Title: The Therapeutic Effect of Electroconvulsive Therapy in Obsessive-Compulsive Disorder Patients: A Quasi-Experimental Study

Running title: Electroconvulsive Therapy in OCD

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Abstract

**Background:** Electroconvulsive therapy (ECT) is demonstrated to be an effective treatment in some psychiatric disorders. It is postulated ECT should primarily be considered for patients with treatment-resistant obsessive-compulsive disorder (OCD) in the context of major depression. Therefore, we aimed to evaluate the efficacy of ECT in OCD patients without comorbid psychiatric disorders.

**Methods:** This quasi-experimental study was conducted on 12 adult patients with severe OCD (Yale-Brown test score above 25) and no comorbid psychiatric disorders referred to a tertiary care hospital for psychiatric disorders. Treatment was administered three times a week for up to three to four weeks (a minimum of 8 sessions and a maximum of 12 sessions). We completed the Yale-Brown test for all the patients exactly before ECT, on the exact day after applying ECT, and two months after the final ECT session in order to evaluate the effect of therapy.

**Results:** Yale-Brown score of patients significantly decreased after the ECT sessions from 28.08 ± 2.50 to 17.17 ± 3.78 (P-value, 0.043). After treatment, the severity of OCD improved in all patients and reduced to mild and moderate levels in 4 (33.3%) and 8 (66.7%) patients, respectively. After two months the mean Yale-Brown score slightly increased to 18.08 ±1.62 (P-value, 0.125) and the severity of OCD in all 12 patients (100%) became moderate. Nevertheless, in none of them, the Yale-Brown score increased up to the baseline value in this period. None of the patients developed significant side effects during/after ECT sessions.

**Conclusion:** ECT was a safe and effective therapeutic strategy for patients with treatment-resistant OCD with no comorbid psychiatric disorders in our study. However, further randomized controlled trials are required to validate the efficacy of ECT for OCD treatment before implementing it into routine clinical practice.

**Keywords:** Obsessive-Compulsive Disorder (OCD), Electroconvulsive Therapy (ECT), Yale-Brown Criteria, Treatment-Resistant OCD
Introduction

Obsessive-Compulsive Disorder (OCD) is known as an incapacitating and long-standing neuropsychiatric disorder that is estimated to have an impact on roughly 2% of the population (Fullana et al., 2010). Furthermore, remarkable growth in OCD prevalence is reported during the COVID-19 pandemic (Abba-Aji et al., 2020). Contamination (washing), checking, symmetry (ordering/arranging), ruminations (intrusive thoughts), sexual/religious and hoarding are the most common aspects of OCD symptoms (Rosario-Campos et al., 2006) and they can cause social and occupational difficulties (Mancebo et al., 2008) and ultimately high suicidal thought and endeavor rates in severe cases (Albert et al., 2019).

Selective Serotonin Reuptake Inhibitors (SSRI) and clomipramine are mainly used to treat OCD (Marazziti & Consoli, 2010). These medications prevent the reabsorption or secretion of serotonin in the synaptic space and increase the concentration of serotonin in the synapses. It is demonstrated that increasing levels of serotonin in the frontal lobe leads to alleviating OCD symptoms. Moreover, olanzapine and risperidone are antipsychotic medications prescribed for treating OCD symptoms to enhance SSRI effects. Studies showed these medications have partially or completely suboptimal efficacy in OCD patients mainly in severe cases (in 40% to 60% of patients). Treatment-resistant OCD subjects are characterized as those patients who receive an adequate trial of Serotonin Reuptake Inhibitors (clomipramine or SSRI) and do not respond or show unsatisfactory response to treatment and this condition accounts for 40-50% of all OCD patients. The definition of treatment-refractory OCD may imply a greater degree of resistance to interventions, including non-respond to SSRIs/clomipramine, augmentation strategies, and behavioral intervention (Fontenelle et al., 2007; Simpson et al., 2013). Therefore, developing novel evidence-based strategies for the management of treatment-resistant OCD patients is highly needed (Simpson, 2009). Evolving therapies for severe and treatment-resistant OCD comprise psychotherapies, novel pharmacotherapies, immunological therapies, pharmacogenetics, non-invasive neurostimulation, and invasive neurostimulation (Fineberg et al., 2020). Nevertheless, the evidence is limited for most of these novel therapeutic strategies (Carrillo, 2012). Despite the considerable improvement of patients using invasive neurostimulation therapies such as deep brain stimulation (de Koning et al., 2011), limbic system surgery (Sheth et al., 2013), and ablative neurosurgery, they cannot be considered as the first choice of treatment due to the need for general
anesthesia and high costs (Denys, 2006; Fineberg & Gale, 2005; Gupta et al., 2019). Also, the effectiveness and safety of these treatments have not been completely investigated yet.

Electroconvulsive therapy (ECT) is proved to be an operative therapeutic strategy in psychiatric clinical practice (Sundsted et al., 2014), mostly used in the management of depression, catatonia, acute dementia, and refractory schizophrenia (Hoirisch-Clapauch et al., 2014). In addition, ECT can have a more effective role than medication in the management of psychosis, bipolar disorder, and depression due to its mood-stabilizing properties (Medda et al., 2014). Many neurobiological mechanisms such as neurophysiological as well as neurochemical alterations in different parts of the brain have been indicated as mechanisms involved in ECT. Likewise, numerous biological aspects of ECT including alterations in neurochemicals and gene expression as well as changing the blood-brain barrier permeability, and the immune system all are contributing altogether to ECT’s therapeutic effects (Singh & Kar, 2017). There is a chance that patients with treatment-resistant OCD may be spared from invasive operations if an ECT experiment was conducted. It has been suggested; however, evidence supporting the efficacy of ECT in the treatment of OCD is still lacking. Former studies focusing on the efficacy of ECT in the treatment of OCD usually were limited to case reports and uncontrolled studies. Also, in most of these reported cases, OCD was present with a comorbid condition particularly depression. Consequently, the majority of investigators believe that ECT should mainly be administered for treatment-resistant OCD patients in the context of major depression (Liu et al., 2014). Therefore, we aimed in this study to evaluate the efficacy of ECT in OCD patients without comorbid psychiatric disorders.

Methods and material

This quasi-experimental study was conducted as a pilot study on 12 adult patients (aged over 18 years) with severe OCD referred to a tertiary care hospital for neuropsychological disorders (the name of the center was disclosed for peer review). Patients were recruited in 12 months from December 2019 to December 2020 and the severity of OCD was scored using the Yale-Brown Obsessive-Compulsive Scale (Bülbül et al., 2013). Severe cases of the disease (Yale-Brown test score above 25) were included in the study. The additional inclusion criteria were indication for ECT as determined by an experienced physiatrist based on a lack of response to pharmacotherapy including an adequate dose of antidepressants and/or mood stabilizer with documented efficacy in severe OCD patients (SSRI and clomipramine) for at least 6 months or medical treatment...
discontinuation due to side effects. Exclusion criteria were having received ECT within 6 months, rapid cycling course of illness, an unstable serious medical condition for example cerebral palsy, a history of myocardial infarction in the last 30 days, a history of cerebrovascular disease or aneurysm, any condition assumed to cause or affect neurocognitive function such as bipolar disease, depressive disorder, Schizophrenia or drug abuse. Also, before performing ECT, the presence of depressive disorder in these patients was ruled out by means of the Hamilton questionnaire, and those with comorbid depression were excluded. The patients were also excluded from the study if the clinician found that the patients required, or better served with other treatment, became significantly clinically worse, or the patients withdrew their consent.

Before starting the treatment, the patients’ age, gender, and level of education as well as the type of OCD, drug history, and the dose of previously prescribed medications were recorded in pre-prepared checklists. Two experienced psychiatrists independently conducted the Structured Clinical Interview for DSM-5 (SCID-5) to attain the diagnosis of OCD and ruled out other major mental illnesses by relevant examinations. Ultimately, the most severe and medication-resistant patients (based on Yale-Brown Obsessive-Compulsive Scale) were selected. ECT was performed for all patients according to the standard procedure as described below. We completed the Yale-Brown test for all the patients exactly before ECT, on the exact day after applying ECT, and two months after the final ECT session in order to evaluate the effect of therapy.

The protocol of this study was approved by the ethics committee of the (the name of the university was disclosed for peer review). Patients provided written informed consent before their inclusion in the study.

**Treatment**

The ECT procedures were standardized using the Thymatron System IV device (Somatics, Lake Bluff, Ill.). The placement of stimulation electrodes was conducted following the d’Elia method (right unilateral electrode placement) (d’Elia, 1970; Kellner et al., 2010; Welch, 2015). The pulse width during the procedure was fixed at 0.5 milliseconds. The first stimulus dosage was calculated for each patient individually based on her/his age and gender (d’Elia, 1970; First, 1997; Kellner et al., 2010; Welch, 2015).
Treatment was administered three times a week for up to three to four weeks (a minimum of 8 sessions and a maximum of 12 sessions). The number of ECT sessions was chosen due to the previous studies on the use of ECT for the treatment of OCD patients (Bülbü et al., 2013; Casey & Davis, 1994; Husain et al., 1993; Jenike et al., 1987; Raveendranathan et al., 2012).

Thiopental in the minimum dosage (1.5-2.5 mg/ kg IV) was used to induce anesthesia during the ECT sessions. Also, Succinylcholine (muscle relaxant) in a dose of 0.5 - 1.0 mg/kg IV was used while performing ECT. Pulse oximetry was conducted and oxygen-enriched air was administered to all patients for a period of 1 to 2 minutes before anesthesia and also during the treatment.

Patients were not allowed to use their previous medication while receiving the ECT to evaluate the pure result of using ECT treatment.

Nonsteroidal anti-inflammatory drugs (NSAIDs) were prescribed for managing patients who experienced mild complications such as muscle pain or headache during this study.

**Yale-Brown Obsessive-Compulsive Scale:** The Yale-Brown Obsessive-Compulsive Scale is the gold standard for evaluating the severity of OCD symptoms (Goodman, Price, Rasmussen, Mazure, Delgado, et al., 1989; Goodman, Price, Rasmussen, Mazure, Fleischmann, et al., 1989). The Yale-Brown Practical Obsession Scale, conducted as a semi-structured interview, measures the severity and the type of obsession. By the development of the Yale-Brown Obsessive-Compulsive Scale, the accuracy of the current rating scales has been largely improved due to its capability of precise measurement of the severity of OCD symptoms. This scale includes 10 items which are completed by the clinician scoring from 0 (no symptoms) to 4 (extreme symptoms) with a total score range of 0 to 40. In Iran (Sepideh Rajezi Esfahani et al., 2011), the reliability of this scale (r = 0.98), its internal consistency (α = 0.98), and test-retest correlation in two-week intervals (r = 0.84) were approved by previous studies (Goodman, Price, Rasmussen, Mazure, Fleischmann, et al., 1989). Also, its criterion validity was obtained with Beck Depression Inventory and Hamilton Anxiety Rating Scale as 0.64 and 0.59, respectively (Goodman, Price, Rasmussen, Mazure, Fleischmann, et al., 1989).
Statistical analysis

All analyses were performed by using the SPSS 24 software package (SPSS Co., Chicago). Means and standard deviation (SD) or median and interquartile range were computed for continuous variables, while numbers and percentages were computed for categorical variables. Analysis of Yale-Brown scores before and after treatment was conducted using the Wilcoxon test. Correlation between variables was evaluated using the Spearman test. A p-value less than 0.05 was considered statistically significant.

Results

In this study, 12 patients were studied, of which 6 (50%) were male and 6 (50%) were female. Six patients (50%) had washing obsession problems, four patients (33.3%) had frequent checking obsessions, one patient (8.3%) had order obsessions, and one patient (8.3%) had comorbidity of checking and washing obsession. Three patients (25%) had a history of behavioral therapy. The demographic characteristics of the patients are described in Table 1. The medications prescribed for patients before ECT are described in Supplementary Table 1.

None of the patients developed significant side effects during/after ECT sessions and the treatment course was completed for all patients. The median number of ECT sessions was 10 (interquartile range [IQR]: 10 - 12). The median duration of obsessive-compulsive disorder was 6 years (IQR: 2 - 15 years).

The mean Yale-Brown score of the patients was 28.08 ± 2.50 at baseline and all 12 patients (100%) started treatment with severe obsessive-compulsive disorder. The mean Yale-Brown score of patients on the day after the treatment sessions was 17.17 ± 3.78 which was significantly lower than the baseline score (P-value = 0.043). The severity of OCD improved in all patients and reduced to the mild level in 4 patients (33.3%) and moderate level in 8 patients (66.7%) (Table 2).

Patients’ involvement status was assessed two months after the end of treatment. The mean of the Yale-Brown score slightly increased to 18.08 ±1.62 (P-value = 0.125) and the severity of OCD in all 12 patients (100%) became moderate. Nevertheless, in none of them, the Yale-Brown score increased up to the baseline value in this period (Table 3, Figure 1).
There was a negative significant correlation between the extent of the response to ECT as measured the day after the last ECT session and after two months (r= -0.810, P-value = 0.001). Those with greater immediate response had a greater increase in Yale-Brown score after two months (cases 1, 4, and 5; Table 3).

Assessing the effect of treatment on each type of OCD demonstrated that all types of OCD had responded similarly to OCD treatment (Table 4).

**Discussion**

The reports on the treatment of OCD with ECT are contradictory, mostly limited to case reports and uncontrolled studies. Moreover, most of the researchers believe that ECT should be applied for patients with treatment-resistant OCD focusing on curing major depression accompanying OCD (Goodman, 1992) as in a study conducted by Xiaohui Liu et al, the severity of disease in three OCD cases with comorbid depression was alleviated and remained stable after ECT treatment at regular follow-up (evaluations were conducted by Hamilton Anxiety Scale (HAMA), Hamilton Depression Scale (HAMD) and Y-BOCS scores) (Liu et al., 2014). Therefore, we designed this study to investigate the patients with treatment-resistant or severe OCD without any psychological comorbidity to prove that ECT might be useful for these patients. In our study, ECT was effective in the treatment of OCD without comorbid psychiatric disorders in both short- and mid-term evaluations. Some studies reported the data of patients with OCD who responded positively to ECT (Bülbül et al., 2013; Martins-Correia et al., 2021; Raveendranathan et al., 2012). Khanna et al. reported the short-term anti-obsessional ECT outcomes in nine OCD cases (Khanna et al., 1988). Beale et al also performed a study on three patients with refractory OCD which all were treated with ECT leading to significantly improved conditions (Beale et al., 1995). Moreover, two female patients experiencing chronic OCD and depression were treated with ECT and responded properly to the treatment (Casey & Davis, 1994; Husain et al., 1993). Maletzky et al. reported significant improvement of 32 OCD patients after ECT treatment, of whom 19 patients did not have comorbid depression suggesting benefits from ECT for all OCD patients with or without depression (Maletzky et al., 1994). Also, Bülbül et.al concluded ECT for patients with a depressive episode of bipolar disorder and concurrent OCD and reported that both depression and OCD symptoms were successfully treated with ECT (Bülbü et al., 2013). In a study executed by Martins-Correia et.al, ECT was administered for a patient with refractory OCD, and the patient's clinical response and functional improvement were significant (Martins-Correia et al., 2021).
Some other case reports also have demonstrated the positive effect of ECT on severe OCD patients (Hanisch et al., 2009; Loi & Bonwick, 2010; Tomruk et al., 2010). Because of the fear of neurological side effects, ECT for treatment of OCD was for decades a controversial treatment for treating OCD, but the patient’s acceptance of this treatment has recently increased because the studies support the idea that the benefits of ECT outweigh the disadvantages (Moksnes et al., 2006). Notably, the ECT treatment course was safely completed for all our patients without significant adverse effects. Although ECT is reported to be associated with cognitive side effects in some cases (Association, 2008), few studies have performed head-to-head comparisons of the treatment-induced cognitive impairment in medication versus ECT-treated patients. Moreover, it seems that the severity, type, and duration of cognitive dysfunction which is attributed to ECT treatment is reportedly dependent on methods used in ECT administration (McCall et al., 2000; Sackeim et al., 2000; Sackeim et al., 2007). The most distressing adverse effect of ECT that was developed in a few cases was the loss, sometimes permanent, of autobiographical memories. Some studies claim that all patients who received ECT experienced some degree of retrograde amnesia (Read & Bentall, 2010). Nevertheless, this side effect is described as a rare complication by most experts (Semkovska & McLoughlin, 2013). The use of bilateral electrode placement was previously reported to be the strongest predictor for understanding whether retrograde amnesia happens in the few months after a complete course of ECT (Kolshus et al., 2017; Lisanby et al., 2000; Sackeim et al., 2007). Although we used bilateral electrode placement in the present study, no adverse event occurred in our patients.

All patients in our study improved after ECT sessions. Nevertheless, previous studies have reported that up 60% of patients with OCD respond to ECT (Fontenelle et al., 2015). The higher response rate in our study is attributable to some points that should be regarded. It should be noted that the Yale-brown score in some patients in our study increased after two months but it did not reach the baseline value; however, there was a possibility that in longer follow up duration, the severity of OCD in some patients return to the baseline status and the response rate decrease. Furthermore, considering that our study was a pilot study on a small number of patients to highlight the efficacy and safety of ECT in OCD patients, the percentage of the response rate might not be generalizable to the whole population, and further studies are warranted in this regard. Nevertheless, some specific features of our study such as completing all ECT sessions by all
patients, the inclusion of only severe OCD patients, and exclusion of patients with comorbid psychiatric be other reasons for the higher response rate in our patients. Furthermore, using different OCD severity assessment tools, administration of concurrent pharmacotherapy during ECT sessions, the various definitions of severe and refractory OCD, and different ECT protocols and durations, could be another explanation for different response rates among studies (Kadouri et al., 2007; Sheehan et al., 2013) (Talaei et al., 2009) (Fontenelle et al., 2015).

Fontenelle et al. reviewed the studies on the effect of ECT on OCD patients (Fontenelle et al., 2015). Nevertheless, there were major limitations in the studies that were included in this review that should be regarded:

- As the authors of this review have mentioned, the studies that reported a nonsignificant effect of ECT in the treatment of OCD patients had a vague definition of pharmacoresistant OCD. Fontenelle et al. explained in the discussion part that OCD patients, who were treated with ECT, have often received inadequate medical treatment before ECT. Moreover, the duration and dosage of these medications are barely reported. Therefore, there is a large possibility that many benign OCD patients have been probably labeled as treatment-resistant and received ECT. Patients in our study had received appropriate pharmacotherapy and had not responded well to these treatments before entering our study as pharmacoresistant severe OCD cases. For further clarification, the information over pharmacotherapy of the patients before the study is provided in Supplementary Table 1.

- Some of the OCD patients under treatment in these studies did not complete their course of treatment with ECT due to the fear of possible adverse effects. Therefore, their unsuccessful results may reduce the overall positive results in these studies.

- Furthermore, the existence of depression as a comorbid psychiatric condition in OCD cases in these studies could alter the effectiveness of OCD.

A few limitations existed in our study. Due to the uncertainty in the effectiveness and safety of ECT in previous studies as well as low patient acceptance and the fear of adverse effects conducting the current study with a large sample size was not feasible. However, considering the results of our study, future studies can be performed as multicenter studies and include a larger sample size. Furthermore, we did not include a control group in our study. Therefore, designing
future studies with randomized controlled clinical trial design with pharmacological treatment (or other treatments) as a comparison for ECT is warranted. Also, supplementation of ECT with different classes of medication to maintain its positive effects and prevent future OCD relapses can be considered in future studies. Also, future studies can alter the number of ECT sessions in a week or the duration of applying ECT to evaluate to find the best strategies. We also suggest that future studies with larger sample sizes perform subgroup analysis to evaluate the effect of ECT in different subgroups and perform a multivariate regression analysis to find the predictor of a better response.

Acknowledgments

None

Conclusion

To conclude, the current results show that ECT was a safe and effective therapeutic strategy for patients with treatment-resistant OCD with no comorbid psychiatric disorders in our study. However, further randomized controlled trials are required to validate the efficacy of ECT for OCD treatment before considering it in clinical practice.

Conflicts of interest

None declared
References


Table 1 Patients' demographic characteristics before receiving ECT treatment.

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
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</thead>
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<tr>
<td><strong>Age years mean (SD)</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Sex n (%)</strong></td>
<td>Female 6 (50)</td>
</tr>
<tr>
<td><strong>Education n (%)</strong></td>
<td>Illiterate 2 (16.6)</td>
</tr>
<tr>
<td></td>
<td>Secondary school 3 (25)</td>
</tr>
<tr>
<td></td>
<td>Associate degree 2 (16.6)</td>
</tr>
<tr>
<td></td>
<td>Master’s degree 1 (8)</td>
</tr>
<tr>
<td><strong>Duration of OCD disease median (IQR)</strong></td>
<td>6 (2-15)</td>
</tr>
<tr>
<td><strong>Previous behavior therapy n (%)</strong></td>
<td>3 (25)</td>
</tr>
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</table>
Table 2. OCD severity in Patient according to Yale brown score before ECT, the day after the last ECT session, and 2 months after the last ECT session

<table>
<thead>
<tr>
<th></th>
<th>Number of patients n (%)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before ECT</td>
<td>The day after the last ECT session</td>
<td>Two months after the last ECT session</td>
</tr>
<tr>
<td><strong>Mild n (%)</strong></td>
<td>0 (0)</td>
<td>4 (33.3)</td>
<td>0 (0)</td>
</tr>
<tr>
<td><strong>Moderate n (%)</strong></td>
<td>0 (0)</td>
<td>8 (66.6)</td>
<td>12 (100)</td>
</tr>
<tr>
<td><strong>Severe n (%)</strong></td>
<td>12 (100)</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td><strong>P-value</strong></td>
<td>-</td>
<td>0.043*</td>
<td>0.125$</td>
</tr>
</tbody>
</table>

* p-value of comparison between before ECT and the day after the last ECT session
$ p$-value of comparison between the day after the last ECT session and 2 months after the last ECT session
Table 3. Type of involvement in each patient and the disease status at each stage of treatment

<table>
<thead>
<tr>
<th>Patient number</th>
<th>Obsessions Without Visible Compulsions</th>
<th>Obsessions with Visible Compulsions</th>
<th>Yale-Brown score before receiving ECT</th>
<th>Yale-Brown score at the day after the last ECT session</th>
<th>Yale-Brown score 2 months after the last ECT session</th>
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<td>NO.1</td>
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<td>+</td>
<td></td>
<td>34</td>
<td>18</td>
</tr>
<tr>
<td>NO.2</td>
<td>+</td>
<td>+</td>
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<td>NO.3</td>
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<td>NO.7</td>
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<tr>
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<td>-</td>
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Table 4. Effect of treatment on each type of OCD

<table>
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<tr>
<th>Obsessions with Visible Compulsions</th>
<th>Yale-Brown score before receiving ECT</th>
<th>Yale-Brown score at the day after the last ECT session</th>
<th>Score difference before and after receiving ECT</th>
<th>Yale-Brown score 2 months after receiving ECT</th>
<th>Score difference the day after ECT sessions and 2 months after receiving ECT</th>
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<tbody>
<tr>
<td>Obsessions Without Visible Compulsions</td>
<td>28.08±2.50</td>
<td>17.17±3.78</td>
<td>10.92±3.31</td>
<td>18.08±1.62</td>
<td>-0.92±3.42</td>
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<td>Contamination Obsessions with Washing/Cleaning Compulsion</td>
<td>28.50±2.67</td>
<td>17±4.20</td>
<td>11.50±3.33</td>
<td>18.13±1.64</td>
<td>-1.12±3.98</td>
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<td>Harm Obsessions with Checking Compulsions.</td>
<td>27.16±1.47</td>
<td>17.33±2.87</td>
<td>9.83±2.85</td>
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<td>Symmetry Obsessions with Ordering, Arranging and Counting Compulsions</td>
<td>30</td>
<td>20</td>
<td>10</td>
<td>20</td>
<td>0</td>
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<tr>
<td>Hoarding</td>
<td>-</td>
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Figure 1 The severity of involvement of patients before, the day after, and two months after ECT sessions
Supplementary Table 1. Medications prescribed for the patients before receiving ECT treatment

<table>
<thead>
<tr>
<th>Patient number</th>
<th>Sertraline [mg per day]</th>
<th>Risperidone [mg per day]</th>
<th>Clomipramine [mg per day]</th>
<th>Fluoxetine [mg per day]</th>
<th>Olanzapine [mg per day]</th>
<th>Chlordiazepoxide [mg per day]</th>
<th>Trifluoperazine [mg per day]</th>
<th>Chlorpromazine [mg per day]</th>
<th>Gabapentin [mg per day]</th>
<th>Clonazepam [mg per day]</th>
<th>Quetiapine [mg per day]</th>
<th>Propranolol [mg per day]</th>
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<td>200 (12)</td>
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