Case Series

Modified Electroconvulsive Therapy in Manic Phase of Bipolar Disorder — a Case Series

Aritra Chakraborty[1], Ranjan Bhattacharyya[2], Shatabdi Saha[3], Saswati Nath[4], Uday Sankar Mandal[5]

Abstract

Background : Modified ECT (mECT) is an important non-pharmacological treatment found very effective in severe depressive episodes with or without suicidal thoughts, catatonia, Neuroleptic Malignant Syndrome (NMS), acute psychosis, schizophrenia, depression in pregnancy, severe postpartum depression and psychosis, obsessive compulsive disorder, bipolar disorder in depressive and mixed phases.This is a case series of five cases are who received mECT in manic phase of Bipolar disorder, who didn't respond well to conventional pharmacological and psychological treatment. All the cases symptomatically as well as statistically (using objective YMRS score) found to be improved and no worsening of manic symptom was noticed.

Key words : mECT, Bipolar Disorder, Manic Phase, YMRS Score.

Electroconvulsive Therapy (ECT) is an important non-pharmacological intervention that is particularly effective treatment for patients suffering from certain severe psychiatric disorders. If patients do not respond adequately to pharmacological treatment, develop adverse effects that make medications intolerable or are suffering from severe symptoms that need urgent intervention and rapid response, then we can consider ECT as a useful, safe and sometimes a lifesaving intervention[1].

Editor's Comment :

- Modified Electroconvulsive Therapy (mECT) is an important nonpharmacological intervention for patients suffering from certain severe psychiatric disorders.
- Electroconvulsive Therapy is a safe, useful and sometimes a lifesaving intervention in Manic phase of Bipolar affective disorder.

Case Presentation

We have discussed 5 cases of bipolar affective disorder, current episode manic with psychotic symptoms (ICD-10 diagnosis)[2]. In all the cases, Routine blood investigations, ECG, Chest X-ray, CT scan of the Brain [non-contrast] were done, and they were all within normal limits. Fundus examination was done in every case to rule out raised intracranial tension. They had no other co-morbid physical illnesses. After getting fitness from the Anaesthesia Department and getting proper consent from family members, bitemporal modified Electroconvulsive Therapy (mECT) was given using the RMS PC ECTRON machine at a twice-weekly frequency. Propofol was used as an anesthetic agent and succinylcholine was used as a muscle relaxant. Physiological monitoring was done using pulse oximetry and an electrocardiogram throughout the procedure. Hamilton's cuff method was used to measure seizure duration. Patients were ventilated with 100% Oxygen until spontaneous respiration started. MMSE scoring was done before initiating ECT and at regular intervals to rule out any cognitive impairment[3]. Young Mania Rating Scale (YMRS). Scoring was done at regular intervals to monitor disease severity in all cases[4]. The number of sessions was determined by the treatment response, and it was between 6 and 12 sessions in all cases.

Case Vignettes

Case 1 :

Md SH, a 25-year-old Muslim male from a lower middle-class Urban background, presented demanding and aggressive behavior, impulsive buying, hypersexuality, big talk, suspiciousness towards neighbors, poor sleep. He has had multiple similar kinds of episodes in the last 6 years, along with episodes of low mood, suicidality, anhedonia, poor sleep. He had a provisional diagnosis of Bipolar affective disorder, a current episode of manic episode with psychotic symptoms. He was treated with multiple typical and atypical antipsychotics and mood stabilizers without any long-lasting improvement. After admission to the hospital, he was given up to 300 mg of clozapine for a period of one month. Still, there was no improvement. Routine blood investigations were all within normal limits. So, a modified ECT (mECT) was planned. Dosage of clozapine and mood stabilizers was reduced. Before starting ECT, he was on quetiapine (300 mg), clozapine (50 mg), and clonazepam (1 mg). After gaining fitness from the pre-anaesthetic check-up, he was given 12 sessions of modified ECT. At the beginning of ECT

Department of Psychiatry, Bankura Sammilani Medical College and Hospital, Bankura, West Bengal 722102
[1]MD, Tutor and Corresponding Author
[2]MD, DNB, Professor
[3]MD, Assistant Professor
[4]MD, Professor
[5]MD, Associate Professor
Received on : 22/08/2025
Accepted on : 08/09/2025

How to cite this article : Modified Electroconvulsive Therapy in Manic Phase of Bipolar Disorder — a Case Series. Chakraborty A, Bhattacharyya R, Saha S, Nath S, Mandal US. *J Indian Med Assoc* 2026; **124(3):** 65-8.

treatment, his YMRS score was 40. After the third session, his YMRS score was 32. After the 6th session, YMRS score was 28. After the 12th session, YMRS score was 5. He was discharged in a stable condition (Table 1)

Case 2 :

Mr SM, a 22-year-old male, came to the Psychiatry OPD with chief complaints of aggressive behavior, physical and verbal abusiveness, big talk, suspiciousness and decreased sleep for the last 2 months. His symptoms started 4 years back with a similar kind of presentation and, after a period of 3 years, he totally discontinued medications on his own. He had a past suicide attempt by hanging 3 years back. He also had a history of cannabis and alcohol abuse. He was admitted to the Psychiatry Ward with a provisional diagnosis of 'Bipolar Affective Disorder, Current Episode Manic with Psychotic Symptoms'. He was treated with sodium valproate, lithium carbonate, risperidone, clozapine. In spite of giving high dosages of the above-mentioned medications for adequate duration, there was no significant improvement. His Routine blood investigation reports were all within normal limits. So, after getting consent from family members and the patient and proper pre-aesthetic check-up, he was given 8 sessions of modified ECT. Medications continued during the ECT sessions were clozapine (50 mg), haloperidol (7.5 mg), sodium valproate (600 mg), lorazepam (1 mg), trihexyphenidyl (4 mg). His YMRS score was 42 before starting ECT. After the third session, YMRS score was 30. After the 6th session, YMRS score was 22. After 8 sessions, YMRS score was 6 (Table 2).

Case 3 :

Mr A G, a 37-year-old Hindu male from a lower Socio-economic status, from a Rural background, was presented with an episode of violent behavior, restlessness, tall talks, decreased sleep, refusal to take food for the last 3 weeks. He has had multiple such episodes, along with episodes of low mood, suicidal attempts, staying away from work, poor self-care, in the last 10 years. He had a diagnosed case of Bipolar disorder. Treatment compliance was poor and there was a history of frequent relapses. After getting consent from family members and getting clearance from the Anesthesiologist, he was given 10 sessions of modified ECT. Before ECT, his medications were decreased, and he was on sodium valproate (800mg), olanzapine (5 mg), clozapine (150 mg), trihexyphenidyl (4 mg), propranolol (40 mg). His YMRS score was 38 before starting ECT. After the third session, his YMRS score was 28. After the 6th session, his YMRS score was 24. After the 10th session, his YMRS score was 8 (Table 3).

Table 1 — *Parameters of modified ECT (mECT) of Case 1*

Md SH	Frequency (Hz)	Pulse Width (mSec)	Duration (Sec)	Current (Amp)	Seizure Duration(Sec)
Session-1	90	1.0	1.2	750	73
Session -2	80	1	1	750	58
Session-3	80	1	1	750	46
Session-4	80	1	1	750	52
Session-5	80	1	1	700	50
Session-6	80	1.2	1.4	800	55
Session-7	90	1.4	1.5	800	39
Session-8	90	1.4	1.5	800	29
Session-9	90	1.5	1.6	800	27
Session-10	100	1.5	1.8	800	40
Session-11	110	1.5	2	800	30
Session-12	110	1.5	2.2	800	33

Table 2 — *Parameters of modified ECT (mECT) of Case 2*

Mr SM	Frequency (Hz)	Pulse Width (mSec)	Duration (Sec)	Current (Amp)	Seizure Duration(Sec)
Session-1	90	1.0	1.2	750	40
Session-2	90	1.0	1.2	750	43
Session-3	90	1.0	1.4	800	28
Session-4	90	1.0	1.4	800	26
Session-5	100	1.2	1.5	800	26
Session-6	100	1.2	1.5	800	28
Session-7	110	1.4	1.6	800	37
Session-8	110	1.4	1.6	800	31

Case 4 :

Mr HM, a 25-year-old Hindu male from a Rural background, came to Psychiatry Outdoors with an elevated mood, big talks, aggressive behavior towards family members and others. He was not taking food and was not sleeping properly. He was admitted to Psychiatry Indoors with a provisional diagnosis of Bipolar disorder and, after being given haloperidol and promethazine injections -each 1 ampule twice daily dosage-for 3 days, he was shifted to oral antipsychotics and mood stabilizers. Oral medications were not effective in treating his symptoms even after 6 weeks of treatment. On the other hand, after giving injectable [to control his violence as needed], he developed extrapyramidal symptoms and delirium. His blood investigations, CT Brain, ECG, EEG were all within normal limits. So, he was given modified ECT after getting fitness from anesthesia and obtaining proper consent. Medications continued during ECT were amisulpride (200 mg), divalproex sodium (1000 mg), lorazepam (2 mg), trihexyphenidyl [6 mg]. Just after the first ECT session, he experienced a dramatic improvement. His YMRS score was 42 before starting ECT. After the third session, his YMRS score was 18.

Table 3 — *Parameters of modified ECT (mECT) of Case 3*

Mr AG	Frequency (Hz)	Pulse Width (mSec)	Duration (Sec)	Current (Amp)	Seizure Duration(Sec)
Session-1	90	1.2	1.4	800	26
Session-2	100	1.5	1.8	800	25
Session-3	110	1.5	2	800	30
Session-4	110	1.6	2.4	800	36
Session-5	120	1.6	2.6	800	30
Session-6	120	1.8	2.8	800	30
Session-7	120	1.8	3.0	800	29
Session-8	130	2.0	3.4	800	25
Session-9	140	2.0	3.8	800	28
Session-10	140	2.0	4.1	800	26

After the sixth session, his YMRS score was 5. As there was significant improvement after 6 sessions, ECT was discontinued and the patient was discharged in a stable condition (Table 4).

Case 5 :

Mrs RG, a 25-year-old Hindu female from a Rural background, came to Psychiatry Outdoors with an elevated mood, tall grandiosity, and violent behavior towards neighbors. She was not taking food properly. She has had 3 such episodes in the last 8 years and multiple depressive episodes. She was admitted to Psychiatry Indoors with a provisional diagnosis of Bipolar disorder and, after being given haloperidol and promethazine injections -each 1 ampule twice daily dosage-for 3 days, she was shifted to oral antipsychotics and mood stabilizers. But she was not taking oral medications and refused to take any oral medications in spite of regular counselling. Her blood investigations, CT Brain, ECG, EEG were all within normal limits. So, she was given modified ECT after getting fitness from anaesthesia and obtaining the proper consent. Medications continued during ECT were olanzapine (10 mg), clozapine (25 mg), divalproex sodium (500 mg), clonazepam (0.5 mg). Her YMRS score was 40 before starting ECT. After the third session, her YMRS score was 28. After the sixth session, his YMRS score was 16. After the eighth session, her YMRS score was 8. As there was significant improvement after 8 sessions, ECT was discontinued and the patient was discharged in a stable condition (Table 5).

The age group of these five cases ranges from (22 to 37 years), 4 cases were male and only 1 case was female (Case 5). Number of ECT sessions were 6-12. The YMRS scores in each cases (baseline, midway and at the end were given in Table 6.

Paired 't' test was performed between YMRS score at the beginning and end of applying mECT. The two-tailed P value is less than 0.0001. By conventional criteria, this difference is considered to be extremely statistically significant. Confidence interval : The mean of YMRS beginning minus YMRS end equals 33.80, 95% confidence interval of this difference: From 30.47 to 37.13 (Table 7).

Table 4 — *Parameters of modified ECT (mECT) of Case 4.*

Mr HM	Frequency (Hz)	Pulse Width (mSec)	Duration (Sec)	Current (Amp)	Seizure Duration(Sec)
Session-1	90	1.0	1.2	750	26
Session-2	100	1.2	1.7	800	25
Session-3	110	1.4	2.0	800	28
Session-4	120	1.5	2.2	800	28
Session-5	130	1.6	2.5	800	32
Session-6	140	1.6	2.8	800	34

Table 5 — *Parameters of modified ECT (mECT) of Case 5.*

Mrs RG	Frequency (Hz)	Pulse Width (mSec)	Duration (Sec)	Current (Amp)	Seizure Duration(Sec)
Session-1	90	1.0	1.2	750	25
Session-2	100	1.2	1.4	800	34
Session-3	110	1.4	1.6	800	34
Session-4	120	1.6	2,0	800	25
Session-5	120	1.8	2.2	800	28
Session-6	120	2.0	2.6	800	28
Session-7	130	2.0	2.8	800	29
Session-8	140	2.0	3.4	800	26

Table 6 — *Key Summary of five cases of Bipolar disorder received modified ECT (mECT).*

Variables	Case-1 [Md SH]	Case-2 [Mr SM]	Case-3 [Mr AG]	Case-4 [Mr HM]	Case-5 [Mrs RG]
Age	25 years	22 years	37 years	25 years	24 years
Sex	Male	Male	Male	Male	Female
Co-prescribed medications	quetiapine [300 mg], clozapine [50 mg], clonazepam [1 mg].	clozapine [50 mg], haloperidol [7.5 mg], sodium valproate [600 mg], lorazepam [1 mg], trihexyphenidyl [4 mg]	sodium valproate [800mg], olanzapine [5 mg], clozapine [150 mg], trihexyphenidyl [4 mg], propranolol [40 mg].	amisulpride [200 mg], divalproex sodium [1000 mg], lorazepam [2 mg], trihexyphenidyl [6 mg]	olanzapine[10 mg], clozapine [25 mg], divalproex sodium [500 mg], clonazepam [0.5 mg]
Modified ECT sessions given	12	8	10	6	8
YMRS Scores	Baseline [40], after 3rd ECT [32], after 6th ECT [28], after 12th ECT [5]	Baseline [42], after 3rd ECT [30], after 6th ECT [22], after 8th ECT [6]	Baseline [38], after 3rd ECT [28], after 6thECT [24], after 10th ECT [8]	Baseline [42], after 3rd ECT [18], after 6th ECT [5]	Baseline [40], after 3rd ECT [28], after 6thECT [16], after 8 th ECT [8]

Table 7 — *Two tailed paired 't' test of YMRS score at base line and at the end of mECT sessions*

Case number	YMRS score (Baseline)	YMRS score (End)	CI (Confidence interval (95%)	DF(Degree of freedom)	't' value	Standard level of difference	Two tailed p-value
Case 1	40	5	30.47-37.13	4	28.1667	1.200	0,0001**
Case 2	42	6					
Case 3	38	8					
Case 4	42	6					
Case 5	40	8					

Discussion

'Bipolar disorders' refers to a group of affective disorders in which patients experience episodes of Depression and episodes of either mania, or hypomania[2,5].

Manic episode usually responds well to treatment with mood stabilizers and antipsychotic medications. So, they are the first-line treatments for the disorder. ECT can be considered as an effective therapeutic alternative for patients who do not respond to medications, who cannot tolerate medications due to side effects or patients presenting with severe symptoms, extreme agitation, delirium or exhaustion[6].

In our cases, first 3 cases were not responding well to medications. So, we had to start ECT. In the 4th case the patient could not tolerate medications due to side effects and so he was treated with ECT. The 5th patient was not taking oral medications and so she was given ECT. Response to ECT treatment was very good and without any significant side effect.

We cannot use modified ECT in Outdoor or even in spite of having Indoor admission due to Anaesthetist availability, fitness issues related to giving Anaesthesia. For common people ECT is a cruel, painful treatment as depicted in serials and cinemas. So, getting consent for ECT is also a challenge.

But like many other studies, our study also showed ECT to be an effective, safe and lifesaving treatment option[7-10].

Two tailed paired 'T' test of YMRS score at base line and at the end of mECT sessions shows significant reduction of YMRS scores with p value <0.0001 in the five cases who had been diagnosed to suffer from Manic episode, not responsive to conventional pharmacotherapy.

Conclusion

Though unmodified electroconvulsive therapy was very popular treatment option among Psychiatrists, modified electroconvulsive therapy is not used much by the Psychiatrists probably due to unavailability of Anaesthetist and legal issues. Electroconvulsive therapy can be a very good treatment option in Manic phase of Bipolar disorder and even can be used as a first line of treatment.

Conflicts of Interest : Nil

Funding and Financial Support : Nil

Ethical Approval : Written informed consent had been taken from the cases.

References

1 Salik I, Marwaha R — Electroconvulsive Therapy. [Updated 2022 Sep 19]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from:https://www.ncbi.nlm.nih.gov/books/NBK538266/

2 World Health Organization. ICD-10 classification of mental and behavioural disorders: Clinical disorders: Clinical description and diagnostic guidelines. Geneva: Oxford University Press; 1992.

3 Folstein MF, Folstein SE, McHugh PR — Mini-mental state. A practical method for grading the cognitive state of patients for the clinician. *J Psychiatr Res* 1975; **12(3):** 189-98. https://doi. org/10.1016/0022-3956(75)90026-6

4 Young RC, Biggs JT, Ziegler VE, Meyer DA — A rating scale for mania: reliability, validity and sensitivity. *Br J Psychiatry* 1978; **133:** 429-35. https://doi.org/10.1192/bjp.133.5.429

5 Phillips ML, Kupfer DJ — Bipolar disorder diagnosis: challenges and future directions. *Lancet* 2013; **381(9878):** 1663-71. doi: 10.1016/S0140-6736(13)60989-7. PMID: 23663952; PMCID: PMC585893

6 Yatham LN, Kennedy SH, Parikh SV, Schaffer A, Bond DJ, FreyBN, *et al* — Canadian Network for Mood and Anxiety Treatments (CANMAT) and International Society for BipolarDisorders (ISBD) 2018 guidelines for the management of patients with bipolar disorder. *Bipolar Disord* 2018; **20:** 97-170.

7 Perugi G, Medda P, Toni C, Mariani MG, Socci C, Mauri M — The role of Electroconvulsive Therapy (ECT) in Bipolar Disorder:effectiveness in 522 patients with bipolar depression, mixedstate,mania and catatonic features. *Curr Neuropharmacol* 2017; **15:** 359-71.

8 Patel RS, Jain SB, Youssef NA — Electroconvulsive treatment utilization for the inpatient management of severe manic episodes of bipolar disorder. *J ECT* 2019; **35:** 195-200.

9 Macedo-Soares MB, Moreno RA, Rigonatti SP, Lafer B — Efficacy of electroconvulsive therapy in treatment-resistant bipolar disorder: a case series. *J ECT* 2005; **21:** 31-4.

10 Beale MD, Kellner CH — ECT in treatment algorithms: no need to save the best for last. *J ECT* 2000; **16(1):** 1-2. https://doi.org/10.1097/00124509-200003000-00001