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Original Research Article

Safety of Electroconvulsive Therapy (ECT) in Psychiatric Patients

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Conflict of interest: Nil

Abstract

Aim: The aim of the present study was to evaluate the safety of electroconvulsive therapy (ECT) in psychiatric patients.

Methods: The Prospective cohort study was conducted in the Department of Psychiatry Lokmaanya Tilak Municipal Medical College and General Hospital, Mumbai, Maharashtra, India for the period of One year. Sample consists of patients are started on ECT for various indications and attending the psychiatry OPD or admitted in ward was included over a period of one year (n=144).

Results: Out of 144 Patients All Patients show 30-45 minutes of Confusional state after the Procedure, Some form of Anterograde Amnesia (deficits in acquisition and retension of newly learned material) during the course of ECT which mostly persist till 2nd week of last ECT, Some form of Retrograde Amnesia (poor recall of information learned before the ECT) during the course of ECT which mostly persist till 1st week of last ECT, Some form of forgetting and unable to recall previously learned information, during the course of ECT which mostly persist till 2nd week of last ECT.

Out of 144 patients 10(6.94%) patients show signs of Prolonged post-ECT Amnesia during the course of ECT which last for less then 24 hours, personal identity of patients is not lost during this period. None of the patients show Global Amnesia. Out of 144 patients 16 (11.11%) shown Bladder incontinence during the procedure, 11(7.64%) complains of Nausea on the day of procedure, 6(4.17%) Vomitted on the day of procedure, 21(14.58%) complained of Bodyache, 22 (15.28%) complained of Headache, 14 (9.72%) suffer from Fever on day of procedure and 1 (0.69%) suffer from Cortical Blindness but recovered within 24 hr. None of the patient died during the procedure.

Conclusion: The present Prospective cohort study was conducted in a tertiary care hospital to study the safety and of ECT. ECT has been considered the most effective intervention for different psychiatry diseases but not in common practice, there may be variety of factors that contribute to the low and uneven rate of ECT use. Perhaps the most important considerations are the stigma associated with receiving the treatment on the part of patients and in recommending or administering the treatment on the part of professionals. This study design to break some barrior, fear of safety and stigma associated with it. Since only one patient suffer from serious side effect (cortical blindness) in the study that also resolve in 24 Hr. Side effects are temporary and resolve after the course of ECT like anterograde amnesia, retrograde amnesia and forgetfulness. Some patient shown post ECT prolonged amnesia. Other side effect like headache, nausea, vomiting, bodyache, fever can occur after the procedure. Hence ECT is a safe procedure and its therapeutic effects outweigh the adverse effect of the procedure.

Keywords: psychiatric patients, ECT, safety

Introduction

The application of electricity to induce a seizure was known in the treatment of mental disorders for over 200 years. The first application of electrical stimulation occurred in 1861 according to generally accepted version in 1938. [1, 2] The spectacular improvement in mental state was reported, but due to the massive side effects and a large number of peri-procedural complications for many years the electroconvulsive therapy (ECT) was seen as highly dangerous and traumatic for the patient. The breakthrough for the development of ECT was the introduction of succinylcholine to relax the striated muscle and execution of ECT under general anaesthesia. This procedure proved to be safe and

general anaesthesia and relaxation using succinylcholine became standard procedure during ECT. [1,3]

The risk of life-threatening complications in the course of ECT treatment is now estimated at 1:50 000, wherein the serious complications occur in about 2% of patients. [4] Indications for ECT are wide [5,6,7] and include both mental and somatic states in which there is a need for a rapid response (e.g., severe catatonia, acute mania or psychotic depression, depressive stupor, depression with suicidal thoughts and tendencies or malignant neuroleptic syndrome), as well as in drug resistance in the course of affective disorders and psychosis or conditions where the use of pharmacotherapy is riskier than ECT treatment (e.g., depression in pregnancy, mental disorders in patients with other medical conditions, patients with poor tolerance of pharmacotherapy or in case of interactions of psychotropic drugs with drugs ordered due to other diseases). The death associated with ECT occurs one time for 80 thousand of ECT sessions or 1 in every 10 thousand of patients treated with ECT. [8] The number of sessions depends on the mental state of the patient and the tolerance of treatment. Sometimes 14–16 sessions are required, or in the case of early remission treatment is reduced to 8–9 sessions.

The aim of the present study was to evaluate the safety of electroconvulsive therapy (ECT) in psychiatric patients.

Materials and Methods

The Prospective cohort study was conducted in the Department of Psychiatry Lokmaanya Tilak Municipal Medical College and General Hospital, Mumbai, Maharashtra, India for the period of One year. Sample consists of patients are started on ECT for various indications and attending the psychiatry OPD or admitted in ward was included over a period of one year (n=144).

Inclusion Criteria:

Patients attending OPD were included if:

a. Patients who require ECT treatment as per opinion of psychiatrists and anaesthetically fit.
b. All patients and/or relatives willing to participate after informed consent
c. All the patients with adequate and reliable objective data

Exclusion Criteria:

Following patients were excluded:

a. Patients lacking objective data

Ethics Permission:

The study was initiated after obtaining approval from the institutional ethics committee.

Methodology:

Study Procedure:

One hundred forty-four patients (n=144) who fulfilled the inclusion criteria mentioned above were selected for the study. A detailed history including the demographic profile, clinical profile, DSM 5 diagnosis and indication to start ECTs were elicited for each patient and duly recorded in the case record form (Annexure I). Consent was taken from each patient for participation in the study after explaining the protocol to the patient in the language that the patient best understood.

Collection of Samples:

Ethics committee approval was obtained from the institutional ethics committee. Informed consent was taken in the attached proforma and following data was collected:

1. The demographic profile was collected in the semi-structured proforma.
2. The patients and relatives were explained the nature of the study.
3. An informed consent was taken from the patient and relatives.
4. Prior to study, patients were informed of the research objectives and assured of the confidentiality of their responses.
5. Patients diagnosed with Schizophrenia, Major Depressive Disorder, Bipolar mood disorder and obsessive-compulsive disorder using the DSM 5 criteria then interviewed. Data collected by asking questions regarding side effects was kept during the course of ECT.
6. On follow up, patient was evaluated by asking history of side effect of ECT like headache, fever, body aches, nausea, vomiting, memory impairment, high blood pressure, disturbances of consciousness.

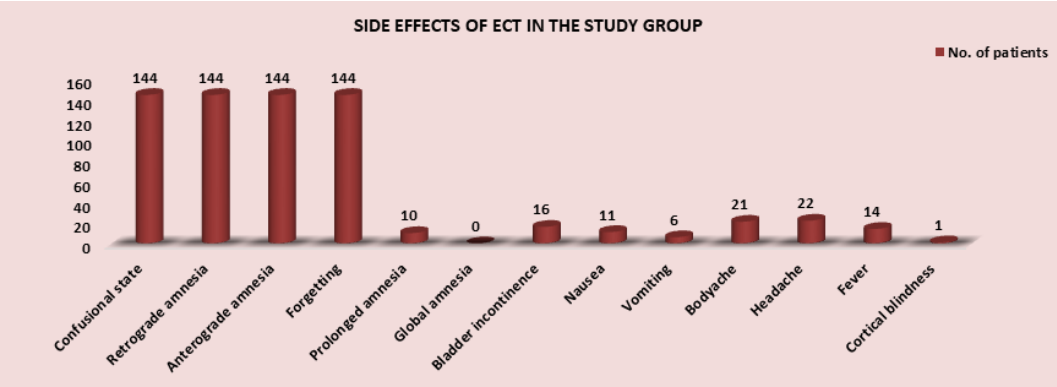
Statistical Analysis:

Data were entered into Microsoft Excel Worksheet. Statistical analysis was performed using IBM Statistical Package for the Social Sciences version 20 (SPSS v20, IBM). Categorical variables between two groups were compared with Paired t test and Annova test. A p value of <0.05 was considered statistically significant.

Results

Table 1: Safety of ect in various indication in the study group (n=144)

Disease	Confusional state	Retrograde amnesia	Anterograde amnesia	Forgetting	Prolonged Amnesia	Global amnesia	Bladder incontinence	Nausea	Vomiting	Bodyache	Headache	Fever	Cortical blindness	Death	p value
Schizophrenia [74]	74	74	74	74	6	0	7	4	3	11	12	7	0	0	<0.001 [very very significant]
MDD [45]	45	45	45	45	2	0	6	4	2	7	6	4	1	0	
Mania [19]	`19	19	19	19	1	0	3	3	1	3	3	3	0	0	
OCD [6]	6	6	6	6	1	0	0	0	0	0	1	0	0	0	
Total	144	144	144	144	10	0	16	11	6	21	22	14	1	0	
Percentage [%]	100	100	100	100	6.94	0.00	11.11	7.64	4.17	14.58	15.28	9.72	0.69	0.00	



Out of 144 Patients All Patients show 30-45 minutes of Confusional state after the Procedure. Out of 144 Patients All Patients show some form of Anterograde Amnesia (deficits in acquisition and retension of newly learned material) during the course of ECT which mostly persist till 2nd week of last ECT. Out of 144 Patients All Patients show some form of Retrograde Amnesia (poor recall of information learned before the ECT) during the course of ECT which mostly persist till 1st week of last ECT, Mostly recent memory recall problem patients faces. Out of 144 Patients All Patients show signs of some form of forgetting and patients unable to recall previously learned information, during the course of ECT which mostly persist till 2nd week of last ECT. Out of 144 patients 10(6.94%) patients show signs of Prolonged post-ECT Amnesia during the course of ECT which last for less then 24 hours, personal identity of patients is not lost during this period. Out of 144 patients none of the patients show Global Amnesia. Out of 144 patients 16 (11.11%) shown Bladder

incontinence during the procedure. Out of 144 patients 11(7.64%) complains of Nausea on the day of procedure. Out of 144 patients 6(4.17%) Vomitted on the day of procedure. Out of 144 patients 21(14.58%) complained of Bodyache. Out of 144 patients 22 (15.28%) complained of Headache. Out of 144 patients 14 (9.72%) suffer from Fever on day of procedure. Out of 144 patients 1 (0.69%) suffer from Cortical Blindness and recovered within 24 hr. None of the patient died during the procedure.

Discussion

Common side effect seen during the course of ECT in the study which will establish the safety of ECT procedure. Out of 144 Patients All Patients show 30-45 minutes of Confusional state after the Procedure but no patient suffered from Deliriums. Our findings were comparable with the study of Anna Ingram, BA (Hons.) [9] where she find General disorientation for a discrete time in the immediate period after ECT is a common occurrence. It is more severe after bilateral (BL) electrode placement, higher dosages, older age, and the presence of neurological disease. It has also been shown to recover in a predictable fashion with orientation to person recovering earlier than orientation to place and time period of disorientation was shortest for person, longer for place, and longest for time. In addition to the discrete periods of post-ECT disorientation, which are relatively frequent, longer and more severe confusional states generally classified as deliriums can also occur. Such post-ECT deliriums are more common in older patients and those with underlying neurological conditions.

Out of 144 Patients All Patients show Anterograde Amnesia (deficits in acquisition and retension of newly learned material) during the course of ECT which mostly persist till 2nd week of last ECT. Our findings were comparable with the study of Anna Ingram, BA (Hons.) [9] where she find that memory disturbance are common post –ECT . Her studies have revealed that both anterograde and retrograde memory impairments after treatment is common. After ECT patients can experience difficulties in their ability to acquire and retain new information (ie, anterograde memory) and recall past events and information learned before the ECT (ie, retrograde memory). Greater memory impairments have been associated with BL electrode placement, higher dosages, increased frequency of treatments and older age. Anterograde Memory impairment In this early period after ECT, deficits have been demonstrated in acquisition, as measured by immediate memory, as well as retention of newly learned material over time, as measured by delayed memory Furthermore, deficits have been observed on both recall and recognition testing and for both verbal and non-verbal material, indicating that ECT initially induces generalized declarative memory impairment in the first days after completion of a treatment course. This is a period in which patients have regained orientation and are not considered confused or delirious. Although reductions in both acquisition and retention have been demonstrated after ECT, there is now growing evidence that retention is more severely affected than acquisition. Such a disproportionate impact on retentive memory has been observed for both RUL and BL ECT and in the immediate and longer term. Delayed memory was more impaired than immediate memory on tasks of word lists, short story, verbal paired associates, and picture recall the ability to learn or acquire new information has been shown to improve to baseline levels within a few days of treatment completion. By contrast, the ability to retain new information over time recovers more slowly. After the seventh ECT, there was a reduction in capacity to acquire and retain information relative to baseline. Four days after the last ECT, this acquisition deficit had returned to pre-ECT levels, but ability to retain newly learned information remained reduced. By 1 month follow-up, anterograde memory has, for the most part, recovered to baseline levels At 2 months follow-up, significant improvement in anterograde memory function has been observed with performance on most measures exceeding baseline levels for some studies Non-declarative forms of memory such as procedural memory and priming seems to be unaffected by ECT.

Out of 144 Patients All Patients show Retrograde Amnesia (poor recall of information learned before the ECT) during the course of ECT which mostly persist till 1st week of last ECT. Mostly recent memory recall problem patients faces. Of 144 Patients All Patients show signs of forgetting and patients unable to recall previously learned information, during the course of ECT which mostly persist till 2nd week of last ECT and of 144 patients 10(6.94%) patients show signs of prolonged post-ECT Amnesia during the course of ECT which last for less then 24 hours where personal identity of patients is not lost during this period. Out of 144 patients none of the patients show Global Amnesia. Our findings were comparable with the study of Anna Ingram, BA (Hons.)[9] where she find that Electroconvulsive therapy can also result in retrograde memory disturbance (ie, poor recall of information learned before the ECT), which is worse when ECT is administered using BL compared with RUL electrode placement The impairment encompasses memory loss for both autobiographical and impersonal material. In addition, a temporal gradient, whereby recent memories are more vulnerable to disruption and loss compared with more remote memories, two points that remain

unclear in the empirical literature are the actual extent of memory loss that occurs after ECT and the degree of recovery that takes place over time. First, although findings of worse memory for recent versus remote events have been reported (ie, temporal gradient), studies rarely report the precise length of time before ECT when memory is affected. Certainly, there is evidence of difficulties recalling events from the year before ECT commencement. What is unclear at this stage is how common memory loss is for the years preceding this.

Some of the popular measures of autobiographical memory after ECT (eg, Personal Memory Questionnaire) assess very few memories and only test episodic memories that occur within the last year or two. This limits the test`s ability to characterize the extent of memory loss after ECT. The recovery of retrograde memory function seems slower and less complete than that of anterograde memory. Our findings were comparable with the study of Datka W [10] where he find that ECT treatment only temporally affects working memory function. The improvement of function may be a result of clinical recovery from depressant symptomatology.

Out of 144 patients 16 (11.11%) shown Bladder incontinence during the procedure. Out of 144 patients 11(7.64%) complains of Nausea on the day of procedure. Out of 144 patients 6(4.17%) vomitted on the day of procedure. Out of 144 patients 21(14.58%) complained of Bodyache. Out of 144 patients 22 (15.28%) complained of Headache. Out of 144 patients 14 (9.72%) suffer from Fever on day of procedure. Similar finding were found by Grover S, Hajari N [11], Pinna M; Manchia M [12] and Lally J, Tully J [13] were they found that adverse reactions occurred in 16.6% and 21.6% respectively in his patients mostly comprises of tachycardia, rise in blood pressure, nausea, vomiting, raised intracranial pressure, body ache. Out of 144 patients 1 (0.69%) suffer from Cortical Blindness and recovered within 24 hr and None of the patient died during the procedure. [14]

Our findings were comparable with the study of Kupechik M; Spivak B [51] where he find that less common adverse reactions are prolonged ECT-induced seizures,, supraventricular and sinus tachycardia, and cortical blindness.

Since only one patient suffer serious consequences (cotical blindness) in the study that also resolved within 24 hr. Hence ECT is relatively a safe procedure and its therapeutic effect outweigh the adverse effect of the procedure.

Conclusion

The present Prospective cohort study was conducted in a tertiary care hospital to study the safety and of ECT. ECT has been considered the most effective intervention for different psychiatry diseases but not in common practice, there may be variety of factors that contribute to the low and uneven rate of ECT use. Perhaps the most important considerations are the stigma associated with receiving the treatment on the part of patients and in recommending or administering the treatment on the part of professionals. Nonclinical economic, cultural, and political factors greatly affect the availability and use. This study design to break some barrior, fear of safety and stigma associated with it. In the study mean age of study population was 31.06±20.38 years mostly working class male and female With Male to Female ratio of 1.32. Mostly lives in Nuclear family in metropolitan city like Mumbai. Mostly are from poor socioeconomic background with low educational qualification. since only one patient suffer from serious side effect (cortical blindness) in the study that also resolve in 24 Hr. Side effects like are temporary and resolve after the course of ECT like anterograde and retrograde amnesia and forgetfulness. Some patients shown post ECT prolonged amnesia. Other side effect like headache, nausea, vomiting, bodyache, fever can occur after the procedure. Hence ECT is a safe procedure and its therapeutic effects outweigh the adverse effect of the procedure.

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