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A refractory case of a male patient with neuropsychiatric systemic lupus erythematosus with various psychiatric symptoms and MRI observations

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ABSTRACT

Patients with neuropsychiatric systemic lupus erythematosus (NPSLE) frequently show neurological and psychiatric symptoms. When NPSLE is comorbid with a psychiatric disorder, symptoms often overlap leading to a delayed NPSLE diagnosis. Herein, we present the case of a 39-year-old male patient presenting various neuropsychiatric symptoms, who was subsequently diagnosed with NPSLE. Severe neuropsychiatric symptoms, including persecutory delusions, visual hallucinations, depressed mood, psychomotor excitement, and cognitive impairments, persisted after NPSLE was treated with prednisolone and cyclophosphamide in combination with antipsychotics and anticonvulsants. We also discuss the changes in enhanced MRI findings that did not reflect the patient's neuropsychiatric symptoms.

Keywords: neuropsychiatric systemic lupus erythematosus, lupus, psychiatric symptom, MRI

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Introduction

Systemic lupus erythematosus (SLE) is a chronic autoimmune disease characterized by various physical and neuropsychiatric symptoms. Neuropsychiatric systemic lupus erythematosus (NPSLE) is a subcategory of SLE presenting neuropsychiatric symptoms. The American College of Rheumatology proposed the nomenclature for NPSLE syndromes based on 19 neuropsychiatric conditions, including 12 of the central nervous system (CNS) and seven of the peripheral nervous system [1]. The CNS syndromes include headache, seizure disorders, cerebrovascular disease, cognitive dysfunction, mood disorder, anxiety disorder, psychosis, and state of acute confusion [1].

The diagnosis and treatment of NPSLE are often challenging due to the difficulty in distinguishing the primarily originated symptoms of the disease from the secondary ones induced by the corticosteroid treatment, such as psychotic symptoms [2]. Here, we present the case of a 39-year-old male patient who was initially diagnosed with a primary psychiatric disorder and was later found to have NPSLE; the patient presented various neuropsychiatric symptoms, including memory impairment, personality changes, excitement, catatonia, delusions, hallucinations, and convulsions.

Case report

A 39-year-old man exhibiting mood fluctuations was considered as suffering from a depressive state and subsequently treated with 0.5 mg/day of aripiprazole. Since there was no improvement in depressive symptoms, the former physician considered prescribing a mood stabilizer such as lithium

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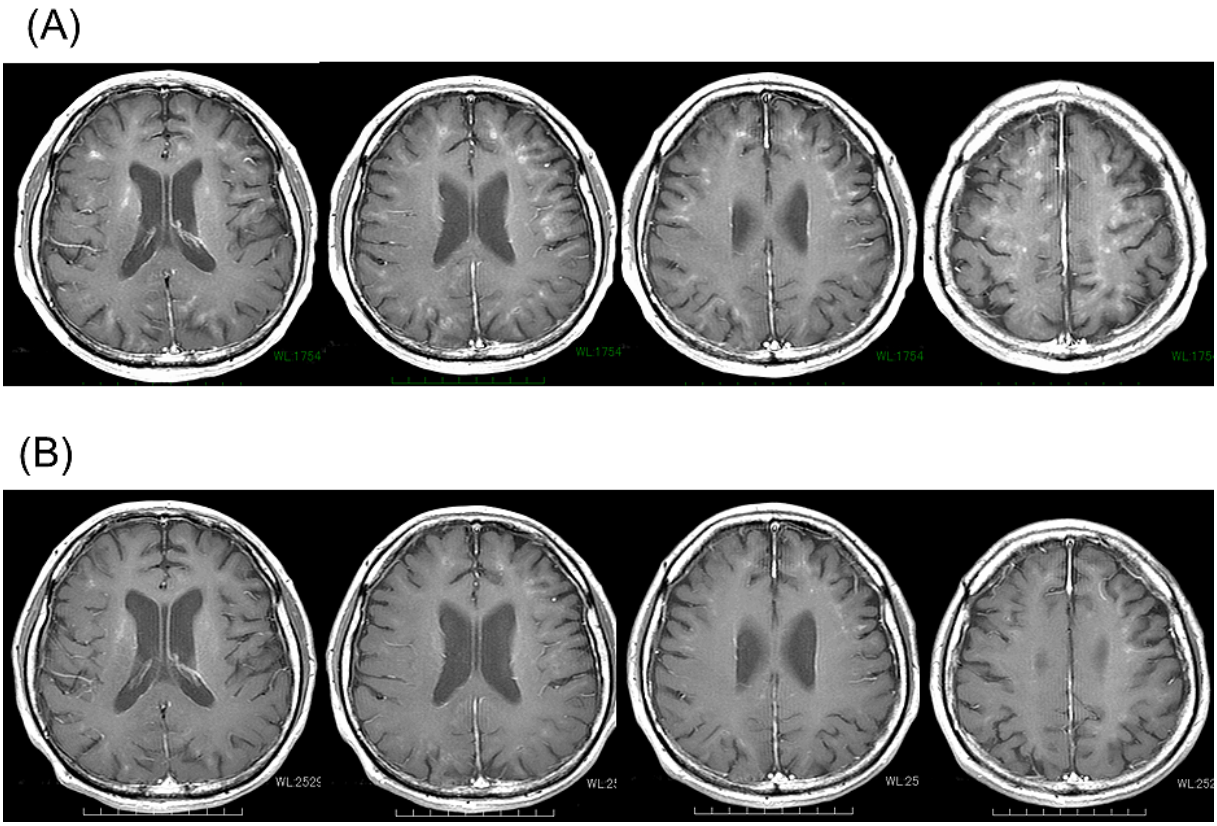

Figure 1. Enhanced MRI findings before (A) and 1 month after (B) treatment with betamethasone and cyclophosphamide. Multiple enhancement areas in the subcortical region and basal ganglia (high-intensity areas in T1) (A) disappeared after the treatment (B).

or carbamazepine. However, the patient suddenly developed tonic-clonic seizures, thereby preventing any treatment modification and only aripiprazole was conservatively continued. Furthermore, the patient gradually showed memory impairment and a few months after the first medical evaluation, he demonstrated Raynaud's phenomenon, thus, he was admitted to the Internal Medicine Department at our University Hospital. The patient did not have elevated blood urea nitrogen (BUN) or creatinine, nephritic-range proteinuria, or anemia. However, antinuclear antibody (ANA) and anti-Sm antibody tests were positive, thus, NPSLE was suspected. Tonic-clonic seizures were controlled with 200 mg/day of lacosamide. Neurological symptoms were not particular. Lumbar puncture showed a clear cerebrospinal fluid (CSF) with elevated protein (65.8 mg/dl) and normal glucose (61.3 mg/dl). The CSF IgG index was 0.37, and interleukin-6 (IL-6) level was 1.5 pg/ml. As shown in Figure 1A, magnetic resonance imaging (MRI) showed a vasculitis pattern in subcortical regions and basal ganglia with a broad calcification. An electroencephalogram showed moderate cerebral dysfunction without a specific seizure pattern. A diagnosis of NPSLE was made on the basis of severe neuropsychiatric manifestations, typical physical symptoms, abnormal MRI findings, and positive ANA and anti-dsDNA tests, which fulfilled the Systemic Lupus Erythematosus International Collaborating Clinics criteria [1]. The SLE Disease Activity Index (SLEDAI) score, that evaluates disease activity over the previous 10 days, was 8 point. The treatment with betamethasone (70 mg/day equivalent to prednisolone) and intravenous cyclophosphamide every two weeks for a total of six times showed no decrease in the anti-dsDNA titer. Two months after the abnormal enhancement in the MRI disappeared (Figure 1B), psychiatric and physical symptoms subsided. However, the patient's cognitive function evaluated by the Mini-Mental State Examination (MMSE) and the Frontal Assessment Battery (FAB) gradually deteriorated; the score of each scale was respectively 21 and 14 points at discharge from the ward. Afterward, he was transferred to the chronic ward for continued rehabilitation at our University Hospital. Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Discussion

This is a case report of a male patient initially presenting a depressive state, followed by confusion, convulsions, delusions, hallucinations, and memory impairments, and who was finally diagnosed with NPSLE. Patients with NPSLE generally present various psychiatric symptoms, such as a depressive or manic state, anxiety, catatonia, and psychosis [3]. Indeed, one-third of patients present psychotic symptoms, including persecutory or bizarre delusions, auditory and visual hallucinations, before the manifestation of lupus [4]. The determination of the cause of psychiatric symptoms is complicated. For the primary illness, corticosteroid treatment is often prescribed; however, a variety of psychiatric symptoms can occur. As in the present case, neuropsychiatric symptoms precede physical symptoms in NPLSE [5]. Adjunctive treatment with antipsychotics, antidepressants, or mood stabilizers is partially effective for psychotic symptoms, depressive mood, or mood swings, respectively [3]. Indeed, it has been reported that lithium was effective for patients with SLE under corticosteroid treatment in improving depressive symptoms [6]. In the present case, however, the patients did not receive any intensive intervention with psychotropic drugs. Cognitive impairment is often treatment-resistant in NPSLE [7]. Also, in the present patient, memory impairment and executive performance gradually deteriorated although neuropsychiatric symptoms partially improved. Contrast-enhanced FLAIR MRI demonstrated an abnormal enhancement in subcortical regions and basal ganglia when the activities of psychiatric and physical symptoms were high. Although abnormal enhancement on MRI disappeared after the treatment with betamethasone and cyclophosphamide, the NPLSE symptoms continued in this patient. Several reports have indicated that contrast-enhanced FLAIR MRI is useful in the detection of brain inflammation [8]. In this case, psychiatric and physical symptoms subsided two months after the abnormal enhancement in the MRI disappeared. These findings indicate that the amelioration of NPSLE symptoms may follow the improvement of enhanced MRI change. In conclusion, NPSLE diagnosis should be considered by clinicians in the list of differential diagnoses of patients with neuropsychiatric symptoms, especially mood fluctuation, cognitive impairment, and psychosis.

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Disclosure

All authors had no conflicts of interest for the present study.

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Editor's note

This case report is not a typical one of CNPT, which is usually a description of a case responding to a certain drug or another case showing an unusual side effect induced by a certain drug. Nonetheless, I published this article in CNPT because this case report outlines not only the difficulty in the diagnosis but also that in pharmacotherapy of NPSLE, which should be overcome in the near future.