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CASE REPORT

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Possible effects of electroconvulsive therapy on refractory psychosis in primary progressive multiple sclerosis: A case report

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Abstract

Introduction: Patients with multiple sclerosis commonly show some degree of psychiatric symptoms. Primary progressive multiple sclerosis is a part of the spectrum of multiple sclerosis phenotypes with progressive accumulation of disability from disease onset and active course. Psychiatric symptoms are commonly shown in multiple sclerosis, and up to 10% of patients with multiple sclerosis have the primary progressive form. Thus, patients with primary progressive multiple sclerosis may also elicit psychiatric symptoms. However, little information is available on psychiatric symptoms, especially on psychosis, in primary progressive multiple sclerosis.

Case: Here, we report on a 42-year-old woman with primary progressive multiple sclerosis whose psychosis did not respond to antipsychotics and was partially ameliorated by electroconvulsive therapy. She suffered from auditory hallucination, anxiety, depersonalization, and suicidal ideation. Initially, several antipsychotic agents were tried, but not effective. Given this, she underwent 12 sessions of electroconvulsive therapy.

Conclusion: Our observation suggests the possible utility of electroconvulsive therapy in the treatment of psychosis in primary progressive multiple sclerosis.

KEYWORDS
antipsychotic agents, drug resistance, mental disorders, multiple sclerosis, stimulation methods

1 | INTRODUCTION

Multiple sclerosis (MS) is a chronic autoimmune, inflammatory neurological disease of the central nervous system.[1] The characteristic neuropathologic feature of MS is the presence of focal demyelinated plaques accompanied by variable degrees of inflammation and gliosis, with partial preservation of axons.[2,3] Common symptoms include sensory symptoms in limbs or face, unilateral visual loss, acute or subacute motor weakness, diplopia, gait disturbance and balance problems, Lhermitte sign, vertigo, bladder problems, limb ataxia, acute transverse myelitis, and pain.[4] In addition, some degree of psychiatric symptoms is commonly shown in patients with MS.[5–7] Specifically, recent epidemiological studies found that prevalence rates of psychosis in MS are two to three times higher than those in the general population.[6] Also, the risk of suicide in patients with MS may be increased in comparison with the general

population.[8] Furthermore, a review of previous studies indicates the possible effect of electroconvulsive therapy (ECT) on psychiatric symptoms in MS.[9]

Primary progressive multiple sclerosis (PPMS) is a part of the spectrum of MS phenotypes, which are assessed based on current status and historical data.[10] PPMS is characterized by progressive accumulation of disability from disease onset and active course; but these factors are relative rather than absolute.[10] The inflammatory response in the progressive phase occurs at least partly behind the blood-brain barrier, which makes it more difficult to treat.[11] Considering the fact that up to 10% of patients with MS have the primary progressive form,[12] patients with PPMS may also elicit psychiatric symptoms. However, little information is available on psychiatric symptoms, especially on psychosis, in PPMS, although one case report showed early psychiatric manifestation.[13]

Here, we report on a 42-year-old woman with PPMS whose psychosis did not respond to antipsychotics and was partially ameliorated by ECT. Our observation suggests the possible ability of ECT to improve psychosis in PPMS.

2 | CASE

Ms. A was a 42-year-old Japanese woman. One and a half years before consulting our hospital, she felt unsteadiness in walking. At the same time, she demonstrated anxiety to attend a psychiatrist. Six months later, she started hearing weird sounds, such as twittering of sparrows and crows that do not actually exist. Also, she complained about hearing weird conversational words, such as "Calm down," "Thank you." In addition, depersonalization and suicidal ideation emerged in her. Six months later, involuntary movement of her upper limbs developed in her. Neurological symptoms had been progressing, and psychiatric symptoms had been embarrassing her without any improvement, which encouraged her to consult us. When she visited our hospital, serum anti-aquaporin-4 antibody was negative by enzyme-linked immunosorbent assay, oligoclonal band in cerebrospinal fluid was positive, and brain MRI images showed bilateral multifocal demyelinating lesions. With the history of present illness, PPMS was diagnosed in her. Also, her psychiatric symptoms were diagnosed as other mental disorder due to PPMS.

Methotrexate (4 mg/d), azathioprine (75 mg/d), prednisolone (5 mg/d), and steroid pulse therapy were administered, respectively; but neither neurological nor psychiatric symptoms were ameliorated. For psychiatric symptoms, we added risperidone up to 4 mg/d, quetiapine up to 400 mg/d, olanzapine up to 20 mg/d, and asenapine 10 mg/d, subsequently. However, auditory hallucination, anxiety, depersonalization, and suicidal ideation were not improved. Given this, approved by the ethics committee for ECT of National Center of Neurology and Psychiatry, we administered 12 sessions of bilateral ECT. Her auditory hallucination was partially ameliorated by the procedures. The frequency of her hearing weird sounds gradually decreased throughout the administration of ECT. She occasionally rated her own auditory hallucination and feelings of security with scores ranging from 0 to 100. After the procedures, the scores of auditory hallucination decreased from 100 to 70, and the scores of feelings of security increased from 0 to 30. On the other hand, her anxiety, depersonalization, and suicidal ideation were not significantly mitigated. Also, unsteadiness in walking and involuntary movement of upper limbs persisted after the procedures.

3 | DISCUSSION

To our knowledge, this is the first report of other mental disorder due to PPMS. The other psychiatric conditions deserve considerations for differential diagnosis. These include delirium, which is unlikely given that she had been fully conscious throughout the time course, and that electroencephalography recordings were normal. Mental and behavioral disorders due to psychoactive substance use are not probable either, in view of the absence of a recent history of substance use or change in medications. Her cognition and memory were maintained, which rules out the possibility of dementia. In our patient, symptoms might be similar to those with schizophrenia or major depressive disorder. However, she showed psychiatric symptoms in accordance with the onset of neurological symptoms, which is consistent with the diagnosis of other mental disorder due to PPMS.

As pointed out above, psychiatric symptoms are commonly shown in MS.[5–7] So far several studies have reported effects of antipsychotics on psychosis in MS.[6,14,15] On the other hand, we verified that the psychosis in our patient with PPMS was refractory to antipsychotics, including risperidone, quetiapine, olanzapine, and asenapine. Also, we revealed the possible utility of ECT in the treatment of psychosis in PPMS. In contrast, her anxiety, depersonalization, and suicidal ideation were not improved by ECT, which is consistent to results of a previous report that no remarkable remission was found in psychiatric manifestation in PPMS.[13] Thus, it may be difficult to completely ameliorate psychiatric symptoms in PPMS.

A limitation of this study is that the change in psychotic symptoms was evaluated based on her subjective measures. We did not use validated measures, such as the Positive and Negative Syndrome Scale and the Brief Psychiatric Rating Scale. This issue warrants further investigations for the benefit of ECT to treat psychosis in PPMS.

4 | CONCLUSION

This case report indicates the treatment resistance of psychosis in PPMS. ECT might possibly ameliorate psychiatric symptoms in PPMS, at least compared to antipsychotics. To support the argument, case series with a large number of patients will be required.

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CONFLICT OF INTEREST

The authors declare no conflict of interest in this article.

DATA REPOSITORY

n/a.

APPROVAL OF THE RESEARCH PROTOCOL BY AN INSTITUTIONAL REVIEWER BOARD

n/a.

INFORMED CONSENT

Written informed consent was obtained from the participant for the publication of this case report.

REGISTRY AND THE REGISTRATION NO. OF THE STUDY/TRIAL

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AUTHOR CONTRIBUTIONS

ZN wrote the first draft of the manuscript. All authors made substantial contribution, drafted the manuscript, and approved the final manuscript.

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