

## Intractable schizo-affective disorder successfully treated with electroconvulsive treatment over six years

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### Abstract

Some patients with severe mental disorders are refractory to psychotherapeutic or psychopharmacological interventions. We describe a patient with severe symptoms from the age of 16 to 44. Her illness is best described as a schizo-affective disorder. Several series of electroconvulsive therapy (ECT) followed by maintenance once a week for more than six years has kept her out of hospital beds for three years. The patient demonstrates the feasibility of long term ECT and the absence of disturbing cognitive reductions.

### Introduction

Patients not responding to psychotropic medication are a challenge for psychiatrists and facility staff. The burden on the families of the patients is not only emotional, but also a financial one.<sup>1,2</sup> Some of these patients, with affective symptoms as part of the primary diagnostic entity, may be helped by electroconvulsive treatment (ECT). This was already shown in a paper penetrating the medical records of the first series of patients treated by Meduna in Budapest, albeit with camphor.<sup>3</sup> Rabheru and Persad reviewed the literature on continuation and maintenance electroconvulsive therapy in different patient groups in 1997.<sup>4</sup> They concluded that both continuation and maintenance electroconvulsive therapy were efficacious, safe, well tolerated, and also cost-effective for patients with major psychiatric disorders with depression. The procedure in itself is deemed extremely safe according to Nuttal *et al.* who studied 2279 patients given 17,394 ECT treatments.<sup>5</sup> No deaths were observed, and only transient cardiac complications (arrhythmias and one cardiac arrest) in 9 patients. The adverse effects of ECT are related to the anaesthesia, which today is very short and practical without any danger of mortality. Headache and nausea occur in some patients, and transient memory impairment is usual during the time of a series of ECTs.

An effect on cognition after maintenance

ECT has been studied. After four years and 180 maintenance treatments the initial slight worsening of some cognitive functions in the patient improved above pre ECT level.<sup>6</sup> The authors also reported on the longest series given to one patient, 2400 treatments. A review of the cognitive functioning in the elderly after ECT concluded that global cognition remained stable, whereas learning verbal information and executive functioning was impaired.<sup>7</sup> This may contribute to the different findings in studies. Cognition is a multifaceted mental function that may be influenced by ECT, age, nutritional status and other factors.<sup>8-10</sup> A report on a patient with severe catatonic depression and autism showed cognitive and functional stability during maintenance ECT for three years.<sup>11</sup>

The indications for ECT around the world differs, although the main indication is severe depression, uni- or bipolar or as part of other mental illnesses.<sup>12</sup> Thus it would be of interest to report on the treatment of a patient with severe mental illness given ECT for more than six years.

### Case Report

A 44-year old woman has been treated for schizoaffective disorder with depressive, manic and psychotic delusional episodes since she was 18 years. She is unmarried, living alone in a sheltered dwelling. Her parents are in regular contact with her. We have no information on untoward events during her childhood or adolescence. She has three siblings, one with a bipolar disorder. Her illness started at the age of 16, and from the age of 18 to 28 she had 10 resident stays at the psychiatric acute department. For a long period she did function well on clozapine, albeit with hospitalisations each year. The medication had to be stopped because she developed agranulocytosis. A computed tomography (CT) scan of the brain taken in 2004 showed expanded supratentorial ventricles and slightly expanded temporal horn. Later CT scans have not shown any further deterioration. When she had to stop taking clozapine she was started on ziprasidone, but the severe melancholiform depression with psychotic delusional thoughts persisted. After a resident stay of more than a year in the acute psychiatry department she suddenly developed a malignant neuroleptic syndrome. She was at the time on ziprasidone and lithium. In the ensuing time she had periods with mania with psychotic symptoms and more catatonic episodes of depression interchangeably. As a last resort electroconvulsive treatment was contemplated and started. She improved after the first series, but several series of ECT had to be given over a year to

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maintain partial remission. From February 2005 she started receiving maintenance ECT. This treatment is still continued. Initially she got one session each week, from treatment number 80-82 an interval of 14 days was tried. Her functioning deteriorated dramatically, and she was restarted on ECT once a week. From treatment number 292 she has successfully increased the distance to every tenth day. This has given her somewhat greater flexibility in life without worsening of symptoms. There are at present no signs of reduction in cognitive functions that could not be related to her having been seriously ill for 28 years and/or having received neuroleptics during the same period. She is still taking neuroleptics that she tolerates. Attempts at reducing the level of the current medication have only partly been successful. Serum level of quetiapine was 562 (reference range 50-700), but the level of the metabolite of quetiapine was 3042 (*i.e.* more than 5 times the level of quetiapine) on a test half a year ago. The dose of quetiapine was thus reduced from 1800 mg to 1600 mg a day. The current doses (as of 2. January 2012) of all medications are quetiapine 400 mg + 400 mg + 200 mg + 600 mg/day and chlorprotixen 25 mg × 2, lorazepam 0.5 mg + 1 mg/day. In the evening she gets 7.5 mg zopiclone and 20 mg alimemazine. She started 2012 with her 348<sup>th</sup> session of ECT. No medications are taken on the morning of an ECT session.

Her psychopathological development may be described as follows: the depressive and delu-

sional symptoms were reduced after the first series of ECTs she received. The improvement did not last long, so she was entered on a second series of ECTs. When 45 single treatments had been given to her a decision was made to continue with maintenance treatments with sessions a week apart, Table 1. After more than a year with stability in the depressive and psychotic symptoms, and with little complicating unrest and stress at sudden changes in plans, treatment was continued at weekly intervals. During the last half-year we have succeeded in increasing the intervals from 7 to 10 days. She is now in a stable state giving her the opportunity to visit parents living abroad during a whole week.

### Electroconvulsive therapy-procedure

ECT is performed in dedicated rooms in the acute psychiatric department with an anaesthesiologist coming to the hospital. The treatment is given with a Thymatron IV™ device. Two EEG leads and pulse oxymeter readings are registered together with the calculated output from the Thymatron device. A protocol is followed that gave rise to the information contained in Table 1. A nurse surveys the patient after the treatment. Most of her treatments have been as a non-resident patient coming to the hospital only for the sessions. She has not

had a resident stay for the last three years. The first 250 treatments have been given with right unilateral stimulating electrode placement, Table 1. Thereafter a change to bifrontal stimulation was made. This change was done partly in an effort to improve efficacy and partly because the patient was afraid of the stimulation electrode gel would destroy her hair.<sup>13</sup>

### Anesthesia

250-350 mg thiopental and 50-60mg succinylcholine has been used over the years, and no change of anaesthetics were needed when we changed from right unilateral to bifrontal stimulation at treatment session 250. Venepuncture on both forearms has been possible during all the treatments. The patient has not missed any scheduled session.

### Discussion

The present case demonstrates the successful continuation of electroconvulsive treatment over more than six years in a young woman with a serious schizoaffective disorder. Her definite improvement would be an argument in the vivid on-going discussion by lay people and psychologist/psychiatrists on cognitive

deficits after ECT.<sup>14-18</sup> It is still disputed in the literature, less among clinicians, whether ECT as a maintenance option is effective. The NICE guidelines (National Institute of Clinical Excellence, technology appraisal 59) from 2003 are negative, but their conclusion is based on mostly retrospective reports, and not the following study. In a prospective, controlled study Swoboda *et al.* studied a group of patients (N=42) with affective or schizoaffective disorder.<sup>19</sup> They got either maintenance ECT + pharmacotherapy or pharmacotherapy alone. At 12 months the former group had a rehospitalisation rate of 33% and the latter 67%. Time to relapse was also longer in the ECT group. The results were somewhat poorer for the schizoaffective cases. Frequent maintenance ECT, as in our patient, may keep the incumbent out of hospital. The NICE guidelines conclusion may thus be irrelevant in these special patients as mentioned in the most recent textbook on ECT.<sup>20</sup>

### Conclusions

The outcome years after a series of ECT may in many cases not be very different from other short-term treatment options as pharma-

**Table 1. Electroconvulsive treatment registration data for the patient.**

Treatment session number	Electrode placement	Stimulus level (mCoulomb) 100% = 504 mCoulomb	EEG monitored duration (sec)	Post ictal suppression index % (PSI)	Days between treatments
1-15	RUL	40%	27-56	41-93	2-10
16-30	RUL	40-70%	24-54	41-91	2-7
31-45	RUL	70-60-65-70	20-30	42-92	2-9
46-59	RUL	75-80-85	18-43	60-100	3-9
60-74	RUL	85-90	19-34	66-95	4-9
75-89	RUL	90-100-55*	17-40	77-97	7-14°
90-103	RUL	55-75	21-66	46-99	7-9
104-118	RUL	75-100	18-59	15-95	5-9
119-133	RUL	100	15-63	90-97	7-9
134-150	RUL	100	13-31	10-94	5-9
152-164#	RUL	100	9-50	66-86	3-9
165-179	RUL	100	14-35	30-93	7-11
180-189	RUL	100	15-37	46-96	4-10
190-203	RUL	100	10-24	37-91	7-9
204-218	RUL	100	17-31	18-91	7-9
219-233	RUL	100	17-41	10-92	5-7
234-249	RUL	100	17-35	35-92	7-8
250-262	Bifrontal	40-50-60	19-49	46-94	7-8
263-276	Bifrontal	60	23-55	10-96	7-8
277-291	Bifrontal	60	21-55	74-96	7-8
292-306	Bifrontal	60	23-41	10-94	7-10
307-321	Bifrontal	60	23-56	10-98	9-11

\* Reduction of stimulation level at change of treating doctor. No change in other parameters. ° Three treatments with an interval of 14 days. # No. 151 either not registered or missed in the sequence of treatments. EEG, electroencephalogram; RUL, right unilateral electrode placement; Bifrontal, bifrontal electrode placement.

cotherapy and/or psychotherapy for depressions.<sup>21</sup> Our patients are influenced by social, economic and emotional factors after successful ECT. These factors would mostly not be related to the ECT as such. Helping patients develop skills to cope with life are necessary, but a task for other health professionals than those giving the patient ECT. In a small follow up study after ECT some patients committed suicide long time after the end of the series.<sup>22</sup> The patients had serious problems with coping in life as assessed by the Sense of Coherence test of Antonovsky.<sup>23</sup> Long-term maintenance treatment may thus contribute to a lower mortality rate in severely depressed patients.

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