A 19-year-old African American young adult with systemic lupus erythematosus (SLE) presented to the emergency department with acute agitation and altered mental status. She had received a diagnosis of SLE 4 years previously, but she had not experienced any episodes of altered mental status since that time.

She presented with agitation, including yelling, singing, and talking gibberish. This was followed by an inability to follow commands and unintelligible responses to questions. She was highly combative and required three 5-mg doses of midazolam and one 5-mg dose of haloperidol to calm her.

Her social history was positive for smoking marijuana regularly and for recently having taken prescribed pain medications, but her family denied any other drug ingestion or past psychiatric history.

Laboratory evaluation results (Table) were remarkable for elevated inflammatory markers, low complement levels, an elevated anti–double-stranded DNA (anti–dsDNA) antibody titer, and an elevated anti–smooth-muscle antibody titer. Urine drug screen results were positive for cannabinoids and benzodiazepines. Cerebrospinal fluid study results were unremarkable.
Computed tomography (Figures 1 and 2) and magnetic resonance imaging (MRI) scan results were significant for basal ganglia calcifications bilaterally within the globus pallidus and in the right caudate nucleus head.

The differential diagnosis for the young woman’s psychosis included neuropsychiatric systemic lupus erythematosus (NPSLE), infectious encephalitis, hyperthyroidism, drug intoxication, nonconvulsive seizures, anti-N-methyl-D-aspartate (anti-NMDA) receptor...
antibody encephalitis, thrombotic stroke, chronic lead poisoning, and a new-onset psychiatric disorder. Rheumatology, neurology, toxicology, critical care, and psychiatry subspecialists were consulted during the patient's admission.

She was treated with pulse-dose corticosteroids followed by high-dose corticosteroids in accordance with recommendations from the rheumatology consultant. The patient was started on a regimen of haloperidol and midazolam, but haloperidol was discontinued following a dystonic reaction, and treatment with olanzapine was initiated.

Over the course of her admission, the patient steadily improved and returned to her baseline behavior. The presumed diagnosis was NPSLE.

Discussion

New-onset agitation and altered mental status in an adolescent patient comes with a wide differential diagnosis, ranging from ingestion to new-onset psychiatric disorder to a component of an underlying organic disease.

When investigating the cause of sudden and severe behavior changes in an adolescent, it is important to keep in mind a patient's underlying medical issues as a potential cause for his or her change in behavior.

This patient’s underlying SLE, along with her age, put NPSLE at the top of the list of differential diagnoses. Laboratory and imaging test results excluded other conditions and confirmed NPSLE as this patient's diagnosis.
SLE is an autoimmune disease characterized by hyperactivity of B and T lymphocytes resulting in a proinflammatory state with overproduction of autoantibodies, immune complex tissue deposition, and increased levels of cytokines. As many as 40% of patients with a diagnosis of SLE present with neuropsychiatric symptoms.¹

**Laboratory Testing and Imaging**

No gold standard test exists for the diagnosis of NPSLE.² Serum studies to be performed as part of the workup should include a complete blood count to assess hemoglobin level, leukocyte count, and platelet count; a complete metabolic panel to assess liver function and levels of electrolytes, glucose, and creatinine; complement tests to assess C3, C4, or CH50; an anti-dsDNA antibody test; an erythrocyte sedimentation rate or C-reactive protein test; antiphospholipid antibody testing; and a lipid profile.

Complement depletion is a hallmark of increased disease activity in patients who have SLE.¹ Urinalysis should be performed, and in some presentations, urine drug screening also may be indicated.

Cerebrospinal fluid studies should include a cell count; protein and glucose level assessment; and culture testing, Gram staining, a Venereal Disease Research Laboratory test, IgG index, and oligoclonal band assessment.³ Tests to assess other proinflammatory cytokines and chemokines are investigational, but levels of these substances have been found to be elevated in patients with NPSLE.³,⁴

Imaging studies should include computed tomography scanning in acute neurologic presentations in order to rule out hemorrhage. MRI is more sensitive in evaluating the location and extent of lesions.³ Commonly reported MRI findings include ventricular dilation, white matter lesions, gross infarctions, and cerebral atrophy.⁴-⁶ However, negative imaging results do not rule out NPSLE.

Finally, standard electroencephalography is indicated in certain presentations, including patients with seizures and encephalopathies.³

**Treatment of NPSLE**

Treatment for NPSLE consists primarily of glucocorticoid administration. Adjunctive therapy for other symptoms (eg, headache, agitation, anxiety) also may be indicated. Refractory cases may necessitate the use of plasmapheresis or intravenous immunoglobulin administration.⁵,⁷

Close patient follow-up with a primary care physician and subspecialty clinicians is essential to the effective management of NPSLE.
Sharla Rent, MD, is a resident in the Department of Pediatrics at Saint Louis University, SSM Cardinal Glennon Children’s Medical Center, in St. Louis, Missouri.

Katherine Forrester, MD, is a resident in the Department of Pediatrics at Saint Louis University, SSM Cardinal Glennon Children’s Medical Center.

Marta King, MD, is an assistant professor and associate pediatric clerkship director in the Department of Pediatrics at Saint Louis University, SSM Cardinal Glennon Children’s Medical Center.

References


