Elmer Press

Case Report

World J Nephrol Urol. 2016;5(2):48-49

Rare Case of Lupus Nephritis With Negative Antinuclear Antibodies, Double-Stranded DNA Antibodies and Positive Anti-Ro/SSA Antibodies

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Abstract

Systemic lupus erythematosus (SLE) is an autoimmune multisystem disease that is characterized by various antibodies to nuclear and cytoplasmic antigens and diagnosed by either fulfilling the 2012 Systemic Lupus International Collaborating Clinics (SLICC) criteria, American College of Rheumatology (ACR) criteria or by Renal Biopsy. Renal involvement is common in SLE and is primarily related to anti-double-stranded DNA antibodies. However, small group of SLE nephritis patients have shown negative anti-dsDNA and ANA. We present a case of 25-year-old female who presented with proteinuria and negative serum antibodies except anti-Ro/SSA. Renal biopsy was performed and was consistent with class IV lupus nephritis (LN). In this report, we highlight the possible role of anti-Ro antibodies in the pathogenesis and the prognosis of LN, although the mechanism is yet to be understood. Anti-Ro/SSA antibodies might play an important role in the pathogenesis and prognosis in LN. However, further studies are required to understand the exact mechanism.

Keywords: Systemic lupus erythematosus; Anti-double-stranded DNA antibodies; Lupus nephritis

Introduction

Systemic lupus erythematosus (SLE) is an autoimmune multisystem disease which is diagnosed by either fulfilling the 2012 Systemic Lupus International Collaborating Clinics (SLICC) criteria, American College of Rheumatology (ACR) or by Renal Biopsy [1]. Renal involvement is a common complication of SLE affecting almost half of the patients [2] and autoantibodies such as anti-dsDNA play a major role in its pathogenesis and activity. In this report, we will discuss a rare case of a young female diagnosed with lupus nephritis (LN), with only anti-Ro/SSA antibodies being positive.

Case Report

A 25-year-old female presented to our hospital because of chest pain and frontal headache for 2 weeks, associated with orthopnea, leg swelling and easy fatigability. She had no history of skin rashes, hypersensitivity, fever, oral ulcers, dry mouth or eyes, joint pains, and recent sore throat or skin infections. She had no past medical history and her family history was unremarkable for renal or rheumatological diseases.

On physical examination, her blood pressure was elevated 188/130 mm Hg, and no pedal edema, skin rashes or joint swelling were noted. Her abdominal, respiratory and cardiovascular examination was unremarkable.

Her complete blood count (CBC) showed microcytic anemia with hemoglobin of 9.6 g/dL and mean corpuscular volume of 76 fL, and the leukocyte and platelet counts were normal. The renal function test showed a picture of chronic kidney disease with blood urea nitrogen of 69 mg/dL, serum creatinine of 5.8 mg/dL, low calcium level of 6.9 mg/dL and elevated phosphorus level of 6.9 mg/dL. Her total protein and albumin levels were low at 4.8 and 2.8 g/dL, respectively. The urine studies were significant for 3+ proteinuria, red blood cells and course granular casts. Random urine protein to creatinine ratio was significantly elevated (8.24). Thyroid stimulating hormone and blood glucose levels were normal, and tests for HIV, hepatitis B and hepatitis C were negative. Her serology was positive only for anti-Ro/SSA antibodies by immunoassay 1.8 AI (reference value < 1 AI). ANA, anti-dsDNA, ASO, anti-La, anti-smith and anti-U1RNP antibodies were all negative. Erythrocyte sedimentation rate (ESR) was elevated at 30 mm in the first hour, with normal C-reactive protein of 0.79 mg/L and complement C3 of 115 mg/dL, and her C4 level was elevated at 53 mg/dL.

Renal ultrasound was unremarkable, with right kidney measuring 10.5 cm in length and left kidney measuring 10.2 cm in length. Biopsy of the left kidney was performed under computed tomography guidance, and microscopic evaluation

Manuscript accepted for publication June 24, 2016

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doi: http://dx.doi.org/10.14740/wjnu272e

of the specimen showed 11 glomeruli, of which three glomeruli were completely sclerosed, and five glomeruli showed cellular crescent. There was diffuse and prominent interstitial inflammation comprising of lymphocytes and few neutrophils. Ultrastructural evaluation of one glomerulus by electron microscope demonstrated many immune-type electron-dense deposits predominantly at subepithelial and mesangial locations. Unfortunately, no immunofluorescence microscopy evaluation was done because no glomeruli were seen on tissue submitted for immunofluorescence, but the pathology findings were suggestive of proliferative (class IV) LN.

The patient was started on pulse steroid therapy with methyl-prednisone 1 g/day for 3 days then 1 mg/kg of prednisone daily along with mycophenolate and hydroxychloroquine. One month later, hemodialysis was started because of hyperkalemia and fluid overload. After 6 months, the patient is still dependent on hemodialysis and has not shown clinical signs or symptoms of SLE.

Discussion

SLE is an autoimmune multisystem disease that is characterized by various antibodies to nuclear and cytoplasmic antigens. Renal involvement is a common complication of SLE affecting almost half of the patients [2]. Although antibodies against DNA play a major role in the pathogenesis and the activity of LN [3-5], there are few cases in the literature of LN with no detectable antibodies [6, 7].

Our patient has a renal biopsy suggestive of LN but did not fulfill the SLICC criteria because there were no antibodies detected except the anti-Ro/SSA which is not part of it. Anti-Ro/SSA antibodies have been associated with Sjogren's syndrome and neonatal lupus erythematosus (NLE) along with fetal heart conduction abnormalities [8]. The role of anti-Ro/SSA in LN is not established yet, some studies have shown that it has no correlation [9] while others showed that anti-Ro/SSA antibodies alone were associated with a higher prevalence of nephritis [10, 11]. One study has evaluated 130 SLE patients and found that 48% of the patients had anti-Ro/SSA antibodies prior to the diagnosis and were the first antibodies to develop in those patients [12]. In this report, we highlight the possible role of anti-Ro antibodies in the pathogenesis of LN, although the mechanism is yet to be understood.

Conclusion

Anti-Ro/SSA antibodies might play an important role in the pathogenesis and prognosis in LN. However, further studies are required to understand the exact mechanism.

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