

Confusion After Modified Electro Convulsive Therapy : Its Incidence and Associated Factors

Dr. Prasenjit Ray¹, Clinical Tutor, Dept. of Psychiatry, Burdwan Medical College, Burdwan

Dr. Madhu Sharma², Dept. of Anaesthesia and Intensive care, Institute of Mental Health and Hospital, Agra

Prof. (Dr.) Sudhir Kumar Chauhan³, Psychiatry and Director, Institute of Mental Health and Hospital, Agra

ABSTRACT

Aims and Objectives : The aim of current study was to find out the incidence of confusion after modified electroconvulsive therapy (ECT) and its possible association with any clinical parameter or medications used.

Methodology : In this cross sectional, naturalistic, hospital based study 100 consecutive patients who were about to receive modified ECT (brief pulse) and met inclusion criteria were taken up. After recovery from anaesthesia subjects were assessed using Intensive Care Delirium Screening Checklist. The number of patients developing confusion after ECT was noted. Data were analyzed to find out if the incidence of confusion was associated with any clinical parameter or medication.

Results : Incidence of post ECT confusion was found to be 37.1%. Except for the gender difference no other clinical parameter or medication was found to be significantly associated with post ECT confusion.

Conclusion : The incidence of post ictal confusion after ECT was found to be higher than in previous studies which could be due to inclusion of certain extra parameters to assess confusion. Before generalizing the results of the current study, further research work is necessary.

Key Words : Modified ECT, Confusion, Predictors.

INTRODUCTION

A number of patients treated with electroconvulsive therapy (ECT) develop different cognitive and motor symptoms soon after receiving ECT. About 10% of these patients develop a state characterized by confusion, restlessness, repetitive movements and lack of response to commands. These symptoms are often self-limiting, lasting 10 to 20 minutes (Andersen & Videbeck, 2005). The level of impairment has been found to vary according to the diagnosis of patients (Kikuchi et al, 2009), as well as, the different technical parameters of ECT including, but not limited to,

electrode placement, dosage, and waveform, as well as patient factors, such as age (Ingram et al, 2008). Though a number of studies have been conducted exploring the impairment of different cognitive functions, mostly related to memory, little work has been done relating incidence of post ictal confusion that occurs soon after ECT.

The aim of this current study was to find out the incidence of confusion after modified ECT and to see if it is anyway related to some demographic or clinical parameter.

METHODOLOGY

It was a cross sectional, naturalistic, hospital based study with a sample size of 100 (N=100). Inpatients, aged 18-60 years, of either sex, who were considered eligible for modified ECT were taken up for the study. Those with history of significant head injury, epilepsy or currently having any significant physical ailment were excluded from the study. Subjects were included in the study after obtaining valid informed consent.

ECT was administered on Monday, Wednesday and Friday in the institute. One hundred consecutive patients were taken up for the study on the ECT days. In case someone was excluded due to some reason the next person was taken up. Demographic profile, BMI, vital status and diagnosis of each individual was noted. Details of medication being received by the patients were also recorded. Selection of patients for ECT, as well as, determining their eligibility for the same was decision of treating psychiatrist of the corresponding unit. Once put up for ECT, patients who met inclusion criteria and gave informed consent were taken up for the study irrespective of the working diagnosis. Serum sodium and potassium level were assessed before administration of ECT in each of our subjects. Those having abnormal serum levels were excluded from the study. Brief pulse ECT was administered and the protocol for administering modified ECT was same for each patient. In case any individual had sub shock and needed further increment of the energy delivered he was dropped out of the study.

After administration of modified ECT and having recovered from anaesthesia subjects were assessed using Intensive Care Delirium Screening Checklist (ICDSC) (Bergeron et al, 2001). As this study intended single assessment (i.e. post ECT) the two items 'sleep/wake cycle disturbances', and 'symptom fluctuation' from the original scale were dropped. The number of patients developing confusion after administration of modified ECT was noted.

Analysis was done using SPSS for Windows (16th version). Descriptive statistics was done to find the distribution of various diagnoses in the study population. Chi square test was done to see the gender difference in incidence of post ECT confusion. Parametric tests (t-test and ANOVA) were done to determine the possible association of post ECT confusion with different clinical parameters and medications.

RESULTS

Incidence of post ECT confusion was found to be 37.1%. Except for the gender difference no other clinical parameter or medication was found to significantly associated with post ECT confusion (Table 1-3).

DISCUSSION AND CONCLUSION

In one previous study (Andersen & Videbech, 2005) the incidence of post ictal confusion after modified

Table 1 : Gender difference in post ECT confusion

Sex	Confused (N = 23) (%)	Not Confused (N = 39) (%)	χ^2 (df = 1)	p
Male	15 (38.46)	24 (61.53)	4.129	0.042*
Female	8 (34.78)	15 (65.22)		

Table 2 : Clinical parameters and post ECT confusion

Variable	Confused (N = 23) (Mean \pm S.D)	Not Confused (N = 39) (Mean \pm S.D)	t (df = 60)	P
Age	28.52 \pm 9.54	31 \pm 11.86	-0.852	0.398
Weight	50.52 \pm 10.23	48.79 \pm 7.30	0.774	0.442
BMI	20.12 \pm 4.27	22.85 \pm 16.38	-0.783	0.437
Heart rate	80.70 \pm 13.27	80.67 \pm 18.01	0.007	0.995
Systolic B.P	112.83 \pm 7.52	113.59 \pm 11.18	-0.290	0.772
Diastolic B.P	74.61 \pm 8.26	73.08 \pm 8.70	0.682	0.498
Temperature	98.45 \pm 0.25	98.57 \pm 0.38	-1.326	0.190
Energy	98.38 \pm 23.81	105.69 \pm 32.25	-0.944	0.349
Seizure duration	33.30 \pm 12.69	34.41 \pm 8.11	-0.419	0.677

B.P. : Blood Pressure

Table 3 : Use of various medication and ICDSC scores

Variable	TFP (N=14) (Mean \pm S.D)	OLZ (N=19) (Mean \pm S.D)	ESC (N=9) (Mean \pm S.D)	SOD.VAL (N=20) (Mean \pm S.D)	F (DF = 2,117)	P
Consciousness	0.357 \pm 0.497	0.211 \pm 0.419	0.111 \pm 0.333	0.300 \pm 0.470	0.691	0.561
Disorientation	0.214 \pm 0.426	0.105 \pm 0.315	0.000 \pm 0.000	0.300 \pm 0.470	1.626	0.193
Hal. Del. Psych.	0.714 \pm 0.267	0.000 \pm 0.000	0.000 \pm 0.000	0.000 \pm 0.000	1.151	0.336
Psych. Agtn. Retrdn	0.143 \pm 0.363	0.526 \pm 0.229	0.000 \pm 0.000	0.000 \pm 0.000	1.403	0.251
Inapp. Spch. Behv.	0.286 \pm 0.469	0.368 \pm 0.496	0.111 \pm 0.333	0.150 \pm 0.366	1.180	0.325
Total score	1.071 \pm 1.269	0.737 \pm 0.991	0.222 \pm 0.667	0.750 \pm 1.164	1.125	0.346

ICDSC : Intensive Care Delirium Screening Checklist

Consciousness : level of consciousness

Hal. Del. Psych : hallucinations/delusions/psychosis

Psych. Agtn. Retrdn : psychomotor agitation or retardation

Inapp. Spch. Behv : inappropriate speech or mood

TFP : trifluoperazine; OLZ : olanzapine; ESC : escitalopram; SOD.VAL : sodium valproate

ECT was found to be 10%. In another study Fink (1993) found the occurrence of post ECT delirium in up to 12% of patients. The excess incidence (37.1%) in the current study could be due to inclusion of certain added parameter to describe confusion like orientation, inappropriate speech and behaviour, which was not assessed in the previous study.

Presence of catatonic features have been found to predict the occurrence of post ECT confusion (Kikuchi et al, 2009). In the present study none of the subjects had catatonic features. Neither any of the diagnosis the study subjects had were found to be significantly associated with occurrence of post ECT confusion. Ingram et al (2008) noted the occurrence of post ECT confusion to be associated with dosage of medication, electrode placement, waveform, age and premorbid intellect. In the current study electrode placement and waveform was uniform (bilateral electrode placement, brief pulse) for the entire study population, thus this effect was controlled. Age was not found to be a determinant of post ECT confusion in the present study. However, controlling the dosage of medication and formal assessment of premorbid intellect remained among some of the limitations of this study. Reti et al (2014) observed that seizure length was a significant predictor of postictal delirium after adjusting for other covariates. However, they did not find any other variables to be predictive of this. In the current

study the association of seizure duration and post ECT confusion was not found to be statistically significant.

As modified ECT remains an important treatment modality in certain cases even these days and confusion a disturbing adverse effect, the need to explore the association between confusion and different clinical parameter and medication holds good. Before generalizing the results of the current study further research work is necessary with a bigger sample size with an effort to overcome the various limitations present in the current one.

REFERENCE

- Andersen KL, Videbech P. Treatment of postictal (emergence) delirium after electroconvulsive therapy, *Ugeskr Laeger*. 2005; 167 (35) : 3313-4.
- Bergeron N, Dubois MJ, Dumont M, et al. Intensive Care Delirium Screening Checklist : evaluation of a new screening tool. *Intensive Care Med*. 2001; 27(5) : 859-64.
- Fink M. Post-ECT Delirium. *Convuls Ther*. 1993; 9(4) : 326-30.
- Ingram A, Saling MM, Schweitzer I. Cognitive side effects of brief pulse electroconvulsive therapy : a review. *J ECT*. 2008; 24(1) : 3-9.
- Kikuchi A, Yasui-Furukori N, Fujii A, et al. Identification of predictors of post-ictal delirium after electroconvulsive therapy. *Psychiatry Clin Neurosci*. 2009; 63(2) : 180-5.
- Reti IM, Krishnan A, Podlisky A, et al. Predictors of electroconvulsive therapy postictal delirium. *Psychosomatics*. 2014; 55(3) : 272-9.