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Dr. Srinivas Kandrakonda
Associate Professor, Department of Psychiatry, Kamineni Institute of Medical Sciences, Narketpally, Telangana, India

Dr. Penubarthi Sravanthi
Senior Resident, Department of Psychiatry, Kamineni Institute of Medical Sciences, Narketpally, Telangana, India

Dr. Vatte Vishwak Reddy
Assistant Professor, Department of Psychiatry, Kamineni Institute of Medical Sciences, Narketpally, Telangana, India

Dr. Ch Siva Kumar
Associate Professor, Department of Psychiatry, Government Medical College, Nizamabad, India

Dr. K Vinya
Junior Resident, Department of Psychiatry, Kamineni Institute of Medical Sciences, Narketpally, Telangana, India

Dr. P Sravana Sandhya
Clinical Pharmacologist, Nizams Institute of Medical Sciences (NIMS), Hyderabad, Telangana, India

Swathi Narayani Saravanan
Clinical Psychologist, Karla Mind Centre, Hyderabad, Telangana, India

Corresponding Author:
Dr. Ch Siva Kumar
Associate Professor, Department of Psychiatry, Government Medical College, Nizamabad, India

Impulsivity and clinical outcome in major psychiatric illnesses: A prospective analytical study

Dr. Srinivas Kandrakonda, Dr. Penubarthi Sravanthi, Dr. Vatte Vishwak Reddy, Dr. Ch Siva Kumar, Dr. K Vinya, Dr. P Sravana Sandhya and Swathi Narayani Saravanan

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Abstract
Background: Impulsivity, due to high comorbidities, is considered as one of the residual symptoms in patients with psychiatric illnesses. There is dearth of literature with respect to the effect of available treatment options on impulsivity and clinical outcome in major psychiatric disorders. Hence, our study aims to observe the change in impulsivity from baseline after 10 days of treatment and clinical outcome in patients with major psychiatric disorders [Schizophrenia, Bipolar Affective disorder (BPAD) and Alcohol Dependence Syndrome (ADS)].
Materials and Methods: This is a prospective analytical, non-randomized, quantitative open label study wherein total of 112 patients diagnosed with either of the three major psychiatric illness i.e., schizophrenia or BPAD or ADS were recruited into the study. BIS-11 was used to assess impulsivity at baseline and 10 days post admission. Clinical outcome was assessed using CGI scale. Data was analyzed using one-was ANOVA, paired t test and Post hoc analysis.
Results: The difference between baseline mean scores and post treatment mean scores on all the subscales of BIS-11 was found to be statistically significant (p value <0.001). On post hoc analysis, mean BIS-11 total scores after 10 days of admission are significantly more in the group with BPAD compared to other two groups (p value 0.02 in LSD).
Conclusion: The need for effective treatment of impulsivity in all the major psychiatric illnesses should be taken care of, to see a better clinical outcome.

Keywords: Impulsivity, clinical outcome, treatment, major psychiatric illnesses

Introduction
Impulsivity, by its definition, is a "predisposition to react towards stimuli in a and unplanned manner without regard to negative consequences" [1]. It is a complex psychological construct that effects one's behaviour and has shown to be associated with a genetic element through detailed interview of various psychiatric conditions like Impulse control disorder, ADHD, OCD [2]. The high comorbidity of impulsivity and selected psychiatric disorders, including personality disorders, substance use disorders, and bipolar disorder, is predominantly related to the neurotransmitter association between these conditions [1]. Apart from Unipolar depression, other major psychiatric disorders (schizophrenia, Bipolar Disorder, Alcohol dependence Syndrome) have significant association with impulsivity and experience multiple adverse events [3, 4]. This establishes a need for effective treatment of impulsivity in order to prevent negative repercussions.
One has to understand about the effect of the prevailing treatment options, to develop any better intervention strategies addressing impulsivity. There is scarcity in literature, both globally as well as in India, regarding the effect of treatment on impulsivity and their clinical outcome in major psychiatric disorders. Therefore, our study aims to observe the change in impulsivity from baseline after 10 days of treatment and clinical outcome in patients with major psychiatric disorders (Schizophrenia, Bipolar Affective disorder and Alcohol Dependence Syndrome).

Materials and Methods
Study design
This study was a prospective analytical, non-randomized, quantitative open label study conducted in the Department of psychiatry of a tertiary health care hospital, south India.

An approval from the Institutional Ethics Committee was obtained.

Participants

The participants for the study were recruited via purposeful and consecutive sampling. The participants who were drug-naïve diagnosed with bipolar affective disorder, schizophrenia or alcohol dependence syndrome as per ICD 10 diagnostic criteria [5], aged above 18 years of age, complied with the study procedures and provided written informed consent were included into the study. The participants who had history of cognitive impairment, mental retardation, history of complicated head trauma, convulsions, delirium or other organic conditions, had been diagnosed with major medical or surgical disorders in the last 6 months were excluded from the study.

Measures

1. **Impulsivity**: The Impulsivity in our study was analysed using Barratt Impulsiveness Scale 11(BIS-11) [6]. It has three major components – non-planning, motor impulsiveness and cognitive impulsiveness.
2. **Outcome Measure:** The Clinical Global Impression rating scales are commonly used measures of symptom severity, treatment response and the efficacy of treatments in treatment studies of patients with mental disorders [7]. The CGI-S & I scale was administered to understand the outcome measure.

Study Procedure

All the subjects who fulfilled the inclusion and exclusion criteria were consented for participation in the study. The socio demographic data and clinical details were captured. The diagnosis was made per ICD-10 criteria, after which baseline assessment of BIS -11 was done. The subjects were then provided treatment as per the orders of treating psychiatrist. They were re-assessed by BIS-11 and outcome was measured using CGI – S and I scales after 10 days of treatment prescribed.

Statistical Analysis

Impulsivity and clinical outcome were considered as primary outcome variables. Study group (Schizophrenia or BPAD or ADS) was considered as primary explanatory variable. Parametric tests like one-way ANOVA, Post hoc analysis (LSD and Tamhane) were used to find the association among the three groups. Paired t test was applied to see the significance of the difference in the outcome variables at baseline and post 10 days treatment. P value < 0.05 was considered statistically significant. IBM SPSS version 22 was used for statistical analysis [8].

Results

In the present study, total of 112 patients diagnosed with one of the three major psychiatric disorders were analyzed. 40 of them were diagnosed with Schizophrenia, 37 with BPAD and 35 of them diagnosed with ADS.

The mean test scores before (pre-treatment) and after (post-treatment) the subjects kept on medication shows there is gradual decrease in the post mean scores after they are kept on medications. There is a strong positive correlation in all the pairs (Pair 1 the r=0.71, p=<0.001, Pair 2 the r=0.55, p=<0.001, Pair 3 the r=0.57, p=<0.001, Pair 4 the r=0.70, p=<0.001). (Table – 1)

Table 1: Depicting the Barrat's Impulsive Scale (BIS - 11) score on admission and after 10 days of admission in relation to the three groups using Paired t-test

Pairs (On Admission and after 10 days of treatment)		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t - Value	Sig. (2-tailed)
Pair 1	BIS-Non planning Scale	8.06	3.09	0.29	7.62	8.78	28.01	.001*
Pair 2	BIS-Motor Impulsivity Scale	7.25	3.83	0.36	6.54	7.97	20.03	.001*
Pair 3	BIS-Cognitive Impulsiveness Scale	4.07	3.44	0.32	3.42	4.71	12.50	.001*
Pair 4	BIS-Total score	1.95	7.40	0.69	1.81	2.09	27.93	.001*

The mean BIS non planning score after 10 days of treatment was 22.20 (S. D=2.86) which was more compared to other BIS subscales. The F value of 3.80 with p value of 0.02 states the significance of the finding in BIS non planning impulsivity after 10 days of admission across 3 groups. Also, the total BIS after 10 days of admission F value of 2.82 with p value of 0.06 states the non-significance of the findings across 3 groups (Table – 2). The F value for other two subscales show no significance across 3 groups.

Table 2: Impulsivity in the three groups at Baseline and Post 10 days of treatment using One Way ANOVA and Post Hoc Analysis (LSD)

Variable	Schizophrenia mean (S.D.)	BPAD mean (S.D.)	ADS mean (S.D.)	One way Anova F value	P value
BIS-Non Planning Scale on Admission	29.98(4.13)	31.94(4.59)	32.84(3.94)	4.66	0.01
				Group 3>Group 1 & 2 LSD (p=0.004) Not much difference between means is significant.	
BIS-Total Score on Admission	75.30(8.01)	81.88(12.60)	80.05(9.12)	4.40	0.01
				Group 2 > Group 1 and Group 3 LSD (P= 0.005)	
BIS- Non-Planning After 10 Days of Admission	22.20(2.86)	24.40(3.93)	23.54(3.65)	3.80	0.02
				Group 2>Group 1 and 3 LSD (p=0.008) Not much difference in means across groups	
BIS-Total Score After 10 Days Of Admission	57.52(6.93)	61.89(9.40)	59.06(7.64)	2.82	0.06
				Group 2>Group 1 and 3 LSD (p=0.02)	

On Post hoc analysis, significant difference (p value 0.008) was found between the groups (Group2 and Group1) i.e., the dimension of mean BIS non planning score after 10 days of treatment was significantly higher in group 2 compared to that of group 1 and group 3. The mean total BIS after 10 days of treatment (p= 0.02) was found between groups i.e.,

dimension of mean BIS total score after 10 days of treatment was significantly higher in group 2 when compared to that of group 1 and group 3. (Table – 2)

Table 3: Clinical outcome in the three groups at baseline and Post 10 days treatment Using One Way ANOVA, Post Hoc Analysis (LSD)

Variable	Schizophrenia mean (S.D.)	BPAD Mean (S.D.)	ADS mean (S.D.)	One way Anova F value	P value
CGI-Severity of Illness on Admission	4.77(0.61)	4.74(0.65)	4.64(0.59)	0.42	0.66
				No difference among the means of the groups	
CGI - Severity of Illness After 10 Days of Admission	2.43(0.64)	2.11(0.47)	1.92(0.55)	8.05	0.001
				Group 1 > Group 2 and 3 LSD (p=0.018)	
CGI-Global Improvement After 10 of Admission	2.35(0.58)	2.08(0.56)	1.86(0.63)	6.49	0.001
				Group 1 > Group 2 and 3 LSD (p= 0.056)	
CGI-Efficacy Index After 10 Days of Admission	1.56(0.86)	1.72(0.86)	2.34(1.12)	6.98	0.001
				Group 3 > Group 1 and 2 LSD(p=0.007)	

There is no significant difference observed in the baseline scores of CGI – severity of illness in the three groups. However, statistical significance (p value <0.001 in LSD) was found between schizophrenia and ADS using post hoc tests in both CGI severity as well as improvement subscales (*p* <0.001 and p = 0.002 in LSD respectively). The dimension of mean CGI efficacy index score after 10 days of treatment between schizophrenia and ADS is significant (p value 0.001 in LSD). (Table – 3)

Discussion

Though there are cross-sectional studies on the presence of impulsivity in various psychiatric disorders, there is not much research done on the effect of treatment on impulsivity to our knowledge. The present study summarises the improvement of impulsivity scores post treatment for psychiatric condition and their clinical outcome.

In our study, it was found that significant improvement was observed in all the three subscales of BIS-11 as well as on total scoring (*p* value - 0.001). The total BIS -11 scores, both on admission as well as 10 days post treatment were found to be higher in BPAD group followed by group with ADS. Similar results were seen in previous studies, where total BIS scores were more in patients with bipolar disorder and substance abuse [9].

In our study, though there is no significant difference in the baseline CGI – severity scale scores, after 10 days of admission, both CGI severity of illness as well as Global improvement scores were significantly higher in the group with Schizophrenia followed by BPAD and ADS. These results were supported by post hoc analysis by LSD, which showed significance in p-value. This improvement in patients with schizophrenia, even when the severity was high, could be due to the use of anti-psychotics, which are well known to reduce impulsivity [10].

There are only a few studies which compared treatment efficacy with impulsivity and clinical outcome, in single psychiatric condition. One such study was conducted by Hollander *et al* (2003), on effect of divalproate sodium on impulsive aggression in cluster B personality individuals. They concluded that at each follow-up (1, 3, 6 weeks from baseline), patients with the drug showed significant improvement when compared to placebo [11].

However, the study had few limitations. Considering the study setting being tertiary care hospital, the results could not be generalized. Additionally, there was no data on the stage of the illness and severity, which could have been the confounding factors for the study results. As the interviewers were not blind to the clinical details of the patient, potential examiner bias was not ruled out. The details of treatment were not recorded or analysed. Future research addressing these issues should be done to create a holistic approach on various treatment modalities and the need for early intervention to improve the morbidity of the psychiatric burden in the community.

Conclusion

Despite the diagnosis, improvement in the impulsivity component seems to have positive effect on the treatment outcome in patients with major psychiatric illnesses. The responsibility lies over decision making of the treating psychiatrist, if the patient needs separate medications for impulsivity or if that is covered with the treatment given for the illness perse. Early diagnosis and treatment of these domains is important to reduce the prevalence of non-response or resistant cases in the general population.

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Conflict of interest

The authors have no relevant financial or non-financial interests to disclose.

References

1. Moeller FG *et al*. Psychiatric aspects of impulsivity. Am J Psychiatry 2001;158(11):1783-93.
2. Isles AR, Humby T, Walters E, Wilkinson LS. Common genetic effects on variation in impulsivity and activity in mice. J Neurosci 2004;24:6733-40.
3. Dumais A, Lesage AD, Alda M, Rouleau G, Dumont M, Chawky N *et al*. Risk factors for suicide completion in major depression: a case-control study of impulsive and aggressive behaviours in men. Am J Psychiatry 2005;162:2116-24.
4. Murkey B, Chakraborty A, Murke M. Study of impulsivity in bipolar affective disorder across the spectrum. International Journal of Indian Psychology 2020;8(3):778-790. DIP:18.01.087/20200803, DOI:10.25215/0803.087
5. World Health Organization. The ICD-10 classification of mental and behavioral disorders: diagnostic criteria for research. Geneva: World health organization 1993.

6. Barratt ES, Stanford MS, Kent TA, Felthous A. Neuropsychological and cognitive psychophysiological substrates of impulsive aggression. Biol Psychiatry 1997;41:1045-61.
7. Guy W, editor. ECDEU Assessment Manual for Psychopharmacology. Rockville, MD: US Department of Health, Education, and Welfare Public Health Service Alcohol, Drug Abuse, and Mental Health Administration 1976.
8. IBM SPSS Statistics for Windows, Version 22.0. IBM Corp Armonk, NY 2013.
9. Swann AC, Dougherty DM, Pazzaglia PJ, Pham M, Moeller FG. Impulsivity: a link between bipolar disorder and substance abuse. Bipolar Disord 2004;6:204-12.
10. Fava M. Psychopharmacologic treatment of pathologic aggression. Psychiatr Clin North Am 1997;20:427-51.
11. Hollander E, Tracy K, Swann A *et al*. Divalproex in the Treatment of Impulsive Aggression: Efficacy in Cluster B Personality Disorders. Neuropsychopharmacol 2003;28:1186-1197. Https://doi.org/10.1038/sj.npp.1300153