

Reports

Catatonia and Psychosis in Pediatric Neuropsychiatric Systemic Lupus Erythematosus: A Literature Review and Clinical Insights

Introduction

Jonah Im, BS¹✉[†], Hannah J Lee, BA, MPH²✉[†], Sylvia Silver, BS³✉, Madeline Mai, BS³✉, Kailin Mimaki, BS³✉, Julia Girdler, MD³✉, Eugenia Chen, MD³✉, Sabrina Reed, MD³✉, Jena Lee, MD³✉

¹ David Geffen School of Medicine at UCLA, ² David Geffen School of Medicine, University of California, Los Angeles, ³ University of California, Los Angeles

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Background

Neuropsychiatric systemic lupus erythematosus (NPSLE) is a rare complication that can involve psychosis and catatonia. Treating these syndromes together poses a clinical challenge because antipsychotics may exacerbate catatonia, while delays in appropriate intervention risk malignant progression. Due to the lack of robust evidence-based guidelines, psychiatrists are confronted with a clinical decision-making dilemma when patients present with severe psychosis and medication-refractory catatonia simultaneously, especially where gold-standard electroconvulsive therapy is unavailable. Despite the recent surge of published reports on pediatric NPSLE cases with concurrent psychosis and catatonia, an updated review does not currently exist in the literature.

Methods

The present study includes a narrative review of published pediatric NPSLE cases with co-occurring psychosis and catatonia to characterize clinical presentations and differential considerations and to delineate treatment sequences associated with outcomes.

Results

A literature review highlighted that antipsychotic use before catatonia control was associated with clinical deterioration and early discontinuation. However, a single report of continuous antipsychotic use under ongoing immunotherapy documented gradual improvement, suggesting context-dependent feasibility. First-line management emphasized benzodiazepines with early, aggressive control of lupus activity (eg, high-dose corticosteroids, cyclophosphamide, rituximab, and plasmapheresis/IVIG when indicated). For treatment-refractory catatonia, electroconvulsive therapy was consistently associated with rapid resolution of catatonia and concurrent recovery of psychotic features. Taken together, the findings recommended early recognition of catatonia, timely immunotherapy treatment, and cautious antipsychotic introduction after catatonia stabilized for optimal outcomes.

Conclusion

Pediatric NPSLE complicated by psychosis and catatonia warrants early detection with standardized catatonia screening and a sequenced approach that prioritizes rapid control



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of lupus activity and catatonia (benzodiazepines and immunotherapy), reserves antipsychotics until stabilization, and employs electroconvulsive therapy early when catatonia is refractory.

INTRODUCTION

Neuropsychiatric systemic lupus erythematosus (NPSLE) is an autoimmune disorder associated with endothelial dysfunction and blood-brain barrier disruption. These physiologic changes permit autoantibodies to infiltrate the central nervous system and cause hippocampal neuronal death.¹ Risk factors for juvenile NPSLE include positive lupus anticoagulant and anti-phospholipid antibodies. Conversely, early use of immunosuppressant agents such as cyclophosphamide and rituximab may delay NPSLE onset.¹ Psychosis occurs in about 10% of cases, whereas catatonia, a behavioral disorder characterized by abnormal movements, immobility, mutism, and impaired responsiveness, remains exceedingly rare.² A 2013 review identified only 8 pediatric NPSLE cases that presented with catatonia.³ Since then, there has been a growth of pediatric NPSLE cases presenting with catatonia as well as psychosis, but an updated comprehensive review has not yet been published.

LITERATURE SYNTHESIS

Psychosis in NPSLE typically carries a favorable prognosis when treated with a combination of antipsychotics and immunosuppressive therapy. However, catatonia in NPSLE must be treated with much greater urgency to prevent progression to malignant catatonia, a potentially fatal complication. Managing co-occurring psychosis and catatonia poses a therapeutic challenge since antipsychotic medications for psychosis work by blocking dopamine receptors, which in turn, may paradoxically worsen catatonic symptoms and precipitate malignant catatonia.⁴ Standard management involves high-dose benzodiazepines and then antipsychotic treatment following stabilization. Electroconvulsive therapy (ECT) is reserved for steroid- and benzodiazepine-refractory cases.⁴ This presents a critical clinical question in pediatric NPSLE: how should severe psychosis be managed in the presence of catatonia, especially when ECT is unavailable?⁵

This report reviews the existing literature of pediatric NPSLE cases with concurrent psychosis and catatonia, and aims to provide updated clinical insights to guide psychiatric management. Information extracted from the published pediatric cases includes demographic data, psychiatric features, pharmacological interventions, and clinical outcomes (Table 1). The cases summarized in this table underscore the clinical challenges of managing overlapping symptoms, including balancing the immunosuppressive benefits of steroids against their potential to exacerbate psychiatric symptoms and the use of antipsychotics with the risk of worsening catatonia.²

Treating pediatric NPSLE with concurrent psychosis and catatonia requires a two-fold approach addressing both the immunopathology and acute neuropsychiatric manifestations. Neuropsychiatric symptoms are suspected to origi-

nate from lupus autoantibodies infiltrating the brain, causing neuronal injury and altered neurotransmission, which then manifest as cognitive dysfunction, seizures, mood disorders, psychosis, and catatonia. These mechanisms provide a strong rationale for early, aggressive immunosuppression for neuropsychiatric recovery.¹¹

PHARMACOLOGICAL MANAGEMENT

Pharmacological management of psychosis in the setting of active catatonia requires careful sequencing and close clinical monitoring to avoid symptom exacerbation. Most pediatric reports withheld antipsychotics until catatonia was controlled, as premature use often worsened symptoms.^{4,7,8} Weiss et al reported an 8-year-old with NPSLE whose excited catatonia progressed to malignant catatonia after initiation of risperidone 1 mg.⁴ Mon et al described a 15-year-old female with NPSLE whose psychosis and catatonia both worsened rapidly on admission.⁷ After starting on olanzapine 10 mg/day, her catatonic symptoms progressively deteriorated while psychosis failed to improve, leading to discontinuation of olanzapine on day 5. Rabello et al outlined another case of a 13-year-old male with NPSLE who was started on risperidone 2 mg/day for worsening psychosis.⁸ Within 24 hours, the patient developed severe catatonia. However, the authors attribute his new onset catatonia to systemic lupus erythematosus disease progression rather than to an adverse effect from antipsychotic treatment, as discontinuing risperidone did not result in improvement or resolution of catatonic symptoms.⁸

Conversely, Perisse et al described a case of a 15-year-old female with NPSLE and psychotic depression who remained on risperidone 6 mg/day throughout a 95-day hospitalization.⁶ While her Bush-Francis Catatonia Rating Scale scores continuously worsened between days 35–60, both catatonic and psychotic symptoms generally improved in parallel with intensive immunotherapy, leading to complete symptom resolution by discharge. This case illustrates that antipsychotics may be tolerated in select circumstances, particularly when catatonia is partially controlled or when immunotherapy is concurrently optimized. Collectively, these reports highlight the heterogeneity of responses, suggesting that while antipsychotics generally pose a high risk during active catatonia, their careful use may be reasonable after stabilization, guided by clinical judgment.

ELECTROCONVULSIVE THERAPY

Electroconvulsive therapy (ECT) has emerged as the most consistently effective intervention for refractory pediatric NPSLE with catatonia and psychosis. 3 patients with steroid- and benzodiazepine-refractory catatonia in our review of the literature experienced expeditious improvement and symptom resolution.^{5,7,9} Leon et al described a case of a 14-year-old female with worsening psychosis and catato-

Table 1. Reported Cases from Existing Literature of Pediatric Patients With Neuropsychiatric Systemic Lupus Erythematosus Experiencing Both Psychosis and Catatonia

Authors	Patient demographics	Clinical psychiatric features	Inpatient psychiatric management	Inpatient SLE management	Clinical outcomes
Perisse et al ⁶	15-year-old female	Catatonia: Catalepsy, stupor, abnormal posturing, waxy flexibility, fixed staring, muscular rigidity, and verbigeration.	Catatonia: Benzodiazepine.	Methylprednisolone up to 1 g/day and pulse cyclophosphamide (0.7 g/m ²). Plasma exchange (4 sessions, at 60 mL/kg per session).	Full resolution after 1 year, euthymic without psychotic symptoms.
		Psychosis: Delusions, hallucinations, disorganized speech and behavior, alogia, and social withdrawal.	Psychosis: Risperidone, Fluoxetine.		
Mon et al ⁷	15-year-old female	Catatonia: Mutism, negativism, refusal of food and sleep, increased muscle tone without parkinsonism, waxy flexibility.	Catatonia: Refractory to diazepam (up to 30 mg/day for 6 days), amantadine (100 mg/day for 3 days), and lorazepam (up to 18 mg/day over 12 days). Showed rapid response to right unilateral ECT.	IV methylprednisolone up to 1 g/day, IV cyclophosphamide (750 mg/m ²), IV immunoglobulin, and rituximab (375 mg/m ²), and a 7-day course of plasmapheresis.	Able to return to school.
		Psychosis: Agitation, disorientation, death-related fears, persecutory delusions.	Psychosis: Olanzapine 10 mg/day discontinued on day 5 due to lack of improvement.		
Weiss et al ⁴	8-year-old female	Catatonia: Extreme excitement, refusal of food and liquids, insomnia, negativism, grimacing, self-injurious behavior, mutism, incontinence, and unresponsiveness to painful stimuli.	Catatonia: IV midazolam + lorazepam up to 2.5 mg q4h.	Not reported in source.	5 years later, stable on aripiprazole 2 mg and clonazepam 2 mg daily.
		Psychosis: Social withdrawal, fearfulness, mumbling, inappropriate laughter, insomnia, screaming, hallucinations, and identity confusion.	Psychosis: Risperidone (1 mg am, 2 mg HS) discontinued once diagnosed with excited catatonia.		
Rabello et al ⁸	13-year-old male	Catatonia: Extreme hypoactivity, mutism, fixed staring, waxy flexibility, and mild spastic limb stiffness.	Catatonia: Lorazepam up to 10 mg/day and diazepam up to 20 mg/day.	Prednisone up to 40 mg/day, methylprednisolone pulse therapy up to 1 g/day, and hydroxychloroquine up to 400 mg/day.	8 months postdischarge, catatonia resolved.
		Psychosis: Social withdrawal, visual hallucinations, hypervigilance and persecutory delusions.	Psychosis: Risperidone up to 2 mg/day.		
Ince et al ⁹	13-year-old female	Catatonia: Rigidity, ambitendency, mutism, and several days of refusal of food and liquids.	Catatonia: Did not respond to lorazepam up to 17 mg/day; 12 ECT sessions over 30 days.	IV methylprednisolone and cyclophosphamide 2.5 mg 4 times/day.	Discharged stable, without psychiatric medications.
		Psychosis: Bizarre behavior, hallucinations, paranoia, and social withdrawal.	Psychosis: Not reported in source.		
Tsai et al ¹⁰	18-year-old female	Catatonia: Slow response, stupor, posturing, waxy flexibility, and negativism.	Catatonia: Oral lorazepam (2 mg, 4 times/day).	Did not respond to methylprednisolone up to 1 g/day, hydrocortisone, azathioprine, and hydroxychloroquine. Received 5 sessions of plasmapheresis.	Discharged stable, without psychiatric medications.
		Psychosis: Incoherent speech, persecutory delusions, mood swings, hysterical yelling, refusal of food, and negative thinking without suicidal behavior.	Psychosis: Not reported in source.		

Authors	Patient demographics	Clinical psychiatric features	Inpatient psychiatric management	Inpatient SLE management	Clinical outcomes
Leon et al ⁵	14-year-old female	Catatonia: Waxy flexibility, catalepsy, stupor, excitement, negativism, mutism, echopraxia, and echolalia.	Catatonia: did not respond to continuous lorazepam infusion up to 20 mg/day. The Received 11 bilateral ECT sessions, with energy settings gradually increasing from 76.1 mc to 457.2 mc.	Methylprednisolone up to 1 g/day, cyclophosphamide and rituximab.	Discharged stable, without psychiatric medications.
		Psychosis: Psychomotor agitation, and visual and auditory hallucinations.	Psychosis: Not reported in source.		
Brelinski et al ¹¹	17-year-old female	Catatonia: Bilateral symmetrical extrapyramidal hypertonia, alternating agitation and prostration, mutism, oppositional behavior with fixed gaze, and disorganized crawling movements.	Catatonia: Lorazepam up to 15 mg/day.	Corticosteroid (30 mg/day) and 4 IV doses of cyclophosphamide (0.6 g/m ²).	3 years later, remains off psychotropic medication. Subsequent lupus relapse was stabilized without psychiatric complications.
		Psychosis: Persecutory delusions.	Psychosis: Amisulpride up to 600 mg/day.		

HS = at bedtime; IV = intravenous.

nia who was unresponsive to 5 days of pulse methylprednisolone, intravenous cyclophosphamide, and rituximab.⁵ Following ECT, she experienced rapid resolution of both psychotic and catatonic symptoms, with Bush-Francis Catatonia Rating Scale scores declining from 44 to 4 after 10 weekly sessions.⁵ Mon et al outlined a 15-year-old female whose NPSLE-related catatonia and psychosis did not improve despite aggressive medication management, including risperidone, pulse methylprednisolone, lorazepam, cyclophosphamide, rituximab, and plasmapheresis, but nearly resolved after 4 ECT sessions.⁷ Finally, Ince et al documented remission in a 13-year-old female with recurrent catatonia after 12 ECT sessions. She had not previously responded to outpatient high-dose oral prednisone, methylprednisolone, cyclophosphamide infusions, and lorazepam.⁹ However, her symptoms remitted after only 12 ECT sessions during readmission.⁹ Collectively, these cases highlight ECT as a pivotal intervention with dual efficacy for catatonia and psychosis, particularly in pharmacological-refractory pediatric NPSLE.

CLINICAL IMPLICATIONS

Current guidelines and our review of published cases on pediatric NPSLE with catatonia suggest that antipsychotic use often coincides with acute worsening of catatonic symptoms, whether from medication effects or disease progression.^{4,7,8} These findings also indicate that premature initiation of antipsychotics may exacerbate catatonia symptoms. In most cases, antipsychotics were discontinued shortly after initiation, limiting conclusions about their role once catatonia was controlled. The rare case of sustained antipsychotic use with improvement indicates possible utility in select settings, but this remains the exception.⁶ Evidence from the literature consistently supports early recognition of catatonia, aggressive immunosuppression, and timely escalation to ECT when first-line measures fail. Antipsy-

chotics should therefore be reserved for persistent psychosis and introduced cautiously, only after stabilization of catatonia.

Current knowledge remains limited to isolated case reports, thereby limiting the ability to develop more comprehensive and nuanced evidence-based guidelines. Future work should consider greater patient sample sizes from multicenter registries and prospective studies to clarify prevalence, clinical trajectories, and treatment outcomes. Important areas of new research include determining safe timing for antipsychotic use after catatonia resolution, evaluating maintenance immunotherapy in preventing recurrence, and developing standardized algorithms that integrate immunosuppressive, psychiatric, and neuromodulatory approaches.

PLAIN LANGUAGE SUMMARY

Neuropsychiatric systemic lupus erythematosus (NPSLE) is a rare complication of lupus that can cause both psychosis and catatonia. Managing these symptoms together is challenging, as administering antipsychotics may worsen catatonia. Standard management includes high-dose benzodiazepines, introducing antipsychotics after catatonia stabilizes, and electroconvulsive therapy (ECT) for refractory cases. This poses a dilemma when patients experience severe psychosis and medication-refractory catatonia, especially where ECT is unavailable. Despite the recent surge of published pediatric NPSLE cases with concurrent psychosis and catatonia, there has not been an updated review of the literature. Our report summarizes the clinical outcomes from 8 patient cases to provide a brief update of the literature, examine treatment modalities, and discuss the importance of judicious pharmacological sequencing in optimizing outcomes.

ABOUT THE AUTHORS

Jonah Im, BS, David Geffen School of Medicine, University of California, Los Angeles, 10833 Le Conte Ave, Los Angeles, CA, 90095, USA.

Hannah Lee, BA, MPH, David Geffen School of Medicine, University of California, Los Angeles, 10833 Le Conte Ave, Los Angeles, CA, 90095, USA.

Sylvia Silver, BS, David Geffen School of Medicine, University of California, Los Angeles, 10833 Le Conte Ave, Los Angeles, CA, 90095, USA.

Madeline Mai, BS, College of Letters and Science, University of California, Los Angeles, 405 Hilgard Avenue, Los Angeles, CA, 90095, USA.

Kailin Mimaki, BS, College of Letters and Science, University of California, Los Angeles, 405 Hilgard Avenue, Los Angeles, CA, 90095, USA.

Julia Girdler, MD, UCLA Mattel Children's Hospital, 757 Westwood Plaza, Los Angeles, CA, 90095, USA.

Eugenia Chen, MD, UCLA Mattel Children's Hospital, 757 Westwood Plaza, Los Angeles, CA, 90095, USA.

Sabrina Reed, MD, UCLA Mattel Children's Hospital, 757 Westwood Plaza, Los Angeles, CA, 90095, USA.

Jena Lee, MD, UCLA Mattel Children's Hospital, 757 Westwood Plaza, Los Angeles, CA, 90095, USA.

CORRESPONDENCE TO:

Hannah Lee, BA, MPH; HannahLee@mednet.ucla.edu.

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AUTHOR CONTRIBUTIONS

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