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Epileptic status as a complication of electroconvulsive therapy: a case report

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Introduction. Electroconvulsive therapy (ECT) is a safe and effective treatment for multiple indications in psychiatric disorders. However, rare complications, such as cardiovascular compromise, post-stroke agitation and epileptic status, can occur.

Case report. The case of an 83-year old female who had clinical symptoms consistent with psychotic depression, intense anguish, pronounced psychomotor retardation and who refused intake with secondary dehydration is presented. Treatment was started with ECT with great improvement of the symptoms, but in the third session of ECT, with the same intensity as the previous ones, electrical epileptic status with no clinical manifestations appeared. It lasted approximately 700 seconds. ECT was suspended and the patient was monitored electroencephalographically. Recovery since then has been progressive but much slower.

Conclusion. It is essential to recognize and treat prolonged seizures during ECT to prevent progression to epileptic status. We recommend conducting a retrospective study aimed at identifying risk factors for the occurrence of nonconvulsive status epilepticus in potential patients and to protocolize preventive measures in order to avoid this complication.

Keywords:

Psychotic depression, Electroconvulsive therapy, Non-convulsive status epilepticus, Electroencephalography

Actas Esp Psiquiatr 2012;40(2):99-101

Status epiléptico como complicación de la terapia electroconvulsiva: a propósito de un caso

Introducción. La Terapia Electroconvulsiva (TEC) es un tratamiento seguro y eficaz en las indicaciones observadas en múltiples trastornos psiquiátricos. No obstante, pueden aparecer raras complicaciones como compromiso cardiovascular, agitación psicomotriz post-ictal y status epiléptico.

Caso clínico. Mujer de 83 años que presenta un cuadro compatible con una depresión psicótica, con intensa angustia, marcada inhibición psicomotriz y negativa a la ingesta global que le conduce a un cuadro de deshidratación. Se inicia tratamiento con TEC que resulta extraordinariamente eficaz, pero en la tercera sesión, utilizando la misma intensidad y tratamiento que en las previas, aparece un estatus epiléptico eléctrico no correspondiente con clínica de 700 segundos de duración. Se suspende TEC y se realiza seguimiento electroencefalográfico. La recuperación desde entonces es progresiva aunque mucho más lenta.

Conclusión. Es fundamental el reconocimiento y tratamiento de convulsiones prolongadas durante la TEC para prevenir la progresión a status epiléptico. Recomendamos la realización de un estudio retrospectivo con el objetivo de identificar factores de riesgo para la aparición de status epiléptico no convulsivo y protocolizar medidas preventivas para evitar dicha complicación.

Palabras clave:

Depresión psicótica, Terapia electroconvulsiva, Status epiléptico no convulsivo, Electroencefalografía

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INTRODUCTION

In the XVI century, the Swiss physician Paracelsus used oral alcanthor to treat different psychiatric disorders by induction of seizures, based on a possible antagonism between schizophrenia and epilepsy. In 1938, the psychiatrist Cerletti and neurophysiologist Bini used electricity for the first time to induce the seizures. During the years 40 and 50,

electroconvulsive therapy (ECT) was considered the principal biological treatment in psychiatric diseases. With the coming of pharmacotherapy, the peak of Psychoanalysis and the emergence of "Antipsychiatry," together with side effects such as fractures and memory disorders, it lost popularity, being shown as "barbarous," and even being spread as a punitive and controlling technique of behavior, which contributes to the art. Since the 80's, the ECT has been in revival because of the new protocols under general anesthesia and many controlled studies carried out that demonstrate its safety and effectiveness, especially in serious psychiatric disorders. However, rare complications may appear, such as cardiovascular compromise, post-stroke psychomotor agitation, and epileptic status. We describe the case of electrical status as an unexpected event after the third session in a patient treated with ECT.

A CASE REPORT

The case of an 83-year old woman with background of depressive pictures of unknown origin who did not require hospital admission is presented. The patient had been undergoing out-patient follow-up by Psychiatry in the last four months due to depressive episode and was being treated with escitalopram. She had intense anguish, significant psychomotor inhibition, deliroid ideation of impoverishment and nihilism, refusal of intake, with secondary picture of dehydration that abated with serum therapy. Treatment was initiated with ECT, with very efficient result. In three sessions, she began to eat and drink adequately, had improved mood state and self care, as well as of the delusional ideas and sleep. In the third session of ECT, using the same intensity as in the previous ones, an electric epileptic status appeared that did not correspond to the symptoms of 700 seconds duration that abated with intravenous administration of 10 mg of valium, 50 mg of penthotal and 30 mg of propofol. ECT was discontinued and electroencephalographic follow-up was performed. Recovery since then has been progressive, although much slower. Once the patient was stabilized, discharge to home was decided with family support and 24 hour care, prescribing treatment of 300 mg venlafaxine and 500 mg of quetiapine daily.

DISCUSSION

ECT is a safe^{1, 2} and effective treatment in multiple psychiatric disorders.³ The neurobiological mechanisms underlying its therapeutic effect are still controversial. Application of ECT entails the appearance of phenomena on the level of the neurotransmitter, hormone and brain metabolism and flow systems, some of which have been postulated as an action mechanism of this technique. The only modification in which consensus exists is in its action on the GABAergic system, although other neurotransmitters

Table 1	Therapeutic indications of first for second choice of ECT according to the American Psychiatry Association
ECT situations as first choice	
<ol style="list-style-type: none"> 1. Need for a rapid and effective response due to severity of the disorder (e.g. severe medical comorbidity, life threatening risk, risk of self-injury or to others, pregnancy). 2. When risks of other treatments are greater than those of the ECT per se. 3. History of poor response to pharmacological treatments or background of good response to ECT in one or more previous episodes. 4. Preference of the patient. 	
Situations in which ECT should be proposed secondarily	
<ol style="list-style-type: none"> 1. Resistance to drug treatment. 2. Intolerance or adverse effects to the psychopharmaceuticals used. 3. Worsening of condition of the patient that justifies the need for a rapid response. 	

such as norepinephrine, serotonin, dopamine (increase of post-synaptic response that could explain the utility in some patients with Parkinson's Disease) and acetylcholine (decrease of the muscarinic receptors that would justify the mnesic effects) have also been implicated. An increase in the expression of glutamatergic receptors with possible increase of the brain-derived neurotropic factor (BDNF) has been described. This would suggest a common mechanism of the antidepressants.

Among the principal indications of the ECT are affective disorders, including severe depressive episodes with and without psychotic symptoms as acute mania. It is considered that there are no absolute contraindications, although some relative ones are contemplated.

The principal side effects are: headache, fractures and dislocations, especially of the jaw (practically non-existence with the use of muscle relaxants and buccal protection), mental confusion (minutes to hours long) and prolonged seizures (up to 19%⁴) that can evolve to epileptic status.⁵ Nonconvulsive status epilepticus should be considered in the differential diagnosis of post-ECT confusion, recommending the performance of EEG to patients with prolonged confusion.⁶ Euphoria may also be found so that the differential diagnosis should be made between the confusional and true hypomanic picture that could indicate the existence of a bipolar affective picture and cognitive disorders (retrograde and anterograde memory, especially autobiographical), the deficit being more important in

patients with previous cognitive deterioration and those with longer post-stroke disorientation. Pre-ECT hyperoxygenation, use of brief pulse apparatuses and unilateral ECT have reduced them. In the case of bilateral ECT, according to some studies, the persistence of verbal and non-verbal memory can be found up to three years post-treatment. However, it has not been possible to demonstrate a harmful effect on the CNS.⁷

Mortality is similar to any surgical procedure that uses short duration general anesthesia (1 / 10,000 - 1 / 25,000 patients), and often in relation to cardiovascular complications. Previous evaluation, preanesthetic treatment and monitoring during the treatment reduces the risks to a minimum.⁸

CONCLUSION

The possible predictive factors of post-ECT epileptic status need to be studied since we only have the recognition of prolonged seizures and their treatment to prevent the progression of the epileptic status,^{9, 10} which can increase morbidity-mortality.³ We recommend performing a retrospective study in order to identify risk factors for the appearance of the nonconvulsive status epilepticus and to make a protocol on preventive measures to avoid this complication.

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