Psychiatr. Pol. 2017; 51(1): 23–27
PL ISSN 0033-2674 (PRINT), ISSN 2391-5854 (ONLINE)
www.psychiatriapolska.pl
DOI: https://doi.org/10.12740/PP/62983

Psychotic symptoms as a complication of electroconvulsive therapy – a case report

Anna Antosik-Wójcińska, Magdalena Chojnacka, Łukasz Święcicki

Affective Disorders Unit, Second Department of Psychiatry,
Institute of Psychiatry and Neurology in Warsaw

Summary

We report a patient who experienced atypical symptoms in the course of electroconvulsive therapy (ECT). During ECT treatment patient experienced psychotic symptoms which should be differentiated with prolonged delirium and nonconvulsive status epilepticus. 46-year-old female was referred to hospital with a diagnosis of major depressive disorder with no psychotic features in the course of recurrent depression. Despite several changes of pharmacological treatment no improvement was achieved, therefore it was decided to initiate ECT. Physical and neurological examination revealed no deviations from the norm. The results of other tests (CT and EEG) were normal. 4 bilateral, bitemporal ECT procedures were performed. The course of each procedure was typical, the same doses of anesthetic medication and pulse dose was administered throughout all of the procedures. The duration of seizure was 32–40 s. Despite this mental symptoms observed during the course of the treatment differed from known to the authors from both their own experience and from literature. Delusions of reference, persecution, agitation, oneiric delusions and olfactory hallucinations which appeared after the 4th ECT session maintained for 14 days and resolved after treatment with olanzapine.

To the best of our knowledge, this is the first report on delusions of reference and persecution, oneiric delusions and olfactory hallucinations associated with the course of ECT.

Key words: electroconvulsive therapy, psychosis, olfactory hallucinations

Introduction

A diagnosis of pharmacological treatment-resistant depression is one of the indications for the electroconvulsive therapy (ECT) [1]. ECT is usually well tolerated, 75% of procedures are not associated with negative side-effects, [1] the most common side effects are mild and resolve spontaneously. The risk of life-threatening complications

The study was not sponsored.

is 1:50 000 [2], which places ECT as a safe therapeutic method. The most common post-procedure complaints pertain to mild muscular pain, vertigo, headache, and nausea [1]. These ailments usually cease by 24 hours after ECT [1, 3]. In the population of patients with cardiovascular problems, several side effects can appear during the procedure itself. Common side effect of ECT is also short term confusion, which usually appears just after ECT and lasts less than 1 hour [1, 3]. In opinion of some authors this side effect occurs in as many as 52% of patients [4]. The occurrence of prolonged disturbance of consciousness is a rare complication of ECT. Only a few papers describe the disturbances of consciousness lasting more than a few hours. The risk factors for delirium after ECT are the prolonged seizure and older age. A longer lasting side effect of electroconvulsive therapy is memory impairment, both a short-term memory impairment (verbal and visual) and long-term memory impairment – declarative and nondeclarative. Most common problem reported by patients is declarative memory impairment which can last up to several months [1].

The authors' interest was whetted by the atypical course of ECT in a young female, admitted to hospital with an episode of depression in the course of recurrent depression.

To the best of our knowledge, this is the first report on delusions of reference, persecution, oneiric delusions and olfactory hallucinations associated with the course of ECT.

Case report

The patient, a 46-year-old female, was admitted to the Affective Disorders Unit because of the lack of effectiveness of antidepressant drugs, which she had been previously treated with in an outpatient setting (she was for appropriate time treated with therapeutic doses of venlafaxine, amitriptyline, mirtazapine, doxepin, mianserin in combination with mood stabilizers – carbamazepine and lamotrigine and antipsychotics – sulpiride, olanzapine, quetiapine). On admission, the patient was in anxiety, mood and drive were reduced, patient complained on sleep disturbance, lack of appetite and concentration, reported anxiety, numerous non-specific somatic complaints, denied suicidal thoughts; no psychotic symptoms were present; the interview with patient did not reveal the presence of any psychotic symptoms in the past. Analysis of medical records indicated that antipsychotics have been used as a potentiation of antidepressant treatment. In hospital, because of the lack of significant improvement (despite the attempts to optimize the treatment by modification of doses of venlafaxine, mirtazapine and quetiapine), decision was made to refer the patient for electroconvulsive therapy.

Medication was stopped, and psychiatric, neurological and imaging diagnostics, as well as laboratory tests, were performed. There were no abnormal findings on brain CT and EEG. The patient's somatic status was normal and she was not treated due to neurological or internal diseases. After conducting the necessary examinations, there were no contraindications to ECT and a series of ECT procedures (bilateral, bitemporal) was commenced. Pulse dose was pre-defined. Pulse width, frequency, and intensity were stable throughout all of the procedures, and were: 0.50 ms, 10–30 Hz, and 0.89–0.91 A, respectively. The course of procedures was typical, the same pulse dose, and the same

anesthetic medication was administered throughout all of the procedures, the seizure duration was 32–40 seconds. Despite administration of the same pulse dose and the same anesthetic medication, the patient's condition after the first three procedures and after the 4th ECT session differed markedly among each other. The course of the first three procedures was with no complications after ECT, the patient complained only of memory impairment, not observed during normal psychiatric examination. After the fourth ECT anxiety rapidly increased and delusions of reference, persecution, and suicidal thought appeared. Two days after the last (4th) procedure, oneiric delusions appeared ("I do not know what is waking and a dream, whether this is happening, I want to wake up, I think I swallowed a tablet with a feed of the poison, which is why I drink water and provoke vomiting"). The patient reported "ECT is made to lost memory" and "everyone is against her and want to hurt her". She claimed that "in the psychiatric ward strange things are happening", reported that she "feels the smell of urine and feces". At this time, the patient was properly oriented in time and place. Patient received intramuscular clorazepate with no improvement, due to psychomotor agitation she was immobilized with safety harness. ECT treatment was stopped and the treatment with olanzapine was introduced. The patient did not agree to treatment, therefore olanzapine was given by intramuscular injection. All the psychotic symptoms resolved gradually. Improvement was achieved after 14 days from the last ECT and 11 days of treatment with olanzapine. The resolution of delusions, olfactory hallucinations and anxiety was observed as well as improvement of mood and drive; suicidal ideation had subsided, and the patient regained sleep and appetite. The patient was discharged from hospital in stable mental condition. At discharge severe depressive episode with psychotic symptoms in the course of recurrent depression was diagnosed (according to ICD-10). Treatment with olanzapine 15 mg/d was continued over the next few months after discharge. At this time, the mental state of the patient remained stable. An attempt to discontinue olanzapine in an outpatient setting, however, ended in failure due to a marked increase in anxiety.

Discussion

The course of ECT were deemed atypical, when compared to data from literature, and from the authors' own experience.

Postictal psychoses of diverse phenomenology have been well described in patients with focal and generalized epilepsies and have the direct link to the occurrence of a seizure or cluster of seizures, but this disturbance usually does not occur in the course of ECT [5]. Inducing a generalized epileptic seizure is generally recognized as an anti-psychotic intervention. Effectiveness of ECT for psychotic symptoms is probably associated with dopamine and serotonin neurotransmitter activity, brain-derived neurotrophic factor secretion and immune system modulation [6, 7].

On a short review of current and past literature on ECT, the authors found only one short report on the risk of post-procedure psychotic symptoms in a patient receiving ECT, however, the authors of this report did not elucidate the causes for this side effect [5]. According to some authors, postictal psychosis may be a sign of noncon-

vulsive status epilepticus [8]. In our case this cannot be excluded, since at the time of occurrence of psychotic symptoms EEG was not performed [9] (mainly because of the accompanying agitation and the need to immobilize the patient). However, it is worth noticing that the administration of benzodiazepines (clorazepate) did not bring improvement. A common cause of psychotic symptoms such as hallucination, delusions and thought disorder after ECT may also occur in the course of delirium-type impaired consciousness [10–13]. In case of our patient postictal psychosis should therefore be differentiated with prolonged delirium, however, the facts that the patient was properly oriented, in logic contact and described symptoms persisted for a period of 14 days, deny this diagnosis. The potential for psychotic symptoms as a complication of ECT treatment is also confirmed by the case of one elder patient treated due to major depressive disorder, who experienced musical hallucinations whilst he was treated with ECT [14]. This patient developed musical hallucinations immediately after the second ECT and persisted during the complete course and resolved few days after the last ECT.

Occurrence of delusions of reference, persecution, agitation, olfactory hallucinations and oneiric delusions associated with the course of ECT has not been described yet. Further studies may reveal the prevalence of this side effect and the relationship between psychotic symptoms occurrence and the course of ECT, however, this needs systematic multicenter analysis of large samples of patients treated with ECT.

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Address: Anna Antosik-Wójcińska
Affective Disorders Unit
Second Department of Psychiatry
Institute of Psychiatry and Neurology
02-957 Warszawa, Sobieskiego Street 9