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Case report

# Neuropsychiatric systemic lupus erythematosus manifest as bipolar affective disorder: a case report

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**Abstract**

*Background*: Systemic lupus erythematosus (SLE) is an autoimmune inflammatory disorder that affects multiple systems of the body, including the central nervous system. in the neuropsychiatric Systemic lupus erythematosus are the consequences of severe SLE activity, and can develop into mood disorder.
*Methods*: This is a case study.
*Results*: We are reporting a case of a 43-years-old patient with SLE who in a state of hypomania after long observation of suspecting the affective bipolar disorder, had a history of depression and manic episodes at the time. The internist gave a symptomatic treatment for the SLE symptoms and the psychiatrist gave an antidepressant, monitoring primary effects, and medication adherence. To maintain Bipolar affective disorder (BD) in SLE we apply watchful medication. Because if SLE was controlled, the BD symptoms would be improved.
*Conclusion*: Bipolar disorder is related to SLE due to neurotransmitter imbalance and down-regulation of inhibitory control in the emotional circuitry, leading to mood state oscillations. Our SLE patient also consumed corticosteroids, which may down-regulate brain-derived neurotrophic factor, contributing to mood disorders. To manage BD in SLE, we use watchful waiting for high-dose corticosteroid treatment or start tapering off the dosage, as controlling SLE improves BD symptoms.

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## Introduction

Systemic lupus erythematosus (SLE) is an autoimmune inflammatory disorder that affects multiple systems of the body, including the central nervous system. The mechanism of SLE involves the loss of immune tolerance in genetically susceptible individuals, leading to aberrant activation of autoimmunity due to multifactorial triggers such as genetic, environmental

(infection, toxin, and UVB). This causes host cell antigens to form autoantibodies by adaptive immune cells, resulting in damage to the autoantibody target tissue. The autoantibodies that have been formed can attack the patient's host cells, involving many systems in the clinical manifestations (Ameer et al., 2022). The prevalence of Neuropsychiatric Systemic Lupus Erythematosus (NPSLE) varies from 6% to 91%; this variability is due to differences in research methods. NPSLE is a severe complication of SLE, affecting the quality of life with increased morbidity and mortality (Zhang et al., 2020).

NPSLE can be both a cause and a complication in SLE patients. This is because severe SLE activity, due to inflammatory mediators or autoantibodies, can disturb the blood-brain barrier or intrathecal immune complex. This event accelerates the process of atherosclerosis, immune-mediated vascular injury, and immune complex deposition in the central nervous system (CNS). The diffuse or focal NPSLE manifestations arise because of this proposed mechanism (Sarwar et al., 2021). A case report provided evidence that family history, such as bipolar I disorder and schizophrenia, can affect the development of NPSLE in an SLE patient (Alao et al., 2008).

Bipolar affective disorder (BD) is a mood disorder characterized by alternating periods of mania or hypomania and episodes of depression. In most cases, patients are not correctly diagnosed due to the transition process from one episode to another and the same diagnostic criteria (Jain & Mitra, 2023). A study stated that cases of BD in SLE patients were around 0.62% of the population studied, with no significant gender difference (Tiosano et al., 2017). Another study reported that BD in SLE patients had an approximate prevalence of 6% (Bachen et al., 2009). These studies indicate that BD is more frequently found in SLE patients than in the general population or patients with non-SLE rheumatic diseases (Bachen et al., 2009; Tiosano et al., 2017).

## Methods

This is a case study.

## Results

### Case

The patient was a 43-year-old female. During the interview, she reported having difficulty sleeping and often complained about her anxiety. She consulted a psychiatrist several times with complaints about helping her family and friends too often. The patient admitted that she would give everything, including her personal money, and even said she would give her life to help her family and friends. She feels she has to give the best to others. The patient is the owner of a foundation in Lamongan and is an SLE fighter. She often provides motivation to fellow SLE sufferers and has used her private money to help members of her foundation, even when it wasn't allowed. She also admitted that she went to a psychiatrist because she wanted to confide in someone, as she felt she couldn’t confide in others due to her role as a motivator. Currently, the patient still has difficulty sleeping but rarely feels anxious.

At another time, this patient brought 10 children with autoimmune diseases into her house to foster them for an unspecified period. This situation bothered her husband and other family members living in the house. Additionally, there was a period when the patient came to the psychiatric clinic feeling like a burden to her husband and asked for a divorce.

The patient has a history of SLE since 2013. Initially, she complained of often being blank and not realizing what she had done before, which her family did not know about. She consulted a neurologist and was diagnosed with absence seizures, confirmed by an EEG examination with light induction. The patient underwent all examinations at RSCM Jakarta. She explained that she has a medical history of meningitis, encephalitis, pulmonary hypertension, and Patent Ductus Arteriosus (PDA), which was diagnosed when she was pregnant. In her childhood, she often complained of pain all over her body due to running, and she still complains about this pain today. The patient admitted that she still consumes coffee because it is related to her medication.

During a psychiatric examination, the patient had a face appropriate for her age, neat and clean clothes, no smell, and was cooperative when asked. She could answer all questions with eye contact, verbal contact, and sufficient voice volume. The patient's psychomotor condition was adequate. She had a hyperthymic mood, affecting harmony. The patient's thinking process was realistic, with a convergent flow, and her thoughts contained no delusions. Her perception had no hallucinations or illusions. She exhibited clear awareness, was compos mentis, and had good orientation to time, place, and people. The patient had good short-term, medium-term, and long-term memory.

The multiaxial diagnosis for this patient comprises Axis I: F31.0 Bipolar I Disorder, current or most recent episode hypomanic; Axis II: None; Axis III: SLE; Axis IV: Psychosocial and Environmental Problems; and Axis V: GAF Scale at examination: 80-70 (indicating no more than slight impairment in social, occupational, or school functioning). The treatment plan involves administering carbamazepine 1x200 mg and fluoxetine 20 mg, with close monitoring of primary effects and medication adherence.

**Discussion**

Bipolar affective disorder is an uncommon type of psychiatric SLE manifestation. The study reported a prevalence of 0.62% BD cases in SLE patients, while another study states 6% (Bachen, et al., 2009; Tiosano, et al., 2017). A case report confirms BD as the main manifestation in NPSLE of a patient, followed by psychiatric presentations in family histories (Alao, et al., 2009). In BD alone, the proposed mechanisms include mitochondrial dysfunction, oxidative stress, immune-inflammatory imbalance, and compromised hypothalamic-pituitary-adrenal (HPA) axis. These phenomena cause neurotransmitter imbalance and down-regulate inhibitory control of emotional circuitry, leading to disruptions in emotional homeostasis and oscillations between mood states or episodes (Jain & Mitra, 2023).

An article review emphasizes the importance of distinguishing mood disturbances in neuropsychiatric manifestations due to SLE from those arising from general chronic diseases (Meszaros et al., 2012). In our case, bipolar affective disorder (BP) is likely attributed to severe SLE activity and long-term, high-dose steroid usage. In the patient's history, there's no evidence of any family psychiatric disorders being the primary factor for the manic episodes, as noted in another case report (Alao et al., 2009). However, there is a history of absence seizures and hospitalization due to meningitis, which we interpret as evidence of severe SLE activity affecting the patient's central nervous system (CNS), leading to NPSLE manifestations.

The underlying mechanisms involve increased levels of neuroinflammation leading to cellular damage through oxidative stress and mitochondrial dysfunction due to chronic

inflammation, as suggested by previous studies on the contribution of autoimmune diseases to the development of BD (Tiosano et al., 2017). Severe SLE activity, characterized by inflammatory mediators or autoantibodies, can disrupt the blood-brain barrier or lead to intrathecal immune complex formation. This event accelerates the atherosclerosis process, causes immune-mediated vascular injury, and results in immune complex deposition in the CNS. These proposed mechanisms give rise to diffuse or focal NPSLE manifestations (Sarwar et al., 2021).

We also hypothesize that SLE treatment, particularly steroid usage, may play a role in the development of BD in our case. We note the onset of mood disturbances and the diagnosis of BD occurring after the diagnosis of SLE and the initiation of SLE treatment over the years. Previous studies have suggested that steroids might down-regulate brain-derived neurotrophic factor, potentially leading to mood disorders, psychosis, headaches, and insomnia (Meszaros, 2012). This aspect has introduced a diagnostic dilemma among physicians regarding whether the manifestations are due to lupus itself or induced by corticosteroid treatment. When faced with a diagnostic dilemma, managing the situation becomes challenging. Physicians must decide whether to adopt a strategy of watchful waiting with high-dose corticosteroid treatment in SLE-induced cases or to consider reducing or tapering off the corticosteroid dosage in cases where psychiatric problems are thought to be induced by corticosteroids.

## Conclusion

A woman presented with complaints of anxiety, sadness, and depression caused by pain stemming from an organic disease, specifically a mediastinal tumor complicated by scoliosis. The patient's diagnosis was (F32.2) Severe Depressive Episode without Psychotic Symptoms, and she is receiving treatment with Stelosi 5 mg, Alprazolam 0.5 mg, Merlopam 2 mg, Valisanbe 2 mg, Amitriptyline 25 mg, and Trihexyphenidyl 2 mg. It is expected that the patient's family will provide daily support for her experiences and be educated about the goals to be achieved. These goals are not aimed at returning the body to a normal state but rather at addressing the mental and emotional issues to enable acceptance and pursuit of future life goals. The patient is scheduled for a follow-up next month so that the doctor can monitor her progress at home.

## Ethics approval

The patient provided written informed consent to be published as a case report.

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We would like to express our gratitude to the patient.

## Competing interests

The author declares that there are no conflicts of interest.

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## Underlying data

Derived data supporting the findings of this study are available from the corresponding author on request.

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