

Table 1. Results of the Systematic Review of Treatment of ECT-Emergent Hypomania/Mania

Study	Study Type	Age (y)/Sex/ Diagnosis	Medications Immediately Preceding ECT	Type of ECT Utilized	Onset of Mania or Hypomania	Treatment Course
Andrade et al 1988 ⁶	Case series	40/F/“depressive disorder”	Not listed	Alternate-day bilateral sinusoidal wave treatment ECT	Within 12 hours of sixth ECT	<ul style="list-style-type: none">ECT was discontinued, and mania spontaneously resolved within 2 daysDepressive symptoms returned, so ECT was reinitiated. After third ECT, mania returned. ECT was discontinued, and mania spontaneously resolved within 2 daysECT was discontinued, and mania spontaneously resolved within 5 days
		25/F/“depressed”	Not listed	Alternate-day bilateral brief-pulse ECT	Within 24 hours of ninth ECT	
		45/F/“depressive illness”	Not listed	Alternate-day bilateral sinusoidal wave treatment ECT	Within 24 hours of first ECT	<ul style="list-style-type: none">ECT was discontinued, and mania spontaneously resolved within 2 daysDepressive symptoms returned, so ECT was reinitiated. There was no resurgence of mania during 6 ECT treatments
		55/M/“depressed”	Not listed	Alternate-day bilateral brief-pulse ECT	After second ECT	<ul style="list-style-type: none">ECT was discontinued, and mania spontaneously resolved within 3 days
DeQuardo and Tandon 1988 ¹⁸	Case report	42/F/“ <i>DSM-III</i> diagnosis of bipolar disorder, depressed, melancholic type”	“Combination of tricyclic antidepressants, lithium, carbamazepine, neuroleptics, and L-thyroxine”	Unilateral, nondominant, brief-pulse ECT	Within 24 hours of first ECT	<ul style="list-style-type: none">ECT was discontinued, and mania spontaneously resolved within 36 hoursPatient became depressed again. She was started on lithium (serum level, 0.89 mEq/L), and ECT was resumed. She was euthymic after 4 ECT treatments. There was no resurgence of mania during 7 ECT treatments
Devanand et al 1988 ¹³	Case series	22/M/bipolar disorder, current episode “severe depression”	Imipramine 200 mg/d, lithium 600 mg/d; medications discontinued 2 weeks before ECT except lorazepam 1 mg twice daily as needed	Right, unilateral, brief-pulse, constant current stimulation ECT	After fifth ECT, patient became hypomanic. Manic symptoms developed after sixth ECT	<ul style="list-style-type: none">ECT was discontinued, and mania spontaneously resolved in 5 daysDuring the next week, patient became depressed and ECT was resumed. After third ECT, hypomania returned. He continued ECT for 5 sessions but remained hypomanic. Symptoms improved after initiation of lithium 1,800 mg/d (serum level, 0.96 mEq/L) and nortriptyline 125 mg/d
		57/F/ <i>DSM-III</i> diagnosis of bipolar disorder, depressed, with psychotic features	Lorazepam 1 mg twice daily PRN and haloperidol 5 mg once 2 days prior to ECT for agitation	Bilateral ECT	After second ECT, patient became hypomanic. Manic symptoms developed after fourth ECT	<ul style="list-style-type: none">ECT was discontinued, and patient was hypomanic for next 5 daysLithium was started, and patient was discharged 2 weeks later on lithium 1,800 mg/d
		43/F/“unipolar psychotic depression”	Imipramine 200 mg/d, haloperidol 6 mg/d; medications discontinued 1 week before ECT except lorazepam 1 mg twice daily as needed.	Bilateral ECT	After fourth ECT, patient was noted to be “laughing uncontrollably about minor things”	<ul style="list-style-type: none">ECT was continued. After fifth ECT, noted to be disoriented. MMSE score had decreased from 20/30 to 14/30 after sixth ECT and to 11/30 after tenth ECT. ECT was discontinued after 20 treatments due to partial responseLater responded to fluphenazine decanoate 37.5 mg every 2 weeks, desipramine 75 mg at bedtime, and benztropine 1 mg twice daily
Andrade et al 1990 ¹⁷	Case report	16/F/first-episode <i>DSM-III</i> diagnosis of MDD with psychotic features	Not listed	Alternate-day brief-pulse bifrontotemporal sinusoidal wave ECT 120–130 V×0.6s	“Immediately after recovery” from fourth ECT	<ul style="list-style-type: none">ECT was discontinued, and mania spontaneously resolved within 2 days10 days later, psychotic depression returned. ECT initiated with imipramine 150 mg at bedtime. After sixth ECT, mania returned. ECT was discontinued, and mania spontaneously resolved within 2 days10 days later, psychotic depression returned. ECT was initiated with imipramine 150 mg at bedtime and trifluoperazine 15 mg at bedtime. After third ECT, mania returned. ECT was discontinued, and mania spontaneously resolved within 2 daysLithium 1,500 mg/d was started, and patient remained euthymic
Sanders and Deshpande 1990 ²³	Case report	65/F/“bipolar illness” current episode “manic and psychotic”	Chlorpromazine and verapamil	Non-dominant unilateral ECT	Received 5 ECT treatments with dramatic improvement. Discharged from inpatient but developed mania within 2 days of first maintenance ECT treatment	<ul style="list-style-type: none">ECT was continued and mania spontaneously resolved after first of 4 additional treatments
Serby 2001 ¹⁶	Case report	78/F/“major depression and ‘anxiety attacks’”	Not listed	Bilateral square wave ECT treatments		<ul style="list-style-type: none">Patient was hospitalized for depression and received 7 bilateral “square-wave” ECT treatments and was subsequently discharged. Within 1 week of the seventh ECT treatment, she developed mania and was treated with discontinuation of ECT, readmitted to psychiatric unit, and treated with valproic acid until mania resolved
Saatcioglu and Guduk 2009 ²⁰	Case report	33/F/ <i>DSM-IV</i> diagnosis of major depressive disorder with psychotic features	Haloperidol 20 mg/d, biperiden 4 mg/d	First 3 ECT used bilateral “unmodified ECT with no anesthesia.” Initial ECT dose of 126 mC. Subsequent ECT dose range between 118 mC and 120 mC. The last ECT session used “modified ECT with anesthesia and muscle relaxants”	After seventh ECT session, patient developed psychomotor agitation, euphoria, and grandiosity with YMRS score of 28	<ul style="list-style-type: none">ECT was discontinued. Patient was discharged on lithium 900 mg/d and chlorpromazine 300 mg/dTwo years later, patient stopped medications due to pregnancy but developed postpartum depression. ECT was initiated. After third ECT, patient developed mania with YMRS score of 24. ECT was discontinued; symptoms improved with lithium 1,200 mg/d and chlorpromazine 300 mg/d21 months later, patient developed depression. She received 5 sessions of ECT. She was discharged AMA with slight improvement of depression6 months later, the patient was hospitalized with a “similar presentation.” She was started on haloperidol 30 mg/d and biperiden 4 mg/d. After 5 sessions of ECT, she developed mania with YMRS score of 24. ECT was stopped. She had full remission of symptoms with haloperidol 20 mg/d, biperiden 4 mg/d, and carbamazepine 400 mg/d
Zavorotnyy et al 2009 ²⁴	Case report	66/F/bipolar disorder, current episode depression	“All other drugs tapered off” except quetiapine 200 mg/d, which was continued throughout ECT course	Right unilateral ECT 3 times per week	After 12 ECT sessions, during week 5, patient developed depressive and manic symptoms cycling in 24- to 48-hour intervals	<ul style="list-style-type: none">ECT was discontinued. Ultrarapid cycling continued, and depression worsened1 week later, ECT and lithium were restarted. After 7 days, symptoms improved. At 2 weeks, the symptoms had resolved
Lee et al 2014 ¹⁹	Case report	55/M/major depressive disorder	Citalopram 20 mg/d, mirtazapine 30 mg at bedtime	Not listed	After third ECT session, patient developed manic symptoms including sexual disinhibition, which worsened over several days	<ul style="list-style-type: none">ECT and all medications were discontinuedThe patient was started on quetiapine and symptoms of mania and sexual disinhibition subsided; however, depression resumed. Sertraline was started. His symptoms gradually improved over the next week
Huber and Burke 2015 ²⁵	Case report	67/F/bipolar disorder type I, current episode depressed	Venlafaxine 300 mg/d, olanzapine 5 mg/d, lithium 250 mg/d; venlafaxine and lithium were discontinued before initiation of ECT, but olanzapine was continued during ECT	Right unilateral ECT 3 times per week for first 8 treatments. Bilateral stimulation was used starting at treatment 9	After eleventh ECT session, patient began experiencing improvement of symptoms. After twelfth ECT session, she developed mania that cycled in 12- to 72-hour intervals	<ul style="list-style-type: none">ECT discontinued and olanzapine increased to 10 mg/dUltrarapid cycling worsened, so ECT was recommenced after 3 missed sessions in combination with lithium, which was restartedSymptoms slowly improved. After 23 ECT treatments, patient was euthymic
Li et al 2015 ²¹	Case report	40/F/bipolar I, current episode depressed, without psychotic features	Lamotrigine 100 mg/d, ziprasidone 80 mg/d, bupropion 300 mg/d; medications were discontinued before initiation of ECT	Not listed	After second ECT session, patient developed “euphoria and grandiosity.” After third ECT session, she had “full-blown manic episode” with YMRS score of 23	<ul style="list-style-type: none">ECT was continued, but mania worsenedAfter the fifth session, ECT was discontinued and patient was started on lithium 800 mg/d, thioridazine 100 mg/d, and clonazepam 6 mg/dPatient had full remission of the mood episode 3 weeks later
Thomas et al 2018 ²²	Case report	50/M/major depressive disorder for past 3 years; “however, his wife reported 2 episodes of mania in the past 10 years both lasting over 2 months”	Valproic acid 1,000 mg twice daily and venlafaxine 375 mg daily; medications were discontinued before initiation of ECT	Bifrontal ECT, pulse width = 1 ms, pulse frequency = 20 Hz, train duration = 6 s, current = 800 mA	“Within hours” of third ECT treatment presented with YMRS score of 17	<ul style="list-style-type: none">ECT was continued and hypomania spontaneously resolved after his fourth ECT treatment with YMRS score of 5Then started on lithium 1,200 mg/d monotherapy and remained euthymic at 6-month follow-up

Abbreviations: AMA=against medical advice, ECT=electroconvulsive therapy, MMSE=Mini-Mental State Examination, YMRS=Young Mania Rating Scale.