

Juana T. Rodríguez-Sosa¹
Aaron Suárez-Lovelle¹
Elena Navarrete-Betancort¹
Ayoze González-Hernández²

Electroconvulsive therapy in dementia

¹Servicio de Psiquiatría
Hospital Universitario de Gran Canaria Dr. Negrín

²Servicio de Neurología
Hospital Universitario de Gran Canaria Dr. Negrín

The use of electroconvulsive therapy (ECT) in the clinical practice in patients with dementia syndromes continues to cause controversy. In this case, the clinical difficulty existing when making a differential diagnosis between depressive episodes and incipient dementia picture is presented. The interrelation between these two pictures and the possible common etiological origin are also evaluated. Electroconvulsive therapy is effective and safe in functional improvement in affective and dementia disorders in elderly patients.

Key words: Frontotemporal dementia, Electroconvulsive therapy, ECT

Actas Esp Psiquiatr 2013;41(3):204-7

Terapia electroconvulsiva en la demencia

La utilización de la Terapia electroconvulsiva (TEC) en la práctica clínica en los pacientes con síndromes demenciales sigue suscitando debate. En este caso se expone la dificultad clínica existente ante un diagnóstico diferencial entre episodio depresivo y cuadro demencial incipiente. También se valora la interrelación entre estos dos cuadros así como el posible origen etiológico común. La terapia electroconvulsiva resulta eficaz y segura en la mejora funcional en los trastornos afectivos y demenciales en pacientes de edad avanzada.

Palabras clave: Demencia frontotemporal, Terapia electroconvulsiva, TEC

INTRODUCTION

Use of electroconvulsive therapy (ECT) in the clinical practice continues to cause controversy, basically because of the idea that this could worsen cognitive function in dementia patients. However, different studies have demonstrated the safety, tolerance and efficacy of this technique in the treatment of affective disorders in elderly patients with dementia.

A search in the literature was made in Pubmed, including scientific articles on ECT in dementia published in the last 10 years. Terms used for the search were electroconvulsive therapy, dementia, frontotemporal dementia and ECT. After, a clinical case that illustrated the subject in review is presented.

CLINICAL CASE

The case of a 65-year old woman with previous psychiatric background of adaptive disorder currently under treatment with SSRIs is presented. She showed partial response of her anxious-depressive symptoms, with persistence of residual symptoms such as obsessiveness, psychiatric anxiety, psychomotor restlessness and frequent somatic complaints. During the evolution of the picture, somatic type delusional ideas and of poverty accompanied by catatoniform symptoms were gradually established. The latter were of sudden onset, such as motor immobility with waxy flexibility, automatic obedience, fixed gaze, mutism and active refusal to eat. She required admission to the Short Hospitalization Unit. Many pharmacological strategies were used, among them treatment with SSRI, norepinephrine reuptake inhibitors (NRI) and antipsychotics in monotherapy and in combination with scarce results. Finally, faced with the refractoriness of the treatment, it was decided to apply bilateral ECT. Thymatron was used with brief square wave pulses using bifrontotemporal zone electrode placement with impedance 800 ohms and a total duration of the stimuli of 3-5 sec with DGX 60%. Vital

Correspondence:
Juana Teresa Rodríguez Sosa
Servicio de Psiquiatría
Hospital Universitario de GC Dr. Negrín
Barranco de la Ballena s/n
35010 Las Palmas de Gran Canaria, Spain
E-mail: rodriguez.teresa9@gmail.com

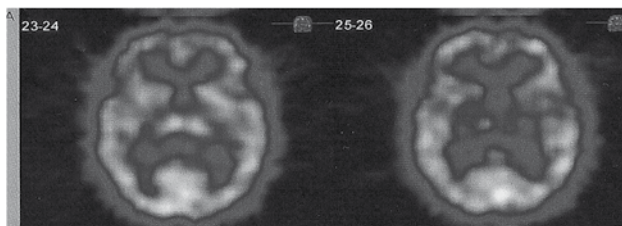


Figure 1 *The images obtained show a slight heterogeneous distribution of the tracer in the cortical gray matter, but without evaluable defects of the perfusion that orient towards a pattern of degenerative and/or vascular dementia*

signs were monitored, oxygen administered at 100% and EEG and ECG recorded, achieving a seizure time measured by EEG greater than 30 sec, this being considered effective. During the application of the technique, anticholinergic treatment with succinylcholine 20 mg/ I.V. and an anesthetic, propofol 1.5 mg/kg/ I.V., was initially administered, with therapeutic tolerance. The patient showed improvement in the fourth out of 8 sessions. She was diagnosed as having severe depressive episode with psychotic symptoms. Later, on 2 occasions and after a short period of period, she had to be re-admitted due to a picture having similar characteristics with predominance of catatonic symptoms that were life-threatening. In these two admissions, the application of 8 sessions of ECT was required again. The patient showed improvement in the fourth session on both occasions. During the time the patient was being treatment with ECT, she continued treatment with sertraline 100 mg/day, quetiapine 200 mg/day. The good initial response to ECT, improvement with psychopharmaceuticals and lack of evidence of significant findings in CT imaging, SPECT tests as well as in the neuropsychological tests (Minimal, clock test, verbal fluency test) seem to confirm the previous diagnosis of severe depressive episode with psychotic symptoms (Image 1).

The subsequent course of the picture after the initial improvement was torpid with progressive and insidious onset of bradypsychia, increase in response latency, speech poverty, intense apathy that was evaluated as affective etiology symptoms in the context of a depressive pseudodementia. SPECT was repeated with a time difference of one year from the onset without significant findings. After, with the appearance of loss of sphincter control and the clinical impression of the existence of possible cognitive deterioration, the Neurology Department was consulted. A third SPECT was performed two years after the first one in which frontotemporal hypoperfusion was finally observed (Image 2 and 3).

During this time period, the patient received different SSRIs and an atypical antipsychotic at low doses with poor response. Treatment was initiated with memantine 20 mg/day. She was admitted to hospital again approximately 1 year later, this time in Internal Medicine due to the presence of recurrent catatonic symptoms that resulted in clear physical deterioration with confusional picture within the context of a urine infection. Finally, the patient was diagnosed of frontotemporal dementia, approximately 3 years after the onset of the symptoms.

DISCUSSION

Depressive pictures are frequent in the initial stages of dementia. They reach a prevalence of 15% as first manifestation of the dementia.¹ The dementia and affective pictures are the most frequent neuropsychiatric disorders in the geriatric population. These pictures pose an important diagnostic challenge for the clinician because of the symptomatic and temporal concurrence of both pictures on many occasions. According to the Cardiovascular Health Study, the severity of the initial depressive symptoms independently predicts the appearance of mild cognitive deterioration six years later,² and many longitudinal studies have maintained that the depressive symptoms having chronic characteristics predict deterioration in the general

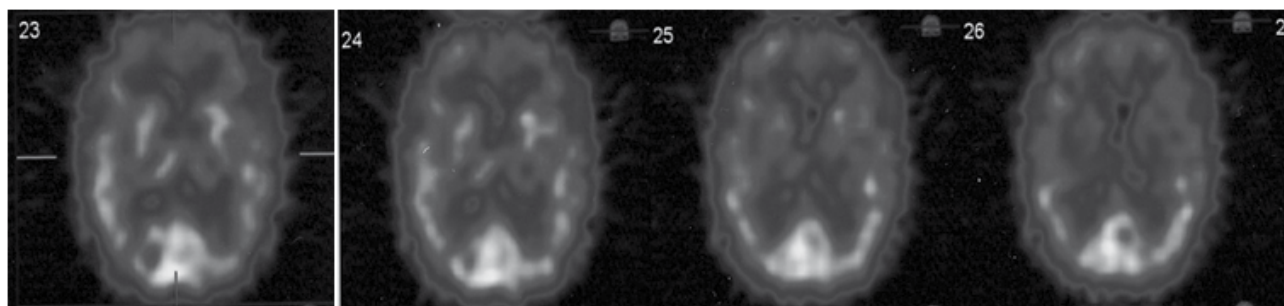


Figure 2 *The images obtained show a mildly heterogeneous distribution of the cortical gray matter, with mild frontal bilateral hypoperfusion and less evident left temporal hypoperfusion*

cognitive state, episodic memory, visual-spatial skills, processing speed, executive function.³ There are also works in the literature that describe a decrease in hippocampal volume in chronic depressive pictures.⁴ "Depressive pseudodementia," a concept of classical psychiatry created by Kiloh (1961), whose decline was already mentioned in the *Journal of Psychiatry*,⁵ reflects how depressive symptoms act as a confounding element that frequently masks a dementia picture. Thus, the likelihood of the existence overlapping between them in the history of the geriatric patient is likely.¹

Currently, there are studies that are trying to differentiate the cognitive changes observed in affective disorders from those found in incipient dementias, as, for example, the Spanish version of the Addenbrooke's Cognitive Examination (ACE).⁶ On the other hand, improvement of the ECT symptoms has led us to consider this technique as a possibility within the therapeutic management. The use of ECT has been established as a safe practice and indication in the treatment of major depression refractory to treatment and of other psychiatric disorders such as acute suicidal mediation, major depressive episodes with psychotic symptoms, catatonia, such as that collected within the CANMAT guide.⁷ ECT has even obtain better results than those obtained in young adults with the same diagnosis with a more immediate action than that offered by psychopharmaceuticals.^{8,9} However, the possibility of extending the use of ECT to other neurological pictures is currently being debated. Good results of treatment with ECT have been described in patients with dementia due to Lewy bodies with major depressive disorder,¹⁰ with major depressive disorder and mania in advanced dementia,¹¹ in patients with Alzheimer's type dementia and agitation refractory to treatment,^{12,13,14} in frontotemporal dementia is with catatonic symptoms,¹⁵ and even in a Cotard syndrome within the context of a frontotemporal dementia.¹⁶ The possibility of cognitive deterioration after the administration of ECT is transient and mild and independent of the psychiatric diagnosis that the patient has, even in patients with established dementia as several studies have shown.¹⁷ However, the importance of monitoring the neurocognitive state of patients before and after treatment has already been proposed in the guidelines. It is also recommended in these cases to use unilateral techniques that reduce the cognitive type side effects, to space the sessions, and to apply the minimum number needed.

In summary, the case illustrates the complex management derived from overlapping in a patient in her sixties of a depressive picture with psychotic symptoms refractory to psychopharmacological treatment. She experienced clinical improvement after application of ECT, associated to cognitive deterioration of rapidly progressive evolution, which finally was diagnosed as frontotemporal dementia. Concurrence of executive dysfunctions and similar symptoms in both disorders may constitute a true diagnostic challenge in the medical

practice, even contemplating the etiological possibility that may be one and the same picture. Based on the communication of this case, it has also been considered that the imaging tests used in the clinical practice to confirm the suspicion of cognitive deterioration have limitations regarding sensitivity and specificity. It may be possible that these tests will not be revealing until the organic process reaches advanced stages. In addition, we confirm the therapeutic benefits and great safety of ECT - acute and maintenance - in the improvement of the affective, behavior and cognitive symptoms secondary to severe depression, in those cases refractory to the medical management in geriatric patients with and without dementia.

REFERENCES

1. Ridruejo P. Sistemática de la relación nosológica depresión-demenia (toward a systematic of the nosological relation between depression-dementia). 4º Congreso de Psiquiatría. Interpsiquis. 2003.
2. Butters MA, Young JB, Lopez O, Aizenstein HJ. Pathways linking late-life depression to persistent cognitive impairment and dementia. *Dialogues Clin Neurosci*. 2008 September;10(3):345-57.
3. Li GE, Wang LY, Shofer JB, Thompson ML. Temporal relationship between depression and dementia: findings from a large community-based 15-year follow-up study. *Arch Gen Psychiatry*. 2011 September;68(9):970-7.
4. Steffens DC, McQuoid DR, Payne ME, Potter GG. Change in hippocampal volume on magnetic resonance imaging and cognitive decline among older depressed and nondepressed subjects in neurocognitive outcomes of depression in the elderly study. *Am J Geriatr Psychiatry*. 2011 January;19(1):4-12.
5. Wagner GS, McClintock SM, Rosenquist PB, McCall WV, Kahn DA. Clinical Case Discussion Major Depressive Disorder with Psychotic Features May Lead to Misdiagnosis of Dementia: A Case Report and Review of the literature. *J Psychiatr Pract*. 2011 Nov;17(6):432-8.
6. Roca M, Torralba T, López P, Marengo J, Cetkovick M, Manes F. Diferenciación entre demencias en estadio inicial y depresión utilizando la versión española del Addenbrooke's Cognitive Examination. *Rev Neurol*. 2008;46(6):340-3.
7. Kennedy SH, Milev R, Giacobbe P, Ramasubbu R, Lam RW, Parikh SV, et al. Canadian network for mood and anxiety treatments (CANMAT). Clinical guidelines for the management of major depressive disorder in adults. IV. Neurostimulation therapies. *J Affect Disord*. 2009;177(suppl 1):44-53.
8. Hausner L, Damian M, Sartorius A, Frölich L. Efficacy and cognitive side effects of electroconvulsive therapy (ECT) in depressed elderly inpatients with coexisting mild cognitive impairment or dementia. *J Clin Psychiatry*. 2011 Jan;72(1):91-7.
9. Van Schaik AM, Comijs HC, Sonnenberg CM, Beekman AT, Sienart P, Stek ML. Efficacy and safety of continuation and maintenance electroconvulsive therapy in depressed elderly patients: a systematic review. *Am J Geriatr Psychiatry*. 2012 Jan;20(1):5-17.
10. Wijkstra J, Nolen WA. Successful maintenance electroconvulsive therapy for more than seven years. *J ECT*. 2005;21(3):171-3.
11. Weintraub D, Lippmann SB. ECT for major depression and mania with advanced dementia. *J ECT*. 2001;17(1):65-7.
12. Wu Q, Prentice G, Campbell JJ. ECT treatment for two cases of dementia-related aggressive behavior. *J Neuropsychiatry Clin*

- Neurosci. 2010 Spring;22(2):E10-11.
13. Ujkaj M, Davidoff D, Seiner SJ, Ellison JM, Harper DG. Safety and efficacy of electroconvulsive therapy for the treatment of agitation and aggression in patients with dementia. *Am J Geriatr Psychiatry*. 2012 Jan;20(1):61-72.
 14. Sutor B, Rasmussen KG. Electroconvulsive therapy for agitation in Alzheimer disease: a case series. *J ECT*. 2008 Sep;24(3):239-41.
 15. Suzuki K, Takano T, Matsuoka H. A case of catatonia resembling frontotemporal dementia and resolved with electroconvulsive therapy. *World J Biol Psychiatry*. 2009;10(3):245-7.
 16. Fazzari G, Benzoni O, Sangaletti A, Bonera F, Nassini S, Mazzarini L, et al. Improvement of cognition in a patient with Cotards delusions and frontotemporal atrophy receiving electroconvulsive therapy (ECT) for depression. *Int Psychogeriatr*. 2009 Jun;21(3):600-3.
 17. Porter R, Hennen H, Reeves J. Original study: early effects of ECT on cognitive function. *J ECT*. 2008 Mar;24(1):35-9.