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Original Research Article

Clinical Characteristics and Treatment Response in Continuation Electroconvulsive Therapy (C-ECT): A Retrospective Study

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Abstract

Background: Relapse following a successful acute course of electroconvulsive therapy (ECT) remains a significant clinical challenge. Continuation electroconvulsive therapy (C-ECT) is used to maintain remission and prevent relapse in patients with severe psychiatric disorders, though data on its real-world effectiveness are limited.

Aim: To evaluate the clinical characteristics and treatment response in patients receiving continuation electroconvulsive therapy.

Materials and Methods: A total of 100 patients who received C-ECT following an acute ECT course were included. Data regarding sociodemographic profile, clinical characteristics, ECT parameters, treatment response, relapse, and adverse effects were collected from medical records.

Results: The mean age of patients was 42.6 ± 13.8 years, with a male predominance (56%). Major depressive disorder was the most common diagnosis (48%), followed by bipolar disorder (32%) and schizophrenia (20%). A good treatment response was observed in 72% of patients, while 18% showed partial response and 10% had poor response. Adverse effects were mostly mild, with memory impairment being the most common (28%).

Conclusion: Integration of C-ECT with pharmacotherapy and individualized treatment protocols can significantly improve long-term outcomes. Further prospective studies are warranted to validate these findings.

Keywords: Continuation Electroconvulsive Therapy, Depression, Bipolar Disorder, Schizophrenia.

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Introduction

Electroconvulsive therapy (ECT) remains one of the most effective biological treatments in psychiatry, particularly for severe and treatment-resistant mood and psychotic disorders. It is well established that ECT produces rapid symptomatic improvement; however, relapse after a successful acute course remains a major clinical concern. [1] Evidence from recent studies indicates that relapse rates may exceed 50% within six months of discontinuing acute ECT, emphasizing the need for effective continuation strategies to sustain remission. [2]

Continuation electroconvulsive therapy (C-ECT) is an established approach aimed at preventing relapse during the high-risk period following an acute ECT course.

It typically involves gradually spaced ECT sessions over the first six months after remission. When continued beyond this period, it is often termed maintenance ECT (M-ECT). [2] Although the distinction between continuation and maintenance phases is conceptually important, both are frequently used interchangeably in clinical practice. [3] Despite its clinical utility, the use of C-ECT remains underutilized.

Factors such as concerns regarding cognitive adverse effects, social stigma, logistical difficulties, and lack of standardized treatment protocols contribute to its limited adoption in routine practice. [4] Moreover, variability in patient selection criteria and treatment schedules further complicates its widespread implementation.

In recent years, there has been increasing interest in understanding the clinical characteristics and treatment response patterns of patients receiving C-ECT. Identifying predictors of response—such as diagnosis, illness severity, duration of illness, and comorbidities—can help optimize patient selection and improve outcomes. However, the available

evidence is largely based on retrospective and single-center studies, which limits generalizability. [5, 6]

Materials and Methods

Study Design and Setting: This retrospective observational study was conducted in the Department of Psychiatry of a tertiary care teaching hospital in North India. The study involved review of medical records of patients who received continuation electroconvulsive therapy (C-ECT) over a period of one year from March 2025 to February 2026. The study included patients diagnosed with major psychiatric disorders who had received an acute course of electroconvulsive therapy (ECT) followed by continuation ECT. Diagnoses were based on standard diagnostic criteria such as the Diagnostic and Statistical Manual of Mental Disorders Fifth Edition.

Inclusion & Exclusion Criteria: Patients aged 18 years and above diagnosed with psychiatric disorders such as major depressive disorder, bipolar disorder, or schizophrenia who have completed an acute course of ECT and subsequently received C-ECT with availability of complete medical records including clinical details and follow-up data were included in the study. However patients with incomplete or missing medical records or patients who discontinued C-ECT prematurely (e.g., less than 2 sessions) or patients with severe neurological or medical comorbidities interfering with assessment were excluded from the study. A total of 100 study subjects were included in the study based on convenient sampling technique method.

Data Collection: Data were extracted from hospital medical records using a structured data collection form. The following variables were recorded:

- **Sociodemographic details:** age, gender, marital status
- **Clinical characteristics:** diagnosis, duration of illness, number of previous episodes, comorbidities
- **ECT-related variables:** indication for ECT, number of acute ECT sessions, frequency and duration of C-ECT, electrode placement, and stimulus parameters
- **Treatment details:** concurrent pharmacotherapy
- **Outcome measures:** clinical response, relapse rates, rehospitalization, and adverse effects

Definition of Continuation ECT: Continuation ECT (C-ECT) was defined as ECT administered after remission from an acute ECT course, typically within the first six months, at gradually increasing intervals (weekly to monthly) aimed at preventing relapse.

Outcome Measures: Treatment response was assessed based on clinical improvement documented in patient records, including reduction in symptom severity and functional improvement as noted by treating psychiatrists. Relapse was defined as the reappearance or worsening of symptoms requiring hospitalization or modification of treatment.

Statistical Analysis: Data obtained was entered into Microsoft Excel and analyzed using Statistical Package for the Social Sciences version 21. Descriptive statistics such as mean, standard deviation, frequency, and percentages were used to summarize data.

Results

A total of 100 patients who received continuation electroconvulsive therapy (C-ECT) were included in the study.

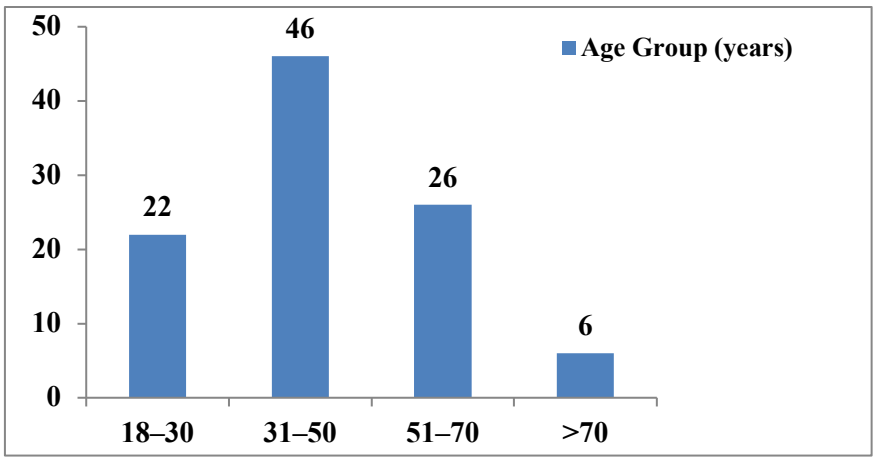

Figure 1: Age wise distribution of study subjects (n = 100)

Majority of study subjects were in the age group of 31-50 years. The mean age of the study population was 42.6 ± 13.8 years (range: 18–75 years).

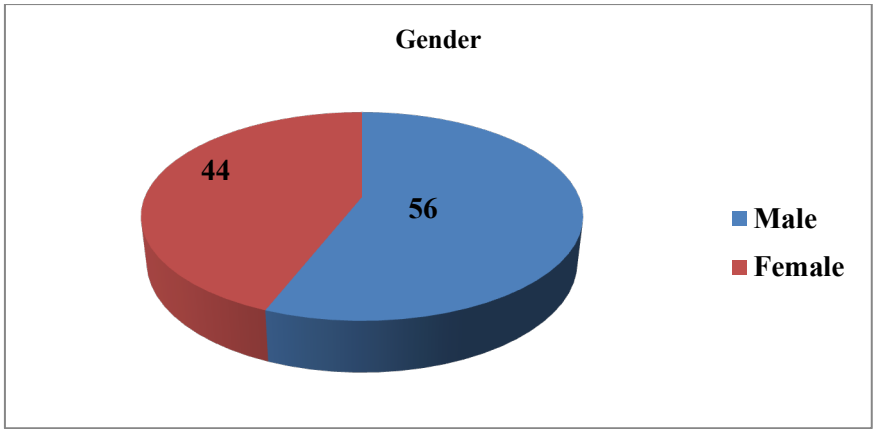

Fig 2: Gender distribution of study subjects (n = 100)

Males constituted 56% of the sample. Major depressive disorder was the most common diagnosis (48%), followed by bipolar disorder (32%) and schizophrenia (20%). The mean duration of illness was 6.2 ± 3.5 years. [Table.1] The mean number of acute ECT sessions was 8.4 ± 2.1, while the mean number of continuation ECT sessions was 6.7 ± 2.8. Most patients received bilateral ECT (72%). [Table.2]

Table 1: Clinical Profile of Patients

Variable	Frequency (n)	Percentage (%)
Diagnosis		
Major Depressive Disorder	48	48%
Bipolar Disorder	32	32%
Schizophrenia	20	20%
Duration of Illness		
<5 years	40	40%
5–10 years	44	44%
>10 years	16	16%

Table 2: ECT Treatment Characteristics

Variable	Value
Mean acute ECT sessions	8.4 ± 2.1
Mean continuation ECT sessions	6.7 ± 2.8
Electrode Placement	
Bilateral	72 (72%)
Unilateral	28 (28%)

Table 3: Treatment Response

Response Category	Frequency (n)	Percentage (%)
Good Response	72	72%
Partial Response	18	18%
Poor Response	10	10%

Out of 100 patients, 72% showed good response, 18% had partial response, and 10% showed poor or no response to C-ECT.

Table 4: Relapse and Rehospitalization

Outcome	Frequency (n)	Percentage (%)
Relapse	22	22%
No Relapse	78	78%
Rehospitalization	18	18%

During the follow-up period, 22% of patients experienced relapse, while 18% required rehospitalization.

Table 5: Adverse Effects

Adverse Effect	Frequency (n)	Percentage (%)
Memory impairment	28	28%
Headache	16	16%
Confusion	10	10%
No significant effects	46	46%

Mild cognitive impairment (e.g., memory disturbance) was the most commonly reported adverse effect (28%), followed by headache (16%). These findings suggest that continuation ECT is an effective and relatively safe strategy for relapse prevention in major psychiatric disorders.

Discussion

In the current study, the mean age of patients was 42.6 years, with a predominance of males (56%). This demographic profile is comparable to recent studies, which have reported that middle-aged adults constitute the majority of patients receiving C-ECT, likely reflecting the chronic and recurrent nature of psychiatric illnesses requiring such interventions. [2] The slightly higher proportion of males in our study is consistent with some Indian studies, although global literature often reports a more balanced gender distribution. [6]

Major depressive disorder (48%) was the most common diagnosis in our cohort, followed by bipolar disorder (32%) and schizophrenia (20%). This aligns with existing evidence that mood disorders, particularly treatment-resistant depression, are the leading indications for both acute and continuation ECT. [3] Previous studies have demonstrated that patients with affective disorders tend to show better response and sustained remission with C-ECT compared to those with schizophrenia. [7]

The treatment response observed in our study was encouraging, with 72% of patients demonstrating a good response and only 10% showing poor response. These findings are comparable to recent studies, which have reported response rates ranging from 60% to 80% in patients receiving continuation or maintenance ECT. [3,8] The high response rate in our study may be attributed to appropriate patient selection, prior positive response to acute ECT, and concurrent pharmacotherapy.

Relapse occurred in 22% of patients during the follow-up period, which is relatively lower than relapse rates reported in patients treated with pharmacotherapy alone after acute ECT. Literature suggests that relapse rates without continuation therapy may exceed 50% within six months. [1]

Our findings support the role of C-ECT in significantly reducing relapse risk and maintaining clinical stability. Adverse effects in our study were predominantly mild, with memory impairment reported in 28% of patients, followed by headache (16%) and transient confusion (10%). These findings are consistent with recent evidence indicating that cognitive side effects associated with C-ECT are generally mild and reversible, particularly when modern ECT techniques and individualized dosing strategies are employed. [8,9] Importantly, nearly half of the patients (46%) did not report any significant adverse effects, further supporting the safety profile of C-ECT.

The mean number of continuation ECT sessions in our study (6.7 ± 2.8) is comparable to other studies, where treatment schedules are typically individualized based on clinical response, ranging from weekly to monthly sessions. [6,9] This flexibility allows clinicians to tailor treatment according to patient needs and minimize adverse effects.

Recommendations

- **Early Identification and Selection of Patients**: Patients with recurrent, severe, or treatment-resistant psychiatric disorders—especially those with a good prior response to ECT—should be considered early for continuation electroconvulsive therapy (C-ECT) to prevent relapse.
- **Individualized Treatment Protocols**: C-ECT schedules should be tailored according to patient response, severity of illness, and tolerability. Flexible dosing intervals (weekly to monthly) can help optimize outcomes while minimizing adverse effects.
- **Combination with Pharmacotherapy**: Continuation ECT should be used in conjunction with appropriate maintenance pharmacotherapy to enhance treatment efficacy and sustain remission.

Limitations

- **Retrospective Study Design & Limited Sample Size**: Being retrospective in nature, the study relied on existing medical records, which may be subject to incomplete data and documentation bias and a larger cohort would provide more robust and generalizable results.
- **Uncontrolled Confounding Factors**: Factors such as concurrent medications, psychosocial interventions, and comorbidities were not uniformly controlled, which could have influenced treatment outcomes.
- **No Control Group**: The absence of a comparison group (e.g., patients receiving

pharmacotherapy alone) limits the ability to draw definitive conclusions about the relative efficacy of C-ECT.

Conclusion

The study demonstrates a high treatment response with minimal adverse effects. C-ECT, when combined with pharmacotherapy and individualized protocols, plays a crucial role in long-term management, though further prospective studies are needed to strengthen evidence.

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