlal Nehru Medical College, Aligarh Muslim University, Aligarh, Uttar Pradesh, India

[*] Corresponding Author: Shravan Kumar

Abstract

Aims: To study the impact of biological rhythm disturbance in patients with bipolar depression.

Materials and Methods: Case-control study was carried at Jawaharlal Nehru Medical College, Aligarh Muslim University, U.P, India. 100 cases of bipolar depression and 100 healthy controls were recruited. Biological Rhythms Interview of Assessment in Neuropsychiatry Questionnaire (BRIAN) and Functioning Assessment Short Test (FAST) were used to assess biological rhythms and functioning, respectively. HAM-D scale was used to assess severity of depressive symptoms.

Results: Total as well as certain domain-specific BRIAN, FAST & HAM-D scores were significantly higher in cases compared to controls.

Conclusions: biological rhythm dysfunction has been found to be common in bipolar depression.

Keywords: biological rhythms disturbance, bipolar mood disorde, bipolar depression

Introduction

Bipolar I disorder starts on average at 18 years and bipolar II disorder at 22 years [1, 2]. A community study using the Mood Disorder Questionnaire (MDQ) revealed a prevalence of bipolar mood disorder 3.7 percent [3]. Circadian rhythm desynchronization has also been implicated in bipolar mood disorders. Animal data indicate that periodic physiological disturbances can occur if two rhythms become desynchronized i.e., if one becomes free-running in and out of phase with the other [4]. It is unclear that how do the genetics contribute to the course of disorder e.g., rapid cycling, circadian and seasonal rhythms, and the capacity for kindling and sensitization.

Cognitive processing is often impaired in bipolar depression [5]. Executive function, visual-spatial, memory, verbal fluency, and attention deficits have been noted. This may be a primary feature of bipolar disorder, secondary to other dysregulation (e.g., insomnia) or secondary to comorbid conditions (e.g., substance use). Cognitive assessment is underutilized in assessing medication side effects, the return to the outpatient sector from inpatient, and employing vocational rehabilitation in preparation for work [6].

Thereby, it is needed to focus on hidden yet relevant and modifiable factors that could improve the course of bipolar depression. One such factor which is gaining importance in recent times is that of biological rhythms. Biological rhythms are cyclical physical or chemical changes occurring in the body [7]. This study aimed to compare biological rhythm disturbances between patients with bipolar depression and apparently healthy controls.

Materials and Methods

Study design

The present hospital case-control study was carried out in the department of Psychiatry, Jawaharlal Nehru Medical College, Aligarh Muslim University, U.P, India.

After explaining the purpose and details of the study, a written informed consent was obtained from the patients or their attendants.

Inclusion criteria

Patients above 18 years of age

Confirmed cases of bipolar mood disorder current episode depression.

Exclusion criteria

Patients with psychiatric illness other than bipolar mood disorder

Uncooperative persons

Patients who did not give consent

Sample selection

The sample size was calculated using a prior type of power analysis by G* Power Software Version 3.0.1.0 (Franz Faul, Universitat Kiel, Germany). The minimum sample size was calculated, following these input conditions: power of 0.80 and $P \leq 0.05$ and sample size arrived were 96 participants in each group. The final sample achieved was 100 per group. Healthy attendants accompanying the patients were recruited into control group.

Methodology

Socio-demographic

Socio-demographic data were recorded using a semi structured, pre-designed and pre-tested questionnaire, which included information about age, gender, education, occupation, marital status, and ethnicity.

Bipolar Disorder was diagnosed as per DSM-5 criteria [8].

The Biological Rhythms Interview of Assessment in Neuropsychiatry (BRIAN) was used for assessing biological rhythms [8]. BRIAN is a 21-item questionnaire assessing domains of sleep, activity, social, diet, and chronotype over the last 2 weeks. Functioning assessment screening tool (FAST) was used for assessing functioning [9]. It assesses domains of autonomy, work, cognitive functioning, financial issues, interpersonal relationships, and leisure. Severity of depression was assessed using HAM-D. HAM-D is a 17-item scale used for rating severity of depression.

Statistical analysis

The data was coded and entered into Microsoft Excel spreadsheet. Analysis was done using SPSS version 20 (IBM SPSS Statistics Inc., Chicago, Illinois, USA) Windows software program. The variables were assessed for normality using the Kolmogorov Smirnov test. Descriptive statistics included computation of percentages, means and standard deviations. Statistical test applied for the analysis was student t-test. Level of significance was set at $p \leq 0.05$.

Results

Table 1: Demographic profile of the study population

Variables	Case	Control
Age		
18-27 Years	16 (16%)	14 (14%)
28-37 Years	50 (50%)	48 (48%)
38-47 Years	24 (24%)	29 (29%)
>47 Years	10 (10%)	9 (9%)
Gender		
Male	62 (62%)	58 (58%)
Female	38 (38%)	42 (42%)
Education		
Illiterate/ Read and write	7 (7%)	6 (6%)
Primary	24 (24%)	21 (21%)
Higher Secondary	46 (46%)	48 (48%)
Graduate	23 (23%)	25 (25%)
Occupation		
Un-employed	14 (14%)	11 (11%)
Skilled	58 (58%)	63 (63%)
Un-skilled	28 (28%)	26 (26%)
Marital status		
Married	59 (59%)	61 (61%)
Un-married	29 (29%)	25 (25%)
Divorced	12 (12%)	14 (14%)
Residence		
Rural	54 (54%)	51 (51%)
Urban	28 (28%)	30 (30%)
Peri-Urban	18 (18%)	19 (19%)
Religion		
Hindu	34 (34%)	31 (31%)
Muslim	49 (49%)	51 (51%)
Sikh	9 (9%)	10 (10%)
Christian	8 (8%)	8 (8%)

Table 2: comparison of total BRIAN Score and its domains

Domains	Case	Control	p-value
Sleep	8.16	4.66	0.001 (Sig.)
Activity	6.98	5.01	0.021 (Sig.)
Diet	4.89	4.17	0.052 (NS)
Social	4.91	3.93	0.039 (Sig.)
Total Score	28.92	24.22	0.001 (Sig.)

Test applied: student t-test

Table 3: correlation between total BRIAN score and HAM-D & FAST score among case group

Variables	BRIAN Score	
	r-value	p-value
HAM-D	0.491	0.001 (Sig.)
FAST	0.4.63	0.001 (Sig.)

Test applied: Pearson Correlation coefficient

Discussion

In the present study 60% of the patients were female with an overall mean age of 42 ± 8.05 years, and majority of them had higher education level. Bipolar depression patients experienced greater overall biological rhythm disturbance than the control group. Specifically, the patients were more impaired than the control group with regard to sleep/ social and activity domains of the BRIAN. No differences between groups were found regarding diet domain. These findings are consistent with previous reports [10, 11] suggesting that biological rhythm dysregulation plays a critical role in the pathophysiology of bipolar disorder. A study from Spain reported significant difference in only domains of sleep, activity, and social domains [12]. An Indian study noted

significant impairment only in activity, social, and diet domains [13].

Our results support previous findings showing that bipolar patients not only experienced sleep-wake alterations, but also were less regular in their personal relationships and work tasks. Disruptions in daily activities and social interactions could act as 'social zeitgebers' which may contribute to increased biological abnormalities (e.g., hormonal, metabolic). This may account in part for the association between lack of regularity and clinical symptomatology in bipolar disorder.

A significant correlation was obtained between total BRIAN score and total FAST as well as domains of FAST. This was found in agreement with the previous studies previous studies [15].

As demonstrated in previous studies [14, 15] we also found a significant correlation between biological rhythm disturbance and depressive symptoms and poor functioning. In addition, patients with a greater variability in daily routines were more likely to have depressive episodes. However, it is unclear if rhythm abnormalities contribute to depressive symptoms or they are a consequence of mood symptoms.

Conclusion

In conclusion, biological rhythm dysfunction has been found to be common in Bipolar disorders. An appropriate treatment strategy combining pharmacological, psychosocial, and chronobiological treatments should be developed for the achievement of recovery from Bipolar disorders. Clinicians should focus more on the circadian rhythm dysfunction for the diagnosis and treatment of BD under a clinical setting. Additional systematic studies are also needed to highlight the importance of sleep disorders in patients with bipolar depression offer a tailor-made treatment for these patients.

References

1. Weissman MM, Leaf PJ, Tischer GL, *et al*. Affective disorders in five United States communities. Psychol Med. 1988; 18:141-53.
2. Hirschfeld RMA, Bowden CL, Gitlin MJ, *et al*. Practice guideline for the treatment of patients with bipolar disorder (revision). Am J Psychiatry. 2002; 159(Suppl):1-35.
3. Hirschfeld RMA, Holzer C, Calabrese JR, *et al*. Validity of the mood disorder questionnaire: A general population study. Am J Psychiatry, 2003; 160:178-80.
4. Goodwin FK, Jamison KR. Manic-Depressive Illness. New York, NY: Oxford University Press, 1990.
5. Nordenson B, Gruber SA, Yurgelun-Todd DA. Neurocognition in bipolar disorder: A review of the current research. Curr Psychosis Ther Rep, 2004; 2:147-52.
6. Dickerson FB, Boronow JJ, Stallings CR, *et al*. Association between cognitive functioning and employment status of persons with bipolar disorder. Psychiatr Serv, 2004; 55:54-8.
7. Reinberg A, Ashkenazi I. Concepts in human biological rhythms. Dialogues Clin Neurosci, 2003;5:327- 42.
8. Giglio LM, Magalhães PV, Andreazza AC, Walz JC, Jakobson L, Rucci P, *et al*. Development and use of a biological rhythm interview. J Affect Disord, 2009; 118:161- 5.
9. Rosa AR, Sánchez- Moreno J, Martínez- Aran A, Salamero M, Torrent C, Reinares M, *et al*. Validity and reliability of the functioning assessment short test (FAST) in bipolar disorder. Clin Pract Epidemiol Ment Health, 2007; 3:5.
10. Kapczinski F, Frey BN, Vieta E. Sleep and circadian rhythm disturbances in bipolar disorder: an urgent need for objective assessment and systematic follow-up. J Clin Psychiatry, 2011; 72:724.
11. Scott J. Clinical parameters of circadian rhythms in affective disorders. Eur Neuropsychopharmacol. 2011; 21(Suppl 4):S671-5.
12. Rosa AR, Comes M, Torrent C, Solè B, Reinares M, Pachiarotti I, *et al*. Biological rhythm disturbance in remitted bipolar patients. Int J Bipolar Disord, 2013; 1:6.
13. Iyer A, Palaniappan P. Biological dysrhythm in remitted bipolar I disorder. Asian J Psychiatr, 2017; 30:218- 24.
14. Frank E, Kupfer DJ, Thase ME, Mallinger AG, Swartz HA, Fagiolini AM, *et al*. Two-year outcomes for interpersonal and social rhythm therapy in individuals with bipolar I disorder. Arch Gen Psychiatry, 2005; 62:996-1004.
15. Goldstein TR, Bridge JA, Brent DA. Sleep disturbance preceding completed suicide in adolescents. J Consult Clin Psychol, 2008; 76:84-91.