Seizure as Initial Manifestation of SLE , CASE REPORT

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Abstract

Systemic lupus erythematosus (SLE) is a multisystem autoimmune disorder with variable disease courses and multiple clinical manifestations [1]. The etiology of SLE is not clear, but different environmental (ultraviolet [UV] light, infections, drugs), genetic, and hormonal factors all seem to be involved [1]. Positive family history and history of having other autoimmune illnesses are considered high-risk factors for SLE, but most SLE cases are scattered [1]. The 2019 EULAR/ACR classification criteria for SLE include positive ANA at least once as a mandatory entry criterion; followed by additive weighted standards grouped in seven clinical (constitutional, hematological, neuropsychiatric, serosal, musculoskeletal, renal, mucocutaneous) and three immunological (antiphospholipid antibodies, complement proteins, SLE-specific antibodies) domains, and weighted from 2 to 10, and patients accumulating [?]10 points are classified to have SLE [2]. Herein, we report this case of neuropsychiatric lupus as it is uncommon and is a severe form of SLE.

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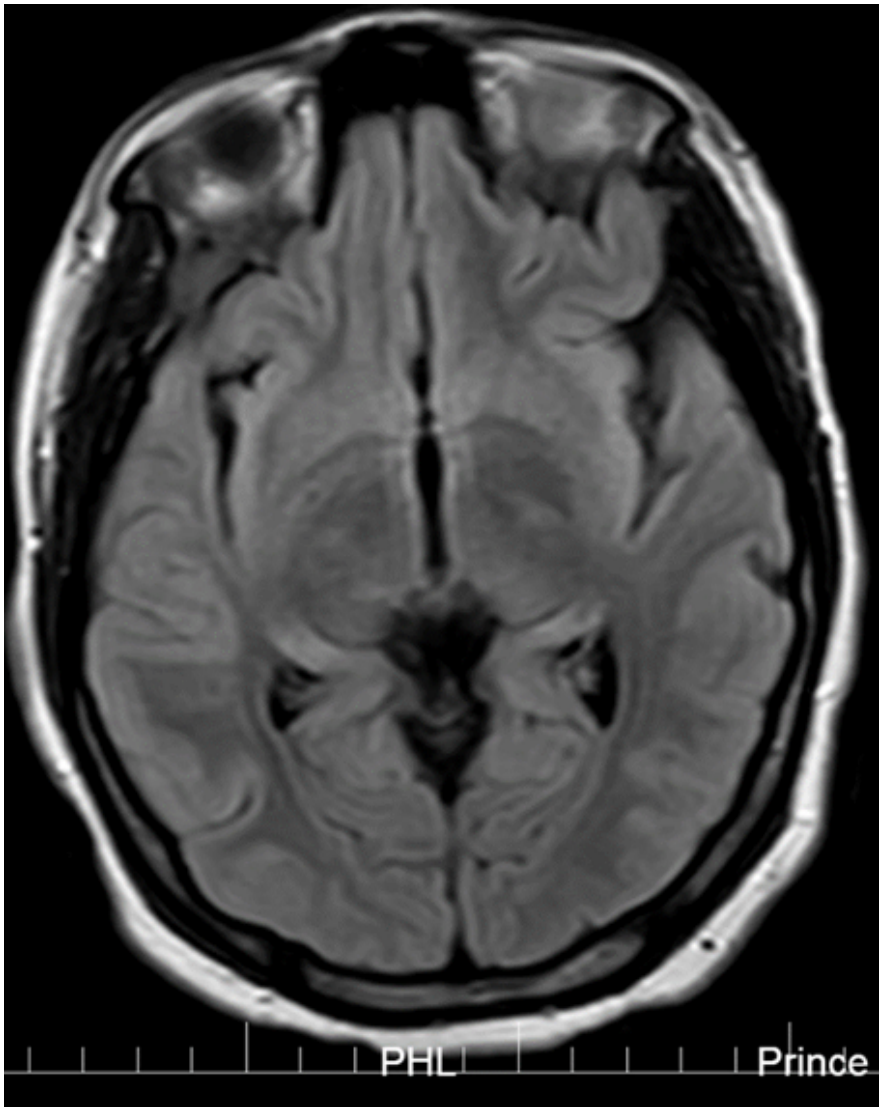
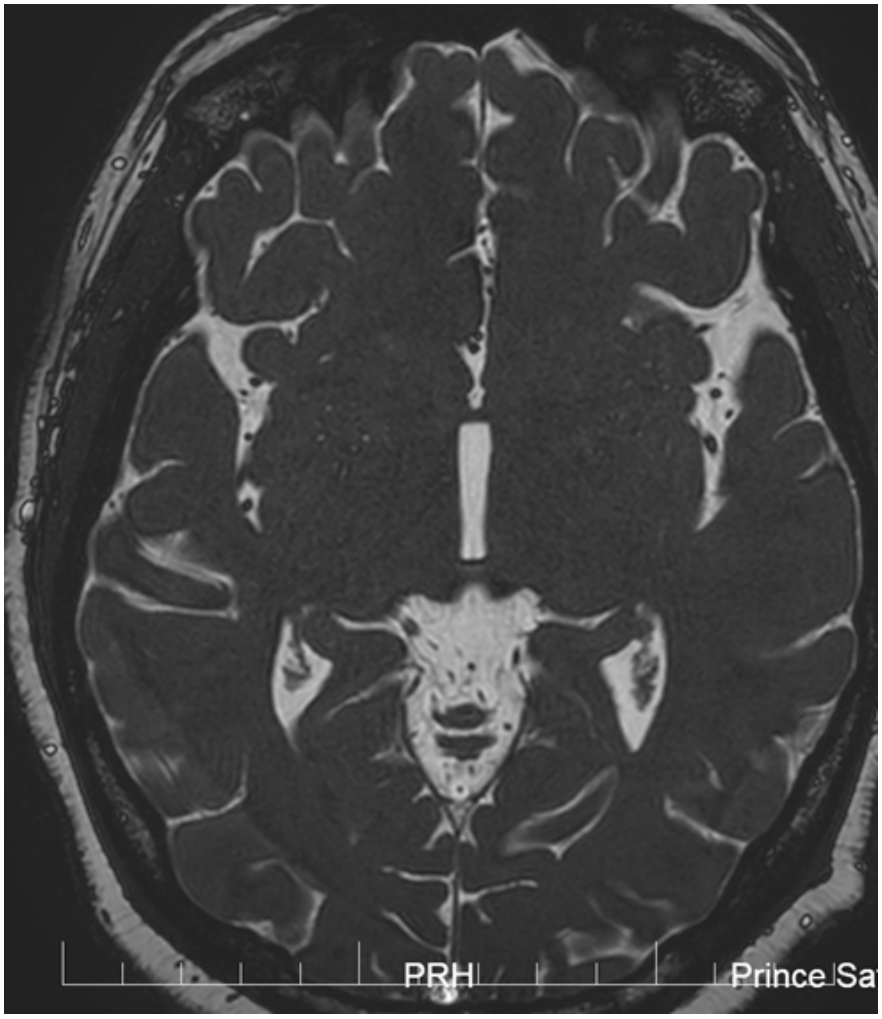
Introduction

Systemic lupus erythematosus (SLE) is a multisystem autoimmune disorder with variable disease courses and multiple clinical manifestations. The etiology of SLE is not clear, but different environmental (ultraviolet [UV] light, infections, drugs), genetic, and hormonal factors all seem to be involved. Positive family history and history of having other autoimmune illnesses are considered high-risk factors for SLE, but most SLE cases are scattered. The 2019 EULAR/ACR classification criteria for SLE include positive ANA at least once as a mandatory entry criterion; followed by additive weighted standards grouped in seven clinical (constitutional, hematological, neuropsychiatric, serosal, musculoskeletal, renal, mucocutaneous) and three immunological (antiphospholipid antibodies, complement proteins, SLE-specific antibodies) domains, and weighted from 2 to 10, and patients accumulating [?]10 points are classified to have SLE. Herein, we report this case of neuropsychiatric lupus as it is uncommon and is a severe form of SLE.

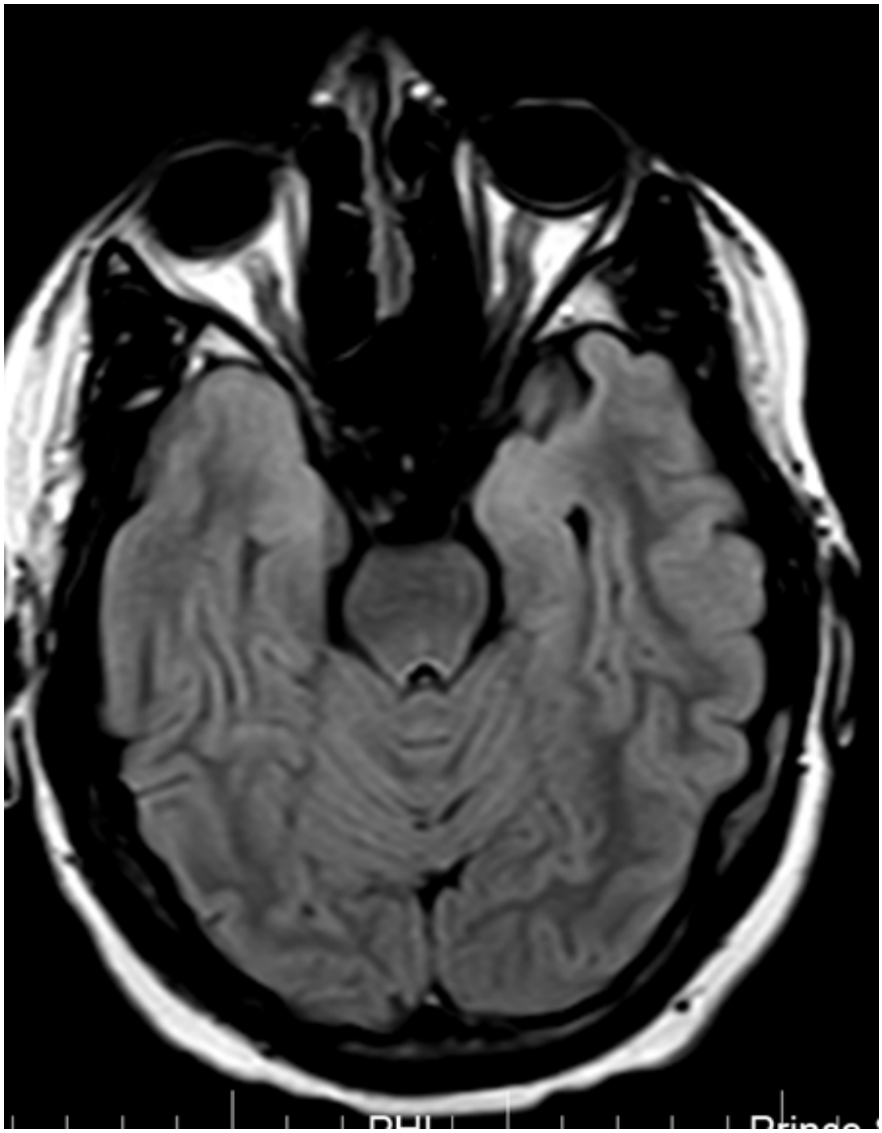
Case presentation

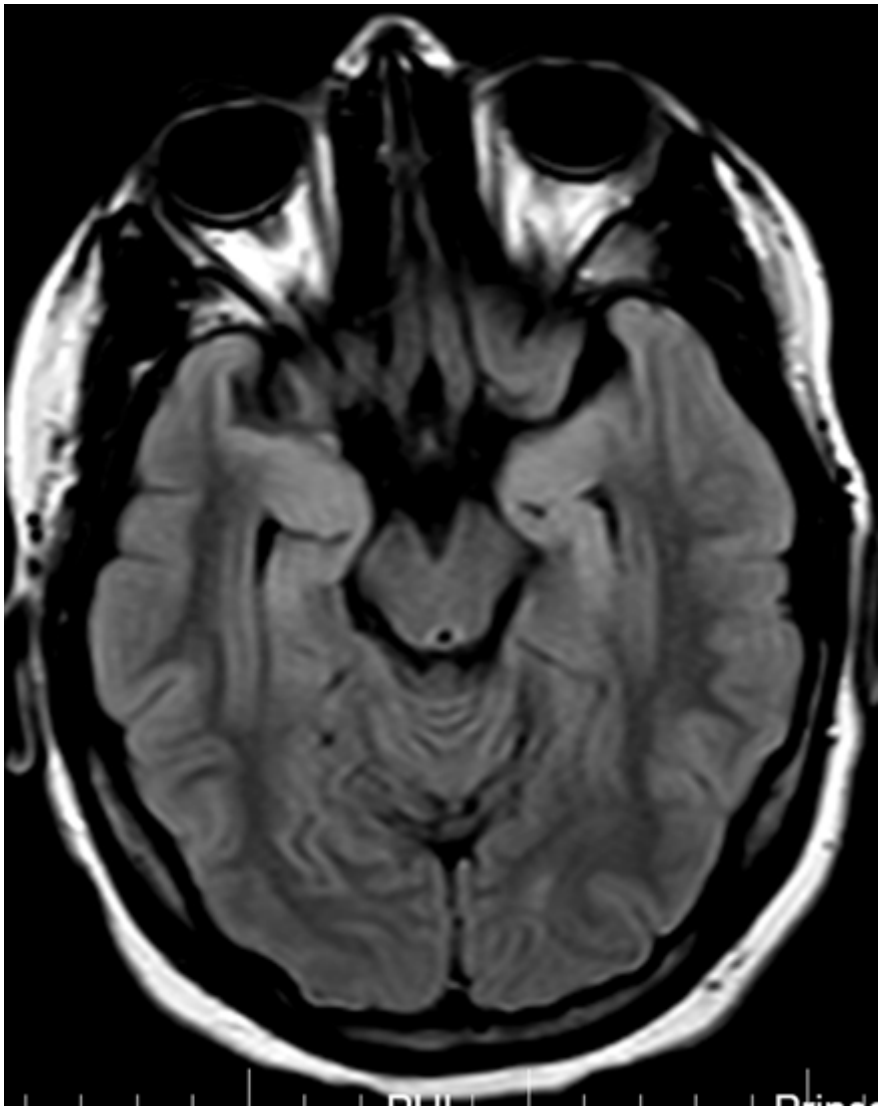
Sixteen years old female was referred to rheumatology with a history of progressive forgetfulness and episodes of jerky movements that were associated with loss of consciousness, upward rotation of both eyeballs, tongue bite, and frothy secretions from the mouth, which persisted for 3 to 10 minutes and followed by an incoherent talk. She had complained of a headache for the last 12 months. There was no history of cough, vomiting, blurred vision, head injury, anorexia, weight loss, or travel history to a malaria area. She is nonsmoker nor an alcoholic. She is allergic to penicillin. Her family history of autoimmune diseases and encephalitis is unremarkable. She was seen in ER in another hospital and then was labeled as a case of suspected viral encephalitis associated with fever; a lumbar puncture was done, then started on antiviral for 14 days and discharged. After that, she still noticed behavioral changes like depression, increased forgetfulness, and recurrent attacks of seizures with agitation for one month. Later on, she presented to our clinic and was diagnosed to have systemic lupus erythematosus based on her clinical presentation, which included neurological manifestations and malar rash, and lab results which showed positive ANA and dsDNA.**On initial examination,** the patient was found agitated but oriented. Her vital signs were, her pulse rate was 87 beats/minute, her blood pressure was 166/91 mm Hg, her Respiratory rate was 17/minute, her temperature: was 36°C, and her weight was: 102 Kg. She had a photosensitive malar rash, alopecia, lymphadenopathy, and thyroid nodules. Other neurological examination findings were normal, and examination of other systems also revealed no other abnormalities.**Investigations done were** , complete blood count (CBC) showed decrease in white blood cells (WBC) = 2700 /µL (4.1 – 11.6), increase in monocytes = 14.4% (3.8 – 11.2), normal red blood cells (RBCs) count, and normal hemoglobin (HGB) level. The liver function tests (LFT) showed mild elevation of alanine aminotransferase (ALT) = 44 (0 – 40), normal albumin level, and other findings were normal. Kidney function test (KFT) showed creatinine level = 33 µmol/L (44 – 80), urea level = 1.95mmol/L (2.1 – 7.1), and other findings were normal. Urine analysis showed negative blood, negative protein, negative glucose, and other findings were normal. Erythrocyte sedimentation rate (ESR) was 07 mm/hour (0 – 20). C-reactive protein (CRP) was positive, and rheumatoid factor (RF) and Anti-cyclic citrullinated peptide (ANTI-CCP) were negative. Anti-dsDNA antibodies was positive 81.7 IU/mL (positive > 35). C3 complement was 90 mg/dL (90 – 180) and C4 complement was 12 mg/dL (12 – 40). A thyroid function test (TFT) revealed a mild decrease in free thyroid hormone 3 (FT3) with normal thyroid-stimulating hormone (TSH) and free thyroid hormone 4 (TF4) levels. ECG shows sinus tachycardia. EEG was done and showed normal brain activity. MRI for the brain revealed prominent sulci, mainly Sylvian fissure, corpus callosum atrophy, and bilaterally prominent temporal horns with relatively symmetrical increased FLAIR signal intensity of both hippocampal formations (figures 1a, 1b, 1c, and 1d). Ultrasound for thyroid shows multiple bilateral nodules with tiny calcific foci. An echocardiogram revealed trace aortic and mitral regurgitation, impaired relaxation by tissue Doppler, no pericardial effusion, and normal ventricular dimension. CT of the chest, abdomen, and pelvis was done, and their results were unremarkable.





(1a)(1b)





(1c)(1d)

Figures 1a, 1b, 1c, and 1d : (MRI brain cuts showing prominent sulci, mainly Sylvian fissure, corpus callosum atrophy, and bilaterally prominent temporal horns with relatively symmetrical increased FLAIR signal intensity of both hippocampal formations)

Management:

The patient started SLE treatment on 30/12/2020 after two months of her initial symptoms. She was started on pulse steroid 1000 mg of methylprednisolone daily for five days, followed by oral prednisone 60mg daily. The patient was started on Plaquenil 400mg PO OD and cyclophosphamide 2mg/Kg PO OD. She was prescribed phenytoin as an antiepileptic medication. However, she developed an allergy to it, so she was shifted on levetiracetam, became more agitated, turned to Lamictal 25mg PO BID gradually, and weaned off levetiracetam, which made her better in terms of agitation. She was prescribed Bisoprolol 5mg PO BID for her sinus tachycardia. After three months, her medical situation improved, with no more seizures or psychosis. On 08/06/2021, cyclophosphamide was stopped, started on Cellcept 1000 mg PO BID, and gradually reduced her steroid dose to 15mg PO OD. Since she was on steroids, her weight increased, and

her lipid profile revealed an increase in total cholesterol and LDL, so she has been prescribed atorvastatin and advised about diet. She had a thyroid antibodies test and was negative, so she was advised to do FNA of the thyroid to check for malignancy, and the biopsy results were unremarkable for malignancy. At 02/03/2022 the patient was on prednisolone 5 mg PO OD, Cellcept 1000 PO BID , Plaquenil 400 mg PO OD , atorvastatin 10 mg PO OD , Lamictal 25 mg PO BID , Bisoprolol 5 mg PO PD, and Ca and vitamin D tablets. She had no active complaints, and she was doing fine.

Follow up

Based on clinical, laboratory, and radiological findings, the professional diagnosis was autoimmune SLE-related encephalitis. Lumbar puncture, which was previously performed, showed normal cyto-biochemical markers. Cerebrospinal fluid (CSF) bacteriological, mycological, and mycobacteriological cultures were negative. On 07/03/2022, she followed up with MRI, EEG, anti dsDNA, and C3 and C4 complement. MRI showed similar changes that were initially seen with mild signal reductions. EEG revealed no abnormal brain activity. Anti-dsDNA was decreased to 1.9 IU/mL compared to the first time, which was 81.7 IU/mL. C3 was 135mg/dL compared to the first time, 90mg/dL, and C4 was 26mg/dL compared to the first time, 12mg/Dl. She is on regular follow-ups by neurology and rheumatology teams. The plan is to taper down her steroid dose to off. The neurology team will follow the patient to adjust her anti-seizure medication. The patient became morbidly obese $<$ 48 BMI and is a candidate for obesity management; the obesity team will follow her, and she will be followed closely by rheumatology for any disease reactivation and medication adjustment.

Discussion:

The diagnosis of our case was hard to establish at first because the main symptoms of CNS lupus can be diffuse (generalized seizures, psychosis) or focal (stroke, peripheral neuropathies), and the patient's symptoms were vague and nonspecific. Differential diagnosis of our patient symptoms includes hypertensive encephalopathy, toxic leukoencephalopathy caused by therapeutic agents, and metabolic causes involving the nervous system, such as hydro-electrolytic changes . The presence of ANA and anti-dsDNA and her symptoms were a strong guide to the final diagnosis. Upon literature review, we found multiple similar cases. For example, in a case reported by (Ferraria, N., et al., 2013) , a seven-year-old girl was admitted because of ataxia, diplopia, and morning vomiting. An MRI of the brain showed marked brain lesions, so the patient started on pulse immunosuppressive treatment followed with Psychotropic medications, and azathioprine was initiated as maintenance therapy. After that, the patient had clinical improvement in terms of symptoms and radiology. Another case was reported by (Iftikhar, et al., 2019), a 43-year-old female who presented to the emergency department with a seizure. She failed conventional antiepileptic medications, and Later on, she developed a malar rash which then the diagnosis of SLE was established based on refractory positive ANA, arthritis, malar rash, and seizures. So has been treated with IV methylprednisolone then maintained by rituximab, and oral prednisolone 45 mg, which tapered gradually. Later on, the patient showed good improvement in her symptoms. In another case reported by (Faruk, et al., 2013), a seven-year-old girl was admitted to the emergency because of a seizure. After confirming the diagnosis of SLE, she was treated with intravenous pulse methylprednisolone followed by oral prednisolone. After the treatment, the C3 and C4 levels returned to normal, and her symptoms improved.

Conclusion

Continued efforts to better understand the pathologic mechanisms of the various manifestations of SLE and neuropsychiatric features are ongoing to aid in diagnosing and treating neuropsychiatric SLE. In our patient, the combination of clinical features, radiological findings, and positive immunological titers helped us diagnose the patient's case. Her symptoms and response to the treatment, along with her lab improvement, have ensured us that we are on the right track. Further studies are obligatory to help rheumatologists ideally deal with and manage CNS lupus patients.

Conflict of Interest

The authors reported no conflict of interest.

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Ethical Approval

The patient consented and agreed before writing this case report.

Authors Contribution

Dr. AAK chose and managed the case and commenced writing the initial and final draft of the article. Mr. FTH conducted a literature review and provided logistic support. Both authors have critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

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