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PSYCHOGERIATRIC NOTE

The effectiveness of electroconvulsive therapy for psychiatric symptoms and cognitive fluctuations similar to dementia with Lewy bodies: a case report

The diagnosis of dementia with Lewy bodies (DLB) requires evidence of progressive cognitive decline[1]; however, distinguishing cognitive decline from depression, delusion, and delirium is difficult because of their similarities. Systematized delusion mimics dementia, and comorbid DLB and depression make the correct diagnosis difficult. Although the effectiveness of electroconvulsive therapy (ECT) for DLB has been repeatedly emphasized,[2,3] ECT for DLB has not been commonly employed. In the case we present here, we found that ECT was effective for treating a patient with DLB-like symptoms: ECT improved the patient's motor symptoms and activities of daily living (ADL) and stabilized her cognitive fluctuations by ameliorating hallucinations, delusions, and depression.[4]

A 69-year-old woman with visual hallucinations presented herself to our psychiatric department. Two years earlier (DLB-like symptoms), her initial symptoms were dry mouth and severe constipation. Two months later, she then developed visual hallucinations in which she saw a devil poisoning her food and making her son smoke marijuana. Consequently, she felt restless and developed depression and insomnia. She was hospitalized at a nearby psychiatric hospital. After 3 months of treatment in psychiatry hospital, her hallucinations and depression disappeared, and she was discharged.

One year before being admitted to our hospital, the patient developed tremors in her right hand. Medications did not control her tremors, but she managed to maintain her household duties. Three months before admission, her visual hallucinations recurred. One month before admission to our hospital, the visual hallucinations worsened, and she developed depression and suicidal ideation; she was admitted to another hospital. She claimed that her grandchildren were drowning, and she felt that she troubled everyone and therefore wanted to die. She started to refuse to eat and take her medications. Her physicians sent her to our hospital for ECT. The patient had no history of mental or neurological disease. The time course of medications is shown in Table S1.

Three core clinical features supported the diagnosis of probable DLB, and several symptoms supported the diagnosis (Table S2, Figure S1). We tried to evaluate the patient's neuropsychiatric symptoms using a test battery, but the patient's severe psychotic symptoms prevented the administration of these tests. The patient's motor symptom appeared after she developed delusions.

We gradually stopped medications in order to produce an adequate seizure during ECT. Before ECT started, her visual hallucinations decreased, and she started to eat but not a sufficient amount. We believe that decreasing her dose of sedative drugs made her more active.

As shown in Figure 1 and Table S3, 15 ECT sessions ameliorated the patient's hallucinations, and her Neuropsychiatric Inventory hallucination score decreased from 12 to 0. Her ADL improved, with her new clinical scale for rating of ADL of the Elderly (N-ADL) score increasing from 13 to 39, and her parkinsonism improved, with her modified Hoehn and Yahr score decreasing from 3 to 2. Her Mini-Mental State Examination (MMSE) score improved from 15 to 29. After ECT, she had only short periods of cognitive fluctuation with auditory hallucination at dusk. ECT settings are shown in Table S4.

In the present case, the patient's cognitive fluctuations were dramatically stabilized by ECT, which also improved her hallucinations, depression, and ADL. After treatment, the patient did not fulfil the diagnostic criteria of dementia. This case suggests the possibility that a substantial number of patients who have symptoms of DLB may be improved by ECT. Surprisingly, there are very few reports related to the use of ECT for patients with DLB. Rasmussen *et al*. reported seven cases of DLB, mainly focusing on depressive

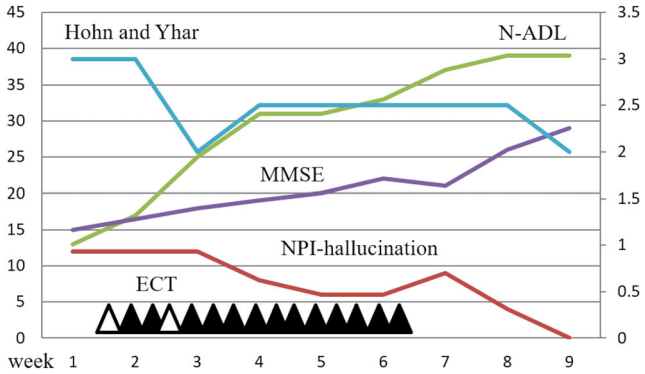

Figure 1 Clinical symptom changes during and after electroconvulsive therapy (ECT). The patient was assessed weekly by the Mini-Mental State Examination (MMSE) for cognitive ability, the Neuropsychiatric Inventory (NPI) for hallucinations, new clinical scale for rating of ADL of the Elderly (N-ADL) for activities of daily living, and the modified Hoehn and Yahr Scale for parkinsonism. Right axis for the Hoehn and Yahr score; left axis for others. Repeated ECT ameliorated her hallucinations and movement disability and improved her cognitive function and activities of daily living. Black triangles, ECT with adequate seizure; white triangles, ECT without adequate seizure.

symptom remission.[2] Their report included the MMSE results of four cases: (i) a patient whose score declined from 24 to 22 after ECT; (ii) a patient whose score fluctuated between 23 and 28; (iii) a patient whose score increased from 19 to 23 after ECT (the only score increase); (iv) a patient whose score was 4 both before and after ECT. Ueda *et al*. reported five cases,[5] all of whom had hallucinations. They included MMSE scores for two cases before and after ECT: one patient who maintained a score of 25 and one whose score increased from 25 to 27. There is no report in which a patient's MMSE improved as remarkably as in the present case.

The guidelines to diagnose DLB and the cognitive fluctuations that characterize DLB require evidence of a progressive cognitive decline. However, as in the present case, delusions likely worsen a patient's cognitive test results, and psychotic symptoms can make a patient appear as if in a demented state. Patients with systematized delusions tend to be mistakenly diagnosed with severe cognitive impairment. Physicians who treat DLB must be mindful of the fact that after a patient's psychotic symptoms disappear, the patient could be diagnosed with dementia. This case highlights this point and led us to reconsider the DLB diagnosis procedure.

DISCLOSURE

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SUPPORTING INFORMATION

Additional supporting information may be found in the online version of this article at the publisher's website: http://onlinelibrary.wiley.com/doi//suppinfo.

Table S1 Time course of medications.
Table S2 Diagnostic criteria for dementia with Lewy bodies.
Table S3 Time course of symptom examinations.
Table S4 Electroconvulsive therapy settings.

Figure S1 Results of ^{123}I-ioflupane dopamine transporter single-photon emission computed tomography. The specific binding ratio (SBR blot) was decreased from 2.84 (average, right = 3.05, left = 2.64) to 2.56 (average, right = 2.59, left = 2.56). (a) Two years before presentation at another hospital. (b) At presentation at our hospital. These results support the diagnosis of dementia with Lewy bodies with SBR <3.02 (two standard deviations below the mean of normal adults (1)).