Submitted on: 10/06/2025
Approved on: 01/12/2026

CASE REPORT

Severe Autoimmune Hepatitis as the Initial Presentation of Juvenile Systemic Lupus Erythematosus: A Case Report

Laura Cecilia Fernandes Silva[1], Mariana Antunes Villa[1], Caroline Ogea Tavares[1], Ana Luiza Amorim Caparroz[2]

Keywords:
Lupus Erythematosus, Systemic.
Hepatitis, Autoimmune.
Autoimmune Diseases.
Pediatrics.
Immunosuppression Therapy

Abstract

Objective: report the case of a 13-year-old adolescent with overlapping juvenile systemic lupus erythematosus and autoimmune hepatitis, accompanied by a review of the literature on the diagnostic and therapeutic challenges of this association. Case description: the patient, previously healthy, presented with diarrhea, abdominal pain, jaundice, and peripheral edema. Investigation revealed autoimmune hemolytic anemia, thrombocytopenia, leukopenia, hypergammaglobulinemia, coagulopathy, elevated transaminases, and complement consumption. Tests showed high ANA titers, positive anti-DNA, and liver biopsy compatible with autoimmune hepatitis. Infectious causes and other hepatic etiologies were excluded. The diagnosis of autoimmune hepatitis associated with juvenile systemic lupus erythematosus was confirmed, and treatment with methylprednisolone pulse therapy was instituted, followed by prednisone and azathioprine, with favorable clinical and laboratory evolution. Discussion: the overlap between juvenile systemic lupus erythematosus and autoimmune hepatitis is rare, but seems to occur more frequently in children and adolescents than in adults. The differentiation between lupus liver disease and autoimmune hepatitis is essential, as it implies different therapeutic approaches. The diagnosis requires comprehensive clinical and laboratory evaluation, complemented by liver biopsy. Treatment is based on immunosuppression with corticosteroids, hydroxychloroquine and azathioprine, which can prevent progression to cirrhosis and liver failure, especially when started early. The possibility of juvenile systemic lupus erythematosus and autoimmune hepatitis association should be considered in all patients with juvenile systemic lupus erythematosus and persistent liver abnormalities. Early and appropriate diagnosis and treatment are essential to optimize prognosis and reduce the risk of serious complications.

[1] Faculdade de Medicina de São José do Rio Preto, Medicine - São José do Rio Preto - São Paulo - Brazil.
[2] Hospital da Criança e Maternidade, Pediatric Rheumatology - São José do Rio Preto - São Paulo - Brazil.

Correspondence to:
Laura Cecilia Fernandes Silva
Faculdade de Medicina de São José do Rio Preto, Medicine, São José do Rio Preto, SP, Brazil. E-mail: lauraceciliafs@gmail.com.

Resid Pediatr. 2026;16(4):e1570
DOI: https://doi.org/10.25060/residpediatr-2026-1570

Creative Commons. Attribution-NonCommercial-ShareAlike 4.0 International.

INTRODUCTION

Systemic lupus erythematosus (SLE) is a complex, multisystem autoimmune disease whose clinical presentation can range from mild to life-threatening.[1] Juvenile SLE (jSLE) is rare, with an estimated prevalence of 3.3–8.8 per 100,000 children. Compared to adult onset SLE, jSLE is usually more severe, with higher rates of hematological involvement and lupus nephritis, greater need for immunosuppressive therapies and higher mortality.[2] Diagnosis can be particularly challenging in children and adolescents. Although the EULAR/ACR 2019 classification criteria provide guidance for identifying pediatric patients with lupus, they are not diagnostic criteria and may lead to overdiagnosis or false exclusions.[3]

Liver involvement in SLE may arise from the disease itself, adverse effects of immunosuppressive therapy, or coexisting autoimmune conditions.[4] Among these, autoimmune hepatitis (AIH) is particularly notable. AIH is a chronic, progressive inflammatory liver disease of unknown etiology, characterized by elevated transaminases, hypergammaglobulinemia, specific autoantibodies, and typical histological features such as lymphocytic infiltrates and interface hepatitis. The disease can present acutely or insidiously and, if untreated, may progress to liver failure requiring transplantation.[5]

AIH can be classified into two subtypes. Type 1 is characterized by positivity for anti-nuclear antibodies (ANA) and anti-smooth muscle antibodies, often accompanied by extrahepatic manifestations such as arthralgia, malar rash, hemolytic anemia, and immune thrombocytopenia.[5,6] Type 2 is defined by the presence of anti-LKM1 and anti-LC1 antibodies, usually with negative ANA, and its manifestations are largely restricted to liver damage, with minimal involvement of other organs.[5,6] In children, type 1 predominates and typically presents in adolescence, whereas type 2 affects younger age groups. Pediatric AIH generally exhibits a more aggressive phenotype than in adults and is associated with other autoimmune diseases in approximately 20% of cases.[5]

As with jSLE, the diagnosis of AIH can be a major challenge, since there is no specific marker for this disease. Diagnosis requires a comprehensive assessment of clinical and laboratory findings, exclusion of alternative etiologies, and, ultimately, confirmation by liver biopsy.[6] The revised International Autoimmune Hepatitis Group (IAIHG, 1999) score can help establish the diagnosis of AIH in pediatric patients; however, its application requires caution, since it is less accurate in complex cases or with atypical manifestations, which are common in this age group.[6,7]

The overlap between SLE and AIH is uncommon but clinically significant, due to the risk of progression to terminal liver failure and the potential need for transplantation, particularly when diagnosis and treatment are delayed.[8] This rare but important condition is illustrated in the case described here: a patient with jSLE whose initial presentation was severe, acute, immune-mediated hepatitis with rapid deterioration of liver function.

CASE REPORT

A 13-year-old Black Brazilian female presented with a 10-day history of diarrhea with liquid stools and abdominal pain, progressing to generalized edema—predominantly in the lower limbs—and jaundice. She was initially treated in an emergency department and subsequently referred for hospitalization and further investigation.

There was no history of fever, pale stools, dark urine, urinary changes, respiratory or cardiovascular symptoms, neurological or behavioral alterations, weight loss, or other systemic complaints. The patient had been previously healthy and denied use of chronic or recent medications.

The patient was in good general condition, afebrile, jaundiced (2+/4+), and pale (2+/4+), with slight frontal alopecia that progressed during hospitalization to non-scarring alopecia involving the entire scalp. No other skin or mucous membrane abnormalities were observed. She had symmetrical lower limb edema with a positive Locker sign, palpable peripheral pulses, and a capillary refill time of less than 2 seconds. Abdominal examination revealed non-tender hepatomegaly extending 5 cm below the right costal margin, without evidence of collateral circulation. Cardiovascular, respiratory, and musculoskeletal examinations were unremarkable.

Laboratory tests revealed elevated transaminases (AST: 315 U/L, reference: up to 35–40 U/L; ALT: 147 U/L, reference: up to 35 U/L with mild cholestatic involvement (ALP: 317 U/L, reference: 100 to 300 U/L; GGT: 72 U/L, reference: up to 25–30 U/L, coagulopathy (INR: 1.41), and hypoalbuminemia (21 g/L; reference: 35 to 50 g/L. Findings were consistent with autoimmune hemolytic anemia (Hb: 7.5 g/dL [75 g/L], Hct: 22.4 %, direct Coombs positive, reticulocytes: 3.5 %), leukopenia/lymphopenia (WBC: 2.79 × 10^9/L, lymphocytes: 0.67 × 10^9/L), and thrombocytopenia (72 × 10^9/L). There was marked hypergammaglobulinemia (IgG: 6.799 g/L; reference: 1.15 g/L for age), while renal function and urinary sediment remained normal. Serologic tests for hepatitis A, B, and C, including anti-HBs, were negative. ANA was positive at a titer of 1:1280 with a homogeneous nuclear pattern, accompanied by consumption of complement fractions C3 and C4, and positivity for anti-DNA antibody. Antibodies against smooth muscle, LKM1, mitochondria, and phospholipids were negative. Echocardiogram revealed no abnormalities.

Liver biopsy revealed chronic hepatitis with moderate interface activity and marked portal, periportal, and parenchymal lymphoplasmacytic infiltrates, with early signs of cirrhosis, consistent with an autoimmune etiology. After excluding infectious causes and thromboembolic phenomena, the diagnostic hypothesis of AIH associated with jSLE was established. Table 1 presents the EULAR/ACR 2019 classification criteria for SLE and the revised International Autoimmune Hepatitis Group (IAIHG, 1999) score for diagnosing AIH, highlighting the criteria met by the patient.[3,7]

Treatment was initiated to induce remission with pulse therapy using methylprednisolone 250 mg/day for 3 days in association with vitamin K 10 mg/day, followed by maintenance therapy with prednisone 60 mg/day, hydroxychloroquine 5mg/kg/day and azathioprine 100 mg/day. After nearly 30 days of hospitalization, she was discharged in good general condition, demonstrating progressive clinical and laboratory improvement, and was scheduled for outpatient follow-up.

The procedures followed were in accordance with the ethical standards of the Research Ethics Committee. CAAE number: 85595024.0.0000.5415.

DISCUSSION

Although the liver is not typically a primary target organ in systemic lupus erythematosus (SLE), elevated liver

Table 1. Clinical and laboratory findings of the patient based on the classification criteria for Systemic Lupus Erythematosus (EULAR/ACR 2019) and the revised AIH Score (IAIHG 1999). The criteria presented by the patient and their scores are highlighted (***).

SLE classification criteria - EULAR/ACR-2019			**Revised AIH score - IAIHG 1999**		
Entry criterion: ANA ≥ 1:80 in Hep-2 cells* **					
Domain	**Criteria**	**Score**	**Category**	**Criteria**	**Score**
Constitutional	Fever (>38.3°C)	2	Sex	**Female*** **	**+2*** **
Hematological	**Autoimmune hemolysis*** **	4	Alkaline phosphatase/AST or ALT ratio	**ALP/AST or ALT < 1.5*** **	**+2*** **
	Plateletopenia (<100,000/mm³)	**4*** **		ALP/AST or ALT > 3	-2
	Leukopenia (<4,000/mm³)	3	Immunoglobulin dosage	**IgG or gamma-globulin > 2x ULN****	**+3****
Neuropsychiatric	Delirium	2		IgG or gamma-globulin 1.5-2x ULN	+2
	Psychosis	3		IgG or gamma globulin 1-1.5x ULN	+1
	Seizures	5	Autoantibodies	**Autoantibodies (ANA, SMA, LKM1) ≥1:80*** **	**+3*** **
Mucocutaneous	**Non-scarring alopecia*** **	**2*** **		Autoantibodies (ANA, SMA, LKM1) =1:40	+1
	Oral ulcers	2	Viral markers	AMA positive	-4
	Acute cutaneous lupus	6		**Negative*** **	**+3*** **
	Subacute cutaneous lupus/Discoid lupus	4		Positive	-3
Serous	Pleural or pericardial effusion	5	Use of hepatotoxic drugs	Yes	-4
	Acute pericarditis	6		**No*** **	**+1*** **
Musculoskeletal	Arthritis (≥2 joints with synovitis and morning stiffness ≥30min)	6	Alcohol consumption	**< 25g/day*** **	**+2*** **
Renal	Proteinuria (>0.5g/24h)	4		> 60g/day	-2
	Lupus nephritis class II or V	8	Histopathology	**Interface hepatitis*** **	**+3*** **
	Lupus nephritis class III or IV	10		Lymphoplasmocytic infiltrate	+1***
Immunological	Antiphospholipid antibodies	2		Hepatocyte rosettes***	+1***
	Complement (low C3 and/or C4)***	3-4***		Absence of typical findings	-5
	Anti-dsDNA or anti-Sm***	6***		Biliary changes or other etiology	-3
Total score		16 points	Additional factors	Associated autoimmune disease	+2***
				Other autoantibodies (e.g. anti-SLA/LP)	+2
			Therapeutic	HLA DR3 or DR4 present	+1
				Response to therapy - remission	+2
Minimum qualifying score for SLE		***10 points***		Response to therapy - relapse	+3
				Total score	**23 points**
				Minimum score for definitive diagnosis of AIH	***15 points***

ANA: antinuclear antibodies, ALP: alkaline phosphatase, AST: aspartate aminotransferase, ALT: alanine aminotransferase, SMA: anti-smooth muscle antibody

enzymes are observed in 25–59% of patients during the course of the disease.[4,5] These abnormalities may result from hepatotoxic medications, metabolic disorders, viral hepatitis, disease activity, or corticosteroid-induced hepatic steatosis.[4,5] However, since up to 41% of SLE patients may have a second autoimmune condition, autoimmune hepatitis (AIH) should be considered in the differential diagnosis for any lupus patient with persistently elevated transaminases.[9]

The precise prevalence of SLE-AIH overlap remains unknown and is generally considered rare, with most data derived from adult studies.[4,5,10] Pediatric studies, however, suggest that this association may be more common than previously thought. Meanwhile, a Brazilian cohort study by Setoue et al. (2018), involving 1,463 patients with childhood-onset lupus, identified autoimmune hepatitis among the associated autoimmune diseases.[10]

The etiology of AIH and jSLE remains unclear; however, both conditions share immunological features, including the presence of antinuclear antibodies (ANA) and multisystem involvement, suggesting common immunopathogenic mechanisms and a potential genetic predisposition.[5]

In most cases, liver involvement precedes or occurs within the first few years after the diagnosis of jSLE.[5,11] ANA is universally present in all cases of overlap between jSLE and AIH, and 43% of patients are also positive for anti-smooth muscle antibodies.[12] Despite the association between these potentially serious conditions, most pediatric patients experience mild clinical manifestations without significant liver complications.[11]

Management of jSLE associated with AIH typically requires high-dose corticosteroids, particularly during remission induction, which raises concerns about potential adverse effects of prolonged use, such as reduced growth velocity, osteopenia, hypertension, and marked physical changes.[5,12,13] In this context, corticosteroid-sparing agents are essential, with azathioprine being the preferred immunosuppressant for managing jSLE-AIH overlap—the approach used in the case described in this report.[5,12,13] Alternative therapies, such as mycophenolate mofetil and rituximab, may be used in refractory cases, while liver transplantation is considered in the presence of advanced cirrhosis. Immunosuppressive therapy should generally be maintained for at least 2 years after hepatic biochemical remission and 5 years after lupus remission.[14]

Prognosis depends on achieving complete biochemical remission and maintaining liver function, along with control of other systemic manifestations of SLE. Most patients respond satisfactorily to immunosuppressive therapy, with normalization of liver enzymes.[14] In a study of 23 patients with SLE-AIH overlap, none progressed to hepatocellular carcinoma, required transplantation, or died from liver failure after a mean follow up of 7.6 years; however, patients presenting with an initial serum IgG level more than twice the upper limit of normal had a higher risk of developing cirrhosis.[15]

Hence, the overlap between jSLE and AIH, although rare, has great clinical relevance, especially in the pediatric population, where its occurrence seems to be more frequent than in adults. Comprehensive clinical and laboratory evaluation, including liver biopsy whenever possible, is essential for early diagnosis. In this context, the EULAR/ACR-2019 criteria for SLE and the revised IAIHG-1999 score for AIH can serve as important diagnostic support tools. Despite the potential severity of this association, the prognosis tends to be favorable when there is early recognition and timely initiation of appropriate immunosuppressive therapy. In most cases, there is a satisfactory clinical response, with progressive normalization of liver enzymes through treatment with corticosteroids and azathioprine. The possibility of AIH should be considered in all patients with jSLE and persistent alterations in liver function tests.

ADDITIONAL INFORMATION

Funding: The authors declare that they received no specific funding for this study. Conflicts of interest: The authors declare that there are no conflicts of interest. CAAE approval number from the Research Ethics Committee: 85595024.0.0000.5415

REFERENCES

1. Basta F, Fasola F, Triantafyllias K, Schwarting A. Systemic lupus erythematosus (SLE) therapy: the old and the new. Rheumatol Ther. 2020;7(3):433-46. doi: 10.1007/s40744-020-00212-9.
2. Kachaner A, Mageau A, Timsit JF, Rio J, Papo T, Sacré K. SLE patients with childhood-onset: a nation-wide population-based study. Autoimmun Rev. 2025;24(6):103802. doi: 10.1016/j.autrev.2025.103802.
3. Aringer M, Costenbader K, Daikh D, Brinks R, Mosca M, Ramsey-Goldman R, et al. 2019 European League Against Rheumatism/American College of Rheumatology classification criteria for systemic lupus erythematosus. Ann Rheum Dis. 2019;78(9):1151-9. doi: 10.1136/annrheumdis-2018-214819.
4. Sönmez HE, Batu ED, İşgüder R, Şahin N, Aliyev E, Aslan E, et al. Exploring gastrointestinal manifestations in childhood onset systemic lupus erythematosus: insights from a multicenter study. Lupus. 2024;33(12):1358-64. doi: 10.1177/09612033241279071.
5. Deen MEJ, Porta G, Fiorot FJ, Campos LMA, Sallum AME, Silva CAA. Autoimmune hepatitis and juvenile systemic lupus erythematosus. Lupus. 2009;18(8):747-51. doi: 10.1177/0961203308100559.
6. Mack CL, Adams D, Assis DN, Kerkar N, Manns MP, Mayo MJ, et al. Diagnosis and management of autoimmune hepatitis in adults and children: 2019 practice guidance and guidelines from the American Association for the Study of Liver Diseases. Hepatology. 2020;72(2):671-722. doi: 10.1002/hep.31065.
7. Alvarez F, Berg PA, Bianchi FB, Bianchi L, Burroughs AK, Cancado EL, et al. International Autoimmune Hepatitis Group Report: review of criteria for diagnosis of autoimmune hepatitis. J Hepatol. 1999;31(5):929-38. doi: 10.1016/S0168-8278(99)80297-9.
8. Tipán-Barros JM, Abril Orellana XG, Patiño Rocha CF, Tipán-Barros TM, Freire Ochoa JA. Pediatric systemic lupus erythematosus associated with autoimmune hepatitis and nephritic syndrome: a case report and review of the literature. Rev Ecuat Pediatr. 2023;24(1):7-15. doi: 10.52011/194.

9. AlAhmed O, Sivaraman V, Moore-Clingenpeel M, Ardoin SP, Bout-Tabaku S; CARRA Registry Investigators. Autoimmune thyroid diseases, autoimmune hepatitis, celiac disease and type 1 diabetes mellitus in pediatric systemic lupus erythematosus: results from the CARRA Legacy Registry. Lupus. 2020;29(14):1926-36. doi: 10.1177/0961203320961469.

10. Setoue DN, Pitta AC, Fiorot FJ, Nastri MM, Novak GV, Molinari BC, et al. Symptomatic polyautoimmunity at diagnosis of 1463 childhood-onset lupus: a Brazilian multicenter study. Autoimmun Rev. 2018;17(8):836-9. doi: 10.1016/j.autrev.2018.03.009.

11. Balbi VA, Montenegro B, Pitta AC, Schmidt AR, Farhat SC, Coelho LP, et al. Autoimmune hepatitis in 847 childhood-onset systemic lupus erythematosus population: a multicentric cohort study. Adv Rheumatol. 2018;58(1):43. doi: 10.1186/s42358-018-0043-7.

12. Salem C, Makhoul E, Murr TEI. Case report and review of literature: an overlap syndrome of autoimmune hepatitis and systemic lupus erythematous. Clin Med Rev Case Rep. 2019;6:249. doi: 10.23937/2378-3656/1410249.

13. Lai WT, Cho WH, Eng HL, Kuo MH, Huang FC. Overlap syndrome involving systemic lupus erythematosus and autoimmune hepatitis in children: a case report and literature review. Front Pediatr. 2019;7:310. doi: 10.3389/fped.2019.00310.

14. Beisel C, Weiler-Normann C, Teufel A, Lohse AW. Association of autoimmune hepatitis and systemic lupus erythematodes: a case series and review of the literature. World J Gastroenterol. 2014;20(35):12662-7. doi: 10.3748/wjg.v20.i35.12662.

15. Lim DH, Kim YG, Lee D, Ahn SM, Hong S, Lee CK, et al. Immunoglobulin G levels as a prognostic factor for autoimmune hepatitis combined with systemic lupus erythematosus. Arthritis Care Res (Hoboken). 2016;68(7):995-1002. doi: 10.1002/acr.22800.