CASE REPORT

Electroconvulsive therapy: a life course approach for recurrent depressive disorder

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SUMMARY

We describe the case of an 89-year-old woman (deceased) with a 60-year history of recurrent depressive disorder treated with electroconvulsive therapy (ECT). It is estimated that she received up to 400 ECTs over her life course as her symptoms would not respond to oral medication. Despite extensive exposure to ECT, there was only minimal cognitive impairment and an excellent safety record, even in later life, as she became increasingly frail from multiple comorbidities. Over the years, there has been a drive to reduce the frequency of ECT administration. However, this case illustrates how in some patients ECT may be vital for acute episodes of severe depression as well as for maintenance therapy. This case report adds to observational evidence that maintenance ECT may be an underused treatment for recurrent depression and also recommends that greater emphasis be given to incorporating carers' views when planning individualised treatment approaches.

BACKGROUND

The role of electroconvulsive therapy (ECT) in depression has been an area of ongoing debate. There has been a reduction in use of what has been historically a highly effective treatment and there is a move to decrease use to last resort only. This case illustrates the utility of ECT in recurrent depressive disorder over a lifespan. Our female patient would not respond to any other alternate agents trialled and would each time decompensate, particularly in later life, to life-threatening complications. Often, it was not until after the insistence of her son (her carer) that she would eventually be given ECT to which she would usually respond quickly. In later life, she required ongoing symptom stabilisation using maintenance ECT.

The public's perception of ECT is often negative due to barbaric images of the treatment portrayed in the media over the past century. This case illustrates that the carer or patient view and response can be the driving force for ECT and this is an important guiding principle in complex clinical cases like this.

CASE PRESENTATION

Our patient's first psychiatric presentation was with postpartum depression in the early 1950s which was successfully treated with ECT. She had ongoing depressive episodes in the intervening years, requiring several courses of ECT as outlined below. With each relapse of severe depression, she presented in a very characteristic way with periods of

unresponsiveness, an expressionless face and staring eyes. She would also adopt bizarre postures and catatonic symptoms. In addition to a very low mood, she was often irritable and there appeared to be a transformation in her personality. When depressed, she would self-neglect, including poor oral intake and rapid weight loss. This often led to severe constipation, sometimes requiring surgical intervention. Constipation was noted to exacerbate her deterioration in mental state. She also socially disengaged from people and refused to take medication. She presented with psychotic features, including persecutory delusions, as she believed that carers were talking about her, and she was often physically and verbally aggressive to her son and staff. She also experienced visual and auditory hallucinations.

Medical history

Our patient's medical history included anaemia, hypothyroidism and a hiatus hernia. She also suffered from recurrent vomiting with constipation which was extensively investigated but no cause was found.

She was also diagnosed with Paget's disease; she had two episodes of hypercalcaemia, as well as stage 4 chronic kidney disease towards the end of her life. She also had ischaemic risk factors including high blood pressure and hypercholesterolaemia which were controlled with medication. She was reported to have had a transient ischaemic attack (TIA) in 2005.

Personal history

Her mother had suffered with depression. Our patient was a nursery nurse, then moved onto privately running her own under 5's nursery school which she managed successfully for many years until she retired at the age of 65. She married in 1950 and had two sons. Her husband died in 1992 of cancer.

Social history

She had lived in the same town since 1947. After her husband's death, she lived with her son, who was her carer, in the family home. She moved to residential care in 2009 and in 2014 she moved into a nursing home. There was no other significant alcohol or other substance history.

INVESTIGATIONS

Her Mini Mental State Examination (MMSE) scores normally dropped when she was depressed to between 18/30 and 24/30. Improvements in her MMSE coincided with post-ECT recovery periods

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in line with pseudodementia. For example, in 2005, it was noted that she made a dramatic recovery after eight sessions of ECT and her MMSE tested after ECT at that time was 30/30. In April 2013, her MMSE was 28/30 following a course of 12 emergency ECT treatments. Head CT report in the same month in 2013 showed generalised involuntional volume loss of the brain parenchyma, periventricular low attenuation of deep white matter and changes consistent with small vessel disease. It appears that ECT did not have a great effect on her cognitive functioning despite the number of treatments she underwent.

DIFFERENTIAL DIAGNOSIS

The differential diagnosis in this context would be recurrent depressive disorder (International Classification of Diseases, Tenth Revision, (ICD-10) F33). This would subsume previous diagnostic categories of endogenous depression and melancholia which would have been previous descriptions of this phenomenon. At times of presentation, there would be diagnostic migration over the lifetime course between moderate episodes, severe without psychotic and severe with psychotic episodes, as would be expected in the disorder (F33.1–F33.3).

Alternative diagnoses which could be considered are bipolar affective disorder (ICD-10 F31); however, there was no history of experiencing manic episodes. A second diagnosis to consider is schizoaffective disorder, (ICD-10 F25), against this would be, (1) the psychosis would always come on in the context of a depressed mood, and, (2) the prominence of the mood symptoms.

TREATMENT

Between 1954 and 2013, our patient had 24 psychiatric admissions, the first in 1954 and the last in 2013. Each admission was for severe depression with psychotic features. Since 2002, she spent 150 weeks in hospital. ECT was given as a course of treatment in every one of her hospitalisations. She continuously received medical therapy between episodes and only stopped taking medication when her mental state deteriorated. Until 2009, her son administered all of her medication to her, and both her son and the professionals are clear that her mental health did not deteriorate because of non-compliance with drug treatment, but rather that it was not effective.

Between the years 2001 and 2011, she suffered more frequent episodes of depression requiring ECT and inpatient care for increasingly longer periods as her physical health deteriorated. From 2006 until 2014, she was managed continually using bilateral maintenance ECT with a frequency of approximately 2–3 weeks, alongside drug therapy. It is estimated that she received up to 400 ECTs over her life course as, despite ECT being effective in the short-term, maintenance treatment did not appear to prevent relapses given on a 2–3 weekly schedule.

We summarise the medical therapy, tried without success over the past 10 years of our patient's life, in [box 1](#) as well as the adverse reactions to ECT that she experienced.

OUTCOME AND FOLLOW-UP

At the end of her life, our patient became increasingly frail with several admissions to general hospital medical wards with falls, confusion and vomiting. She was managed in the community with aftercare provided under section 117 of the Mental Health Act, whereby Mental Health and Social Services have a duty to provide aftercare services to patients who have been detained under the Mental Health Act.

When in remission, the patient would choose ECT as a preferred treatment and was in agreement to having maintenance

Box 1 Alternative medications trialled and adverse reactions to electroconvulsive therapy (ECT)—summary of the past 10 years of notes

Medications tried:

- ▶ 2002: Trifluoperazine, venlafaxine and dothiepin combination
- ▶ 2005: Flupenthixol 10 mg intramuscular weekly, mirtazapine 30 mg
- ▶ 2007: Olanzapine 2.5 mg, reboxetine 4 mg
- ▶ 2006: Mirtazapine and quetiapine
- ▶ 2009: Reboxetine 4 mg and citalopram 30 mg; amisulpride 50 mg nocte
- ▶ 2010: Quetiapine, reboxetine 4 mg, clonazepam 0.5 mg
- ▶ 2013: Citalopram 20 mg once daily and sodium valproate 200 mg two times a day
- ▶ 2014: Sertraline and sodium valproate changed to sertraline, quetiapine 75 mg

Lithium had been trialled early on in the course of her illness, but she became extremely confused and extremely irritable after 1 day on lithium and could not tolerate it

Adverse reactions to ECT:

- ▶ 2006—Unconscious for 2 h—difficult to rouse
- ▶ 2010—She experienced confusion and complete loss of memory—could not recognise her own son—for 3 days after ECT

ECT from 2006 until 2014 when it was stopped due to her becoming physically frail.

At her last best interests meeting, she was determined to be non-capacitous due to being mute, very underweight and having frequent vomiting (this was investigated without any conclusive outcome). It was the recommendation of the responsible consultant psychiatrist that she was not fit for an anaesthetic, so a decision was made to admit her to a general medical ward that same day where she deteriorated further.

Her son had wondered if in the final few months of her life she had been given ECT one last time the outcome could have been different as she had been more physically unwell in the past and recovered with ECT against the odds on several occasions prior. This illustrates the difficult balance of harms and benefits in giving ECT in an elderly population and the importance of consideration of carers' views in the treatment of recurrent illnesses.

DISCUSSION

ECT is a very powerful intervention used to treat severe psychiatric illness, particularly severe depressive disorder. In psychotic depression, especially in the elderly population, some studies have recorded a remission rate with ECT that is double the rate of remission compared with treatment with tricyclic antidepressant treatment, even when augmented with antipsychotics.¹ ECT also avoids the long-term adverse physical health effects of drug treatment.¹

ECT is the only treatment in psychiatry that is stopped when someone gets better. Despite its high efficacy, a major downside of ECT is the high rate of relapse after treatment² ranging from 50%³ to 80%⁴ relapse within a year.

There are lots of theories on how ECT works, but there are still large gaps in our understanding of its mechanism of action; however, this is also the case with antidepressants.⁵ ECT is sometimes used as a continuation or maintenance treatment in

people who have been known to respond to ECT in order to try and prevent further relapses and recurrences of the index illness.⁶

The evidence for using ECT as a maintenance therapy is gradually increasing. Earlier National Institute for Health and Care Excellence (NICE) guidelines (2003) did not recommend ECT as a maintenance therapy, whereas NICE 2009 took a more neutral stance for patients with depression, recommending that it could be used in severe cases such as psychotic depression or life-threatening states.⁶

A 2010 study looking at ECT for prevention of depressive relapse² concluded that ECT could be used as a safe and effective method in relapse prevention. In the same year, O'Connor *et al*⁷ reported a reduction in hospitalisations using maintenance ECT, although it was not possible to prove that this was solely due to ECT, and it is recognised widely that people undergoing ECT have a lot more contact with clinicians and special care given to them that is different from other treatment options.⁶

In 2012, a review of the literature by Rabheru⁸ suggested that for those who have not responded well to medications but have responded to ECT, maintenance ECT must be presented as an option to the patient and the family for consideration. A recent systematic review has provided more evidence for efficacy of continuation and maintenance ECT therapy; however, the studies included within it were highly prone to bias.⁹ In addition, evidence for the safety and efficacy of ECT in the older population is provided by a case report of a patient who received 172 ECT treatments, up to the age of 89.¹⁰

A similar case has been reported of a 74-year-old patient who received 430 ECT treatments as maintenance therapy over 31 years, from the age of 43, treating psychotic depression.¹¹ No cognitive deficits were found. Another study covered a period of 12 years of ECT.¹² In our case report, we observe that the use of maintenance ECT in later life, every 2–3 weeks, resulted in little or no long-term worsening of cognitive side effects, which is supported by previous evidence from case reports,^{11 13} case series,^{14 15} a cohort study¹⁶ and a systematic review.¹⁷ In addition, a case report from 1985 showed that

following 1250 ECT treatments, no observable gross or histological evidence of brain damage was found at postmortem.¹⁸

One previous case report suggests that three weekly ECT led to relapse, whereas two weekly ECT prevented relapse.¹⁹ In our case report, owing to lack of control, we could not definitively state whether maintenance ECT clearly reduced relapse rates or even rehospitalisation. However, from the family's point of view, they were very satisfied by ECT treatment as they believe that ECT prolonged her life by years and allowed rapid remission of symptoms and improvement in her quality of life where medication repeatedly failed.

Further research into the prediction and prevention of depressive relapse after ECT is needed. In addition, more randomised control trials are needed to determine whether continuation or maintenance ECT schedules are better given on a set schedule or more flexibly at varied intervals after the initial series of treatment ECTs.⁹ Also, more emphasis should be given to carers' views in the first-line treatment of recurrent depression.

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Learning points

- We describe a case report of a woman with a 60-year history of recurrent depression with repeated response to electroconvulsive therapy (ECT) where the benefits of prolonged ECT outweighed the risks. Despite extensive exposure to ECT over the course of her lifespan, there was only minimal cognitive impairment and an excellent safety record even in later life as she became increasingly frail from multiple comorbidities.
- Maintenance ECT appears to be an underused treatment option for treatment-resistant depression.
- Although there is a move to decrease the use of ECT, this case report adds to anecdotal literature supporting maintenance ECT as a safe and beneficial treatment to be offered on a case-by-case basis.
- Perhaps most importantly, this case illustrates the importance of carers' views in decisions about first-line treatment choices in recurrent illness.
- More robust research is needed that looks at different outcomes and the efficacy of maintenance ECT over longer time periods of follow-up.

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