

## Case Report

# A UNIQUE PRESENTATION OF SYSTEMIC LUPUS ERYTHEMATOSUS IN A 7-YEAR-OLD CHILD

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## ABSTRACT

This case report describes a 7-year-old female who presented with lupus nephritis in association with endocrinopathies, central nervous system (CNS) lupus, Libman-Sacks endocarditis which are rare manifestations of this disease in childhood.

**Key Words:** Systemic lupus erythematosus, endocrinopathies, central nervous system lupus, Libman-Sacks endocarditis

## INTRODUCTION

Systemic lupus erythematosus is a widespread vasculitis characterized by fibrinoid necrosis of the vessel wall manifested in multisystem organ damage and rarely seen in childhood. Although renal, articular, pulmonary, central nervous system and cardiovascular manifestations of the disease are well defined, endocrinopathies presenting as hypo- or hyperthyroidism and diabetes mellitus are quite rare and yet to be investigated. We present a 7-year-old girl lupus patient with a unique combination of membranous glomerulonephritis, Libman-Sacks endocarditis, hyperthyroidism, diabetes mellitus and central nervous system involvement.

## CASE REPORT

A 7-year-old girl was referred to our hospital due to high blood pressure refractory to antihypertensive therapy. Her history revealed that she had had a

diagnosis of nephrotic syndrome at the age of 5. Then she had had proteinuria (4+), hematuria (4+) and low C3 level (0.26 gm/L [normal, 0.77-1.95]). The family reported that she had received irregular prednisone therapy (2 mg/kg/day) for a few months due to noncompliance. Her physical examination revealed a mentally retarded girl with a blood pressure of 150/95 mm-Hg. She had a 3/6 systolic murmur best heard at apex and hepatomegaly besides widespread edema and ascites.

Initial laboratory results included; urinalysis-protein, 4+; blood, 4+ (with multistix); 10 to 15 erythrocytes, and 10-25 granular casts per high power field in the sediment; 24 hour urine protein of 2.5 gm. Complete blood count, serum electrolytes and liver function tests were within normal limits. Erythrocyte sedimentation rate was 33 mm/hour by the Westergren method. Prothrombin and activated partial thromboplastin time values were increased. Blood urea nitrogen and serum creatinine levels were 22 mg/dl and 1.6 mg/dl, respectively. Total protein level was 5,2 gm/dl and albumin level was 1,8 gm/dl. Blood glucose values fluctuated between 110 mg/dl and 439 mg/dl, without any evidence of ketosis. Hemoglobin A1c level was within normal limits. Direct Coombs test was negative. Serum complement levels were; C3, 0.925 gm/L and C4 0.343 gm/L (normal, 0.07 to 0.4 gm/L). Thyroid function tests revealed; T4, 1.50 µg/dl (normal 4.5 - 12.5 µg/dl) and TSH, 124 mU/L (normal, 0.4-4 mU/L). Antinuclear antibody titer was positive at a dilution of 1:320 and anti-dsDNA level was 102.4 IU/ml (normal <100 IU/ml). Anti-Sm, anti-RNP, anti-islet cell and antithyroid antibodies were negative, whereas anticardiolipin antibody test was positive (IgG 41 GPL [normal, <13GPL]).

Her renal ultrasound depicted bilateral nephromegaly and increased echogenicity. Renal biopsy specimen findings were consistent with membranous glomerulonephritis of lupus nephritis (class V lupus nephritis according to the WHO morphologic classification).

Her echocardiography showed moderate mitral regurgitation and severe pericarditis besides a pea-sized vegetation on the atrial surface of mitral valve, which was consistent with Libman-Sacks endocarditis (Fig 1). Electrocardiographic evidence of second degree heart block was present. Thyroid ultrasound revealed normal size thyroid gland in its normal location. Her cranial magnetic resonance imaging showed infarctions on right posterior parietal area and internal capsular region (Fig. 2a, b).

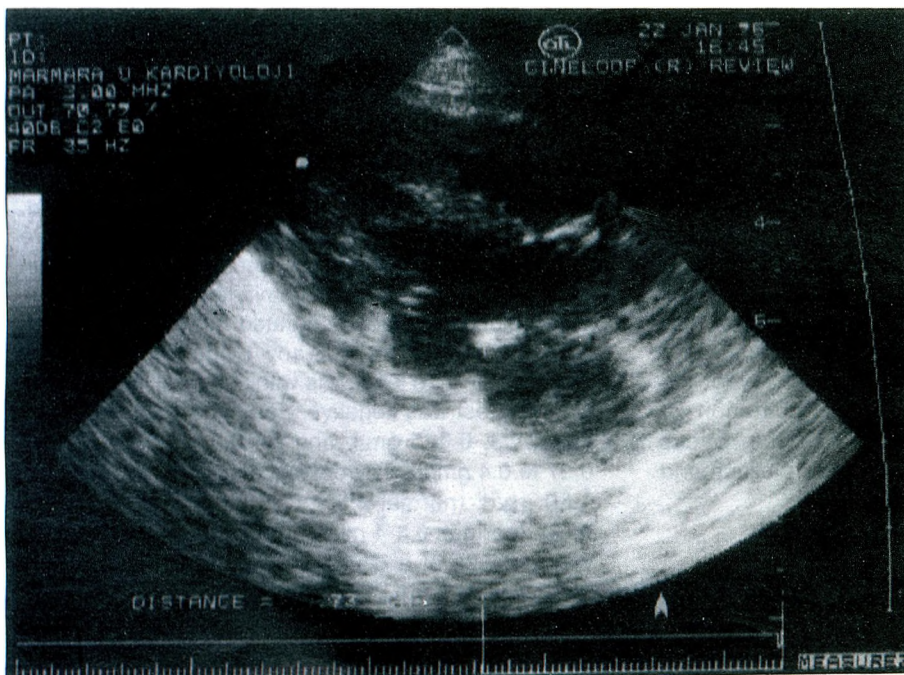
She has fulfilled the criteria for SLE according to American College of Rheumatology (1). Her therapy was planned as oral prednisone (2 mg/kg/day) and monthly intravenous administration of cyclophosphamide (750 mg/m<sup>2</sup>). She developed persistent hypoglycemia upon initiation of prednisone and insulin therapy was started. Hypothyroidism was another manifestation of her clinical picture and her thyroid function tests returned to normal with the use of levothyroxin. Her renal function improved and nephrotic syndrome resolved after the second cyclophosphamide infusion. Her hypertension was treated with a calcium channel blocker. Pericardial effusion resolved with prednisone therapy (2 mg/kg/day).

## DISCUSSION

SLE is an uncommon disease of childhood and rarely diagnosed before 5 years of age. Our patient presented with lupus carditis, nephritis, CNS lupus, hypothyroidism and glucose intolerance with progression to overt diabetes upon initiation of steroid therapy.

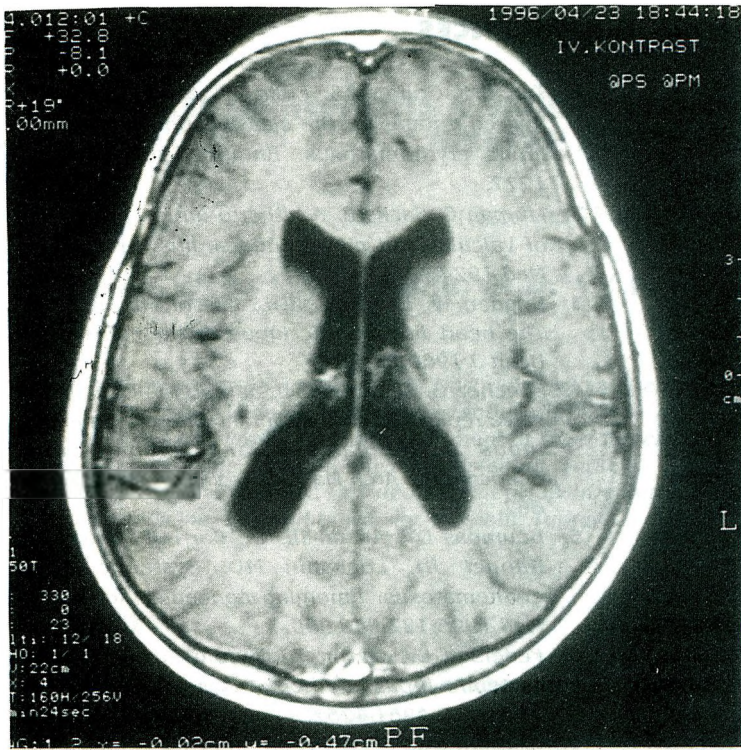
The most characteristic finding of lupus carditis is endocardial involvement, as described by Libman-Sacks (2), which is present in 13 to 50 percent of autopsy studies (3). Sanchez et al. reported a 16-year-old girl as the youngest SLE patient with Libman-Sacks endocarditis (4). Valvular lesions have been seen with increased frequency in patients with SLE and antiphospholipid antibodies, which have led to the speculation of a possible casual relationship (5). Our case has presented with Libman-Sacks endocarditis and elevated anticardiolipin antibodies.

Autoimmune endocrinopathies are uncommon in patients with SLE. An association between thyroid autoimmune disease and SLE has been suggested due to the presence of autoantibodies in these patients. It is shown that thyroid involvement in SLE is more common among children than adults (6). In the literature, anti-islet cell or antithyroid antibodies were shown to be present in all lupus cases associated with endocrinopathies (6,7). We were not able to show the presence of autoantibodies in our case, but the clinical and laboratory evidence of diabetes and hypothyroidism were present. The frequency of HLA-

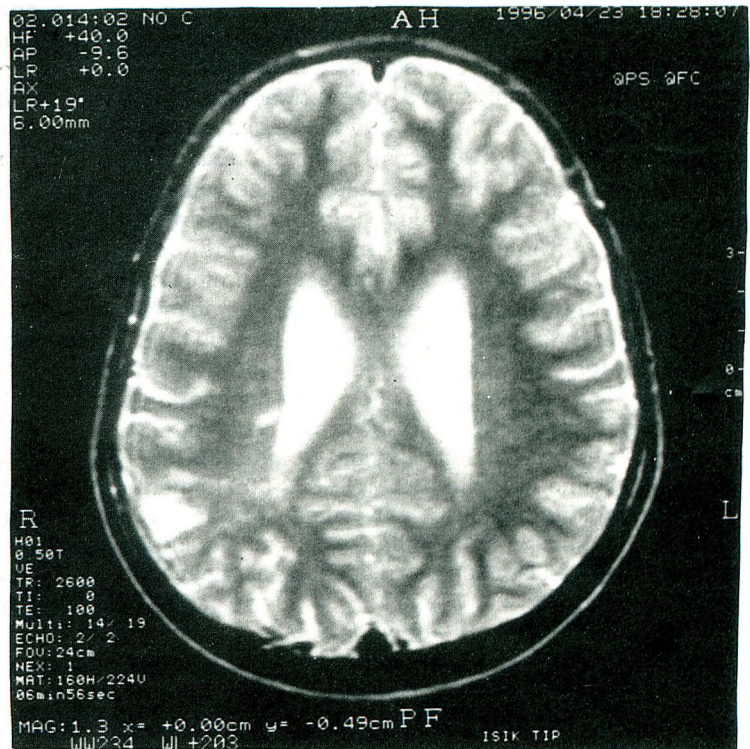


**Fig. 1:**

Echocardiographic parasternal long axis view showing the vegetation of the mitral valve.



**Fig. 2a**



**Fig. 2b**

**Fig. 2 a - b :** Ischemic lesions on right parietal lobe and internal capsular region on cranial MRI.

B8 and HLA-Bw15 antigens has been reported to be higher both in insulin-dependent, juvenile-onset diabetics and in SLE patients (8). In this case, HLA tissue typing revealed HLA-B8 antigen positivity.

Renal involvement is one of the life threatening complications of SLE. Our case has presented with membranous glomerulonephritis which is seen in less than 10 percent of cases with lupus nephropathy. We chose to treat her with an extended course of pulse cyclophosphamide therapy since it is shown to be more effective than a 6 month course of pulse methylprednisolone therapy in preserving renal functions (5).

CNS involvement is reported in 20-30% of children with SLE. Seizures and psychosis are the most prominent features of CNS lupus. Anticardiolipin antibodies have been associated with seizures, intracranial arterial and venous thrombosis. Cranial MRI findings of our patient were thought to be consistent with CNS vasculitis. Mental retardation was reported in a 18-month-old child with SLE by Fish et al. in 1977 (9). In our patient, low thyroid hormone levels and the presence of ischemic lesions could have all contributed to her mental status.

This case is unique since there has been no reported pediatric SLE patient with a combination of hypothyroidism, diabetes mellitus, Libman-Sacks endocarditis, CNS lupus and membranous lupus nephritis.

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