Nine years old child with nephrotic syndrome: a case of biopsy proven lupus nephritis in tertiary level medical college hospital in Mymensingh, Bangladesh.

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Abstract

We observed a case of a 9 years old female patient who presented with nephrotic syndrome and impaired renal function diagnosed to have Systemic Lupus Erythematosus (SLE). Lupus nephritis (LN) is a common major organ manifestation of SLE and causes significantly increased morbidity and mortality. Thus, all patients with SLE should be regularly screened for LN. This patient presented with nephrotic syndrome, pleural effusion and pericardial effusion which depicts the multisystem effects of SLE. This patient was treated with Oral Mycophenolate Mofetilin combination with steroid as induction therapy and attained remission after a month of treatment. Systemic lupus erythematosus should be considered in patients with nephrotic syndrome and these patients should have renal biopsy to determine renal involvement.

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Introduction

Lupus nephritis (LN) is a major cause of morbidity and mortality in patients with systemic lupus erythematosus (SLE). The general consensus is that 60% of lupus patients will develop clinically relevant nephritis at some time in the course of their illness.[1] Prompt recognition and treatment of renal disease is important; as early response to therapy is correlated with better outcome.[2] Most SLE patients develop nephritis early in the course of their disease. The vast majority of patients who develop nephritis are younger than 55 years, and children are more likely to develop severe nephritis than are elderly patients.[3]

In a recent retrospective study, male sex, young age (<33 years) and non-European ancestry were found to be determinants of earlier renal disease in patients with SLE. Asian, African Caribbean, and African American ethnicities may present with more severe nephritis than other ethnic groups.[4]

Proteinuria is the characteristic feature of renal disease in lupus. In a comprehensive review of LN, proteinuria was reported in 100% of patients, with nephrotic syndrome being reported in 45 to 65%.[5] Occurrence of Microscopic hematuria was found in about 80% of patients during the disease course, invariably associated with proteinuria. Macroscopic hematuria is rare in LN. Hypertension is not common but is present more frequently in patients with severe nephritis. About one-half of all patients with LN will have a reduced glomerular filtration rate and occasionally patients with acute kidney injury.

The diagnosis of lupusnephritis is usually considered in patient with SLE presenting with features indicating renalinvolvement, proteinuria, haematuria, red blood cell casts and elevated serum creatinine.[6]

This report describes a patient who presented with nephrotic syndrome to Department of Nephrologyat Community Based Medical College Hospital, winnerpar, Mymensingh.

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Case report

A 9 years old female was admitted in the Department of Nephrologyat Community Based Medical College Hospital, winnerpar, Mymensingh with history of joint pain and generalized body swelling for 6 months, skin lesions for one month. Joint pain was involving multiple big joints; there was no history of joint swelling or morning stiffness. Body swelling started on the face and was worse in the morning subsiding towards the evening. Swelling also involved abdomen and the lower limbs. There was history of frothy urine. However, no history of haematuria or reduced urine output was given. The patient reported history of dyspnoea especially on lying flat and worse on exertion three weeks after generalized body swelling. One month prior to admission, the patient developed itching generalized hyperpigmented skin lesions which did not affect the face.

On physical examination, she was wasted with light and easily pluck-able sparse hair with patchy alopecia. She had some palmar pallor with pedal oedema and no lymphadenopathy. Respiratory rate was 36 breaths/ minute and trachea was central. She had reduced tactile vocal fremitus bilaterally in the infra-mammary and infra-scapular positions and reduced breath sounds consistent with bilateral pleural effusion. Pulse rate was 106 beats/minute, blood pressure was 140/95 mmHg, apex beat with difficult to locate and heart sounds were muffled, these features were consistent with pericardial effusion. Patient had hyper-pigmented lesions on the abdominal skin, ascites and hepatomegaly of 12 cm span.

Urinalysis revealed proteinuria +3, twenty four hours urinary protein excretion was 6.8g, serum albumin was 15 g/L, and serum cholesterol was 6.24 mmol/L. Serum creatinine was 1.6 mg/dl, serum urea was 115 mg/dl, glomerular filtration rate was estimated to be 34 ml/min. Serum electrolytes revealed hyperkalaemia (5.9 mmol/L) and hyponatremia (128 mmol/L). Haemoglobin level was 7.9 g/dL with mean corpuscular volume and mean corpuscular haemoglobin concentration of 77.6 fL and 24 pg respectively. Platelet count was 490 x 103/µL. HIV, hepatitis B and C screening were negative. Anti-nuclear antibody test (ANA) and anti-double stranded DNA (anti-dsDNA) were both positive. Abdominal ultrasound revealed normal sized kidneys, grade one echogenicity and mild loss of cortical-medullary differentiation. Chest x-ray revealed bilateral pleural effusion, electrocardiogram showed low voltage and echocardiogram revealed pericardial effusion.

Renal biopsy was performed after stabilizing the patient and light microscopy slide with Haematoxylin and Eosin, Periodic acid Schiff and Silver stains were prepared. No immunofluorescence slides were prepared as the hospital does not have facility for immunohistochemistry. Light microscopy revealed 25 glomeruli with diffuse endocapillary proliferation, fibro-cellular crescents in three glomeruli, wire loops in capillary tufts and mesangial matrix expansion (Figures 1 and 2) which are consistent with lupus nephritis class IV-S.

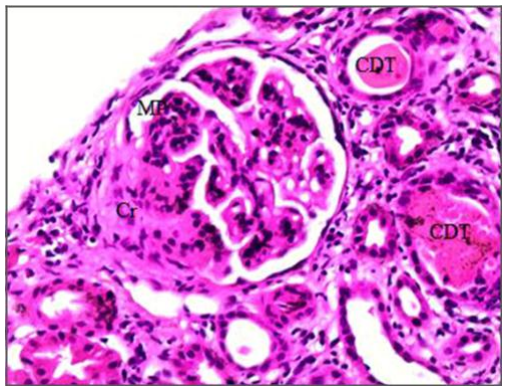

Figure 1: Glomerular lesion with fibro-cellular crescent (Cr) and mesangial proliferation (MP), CDT indicates cast in the tubules (Haematoxylin and Eosin stain; magnification x 400)

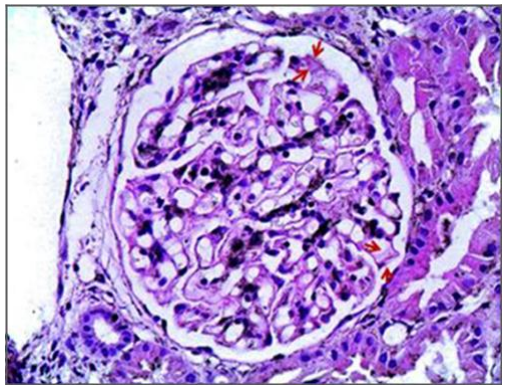

Figure 2: Double contouring (wire-loops) of glomerular basement membrane (arrows) (Periodic acid-Schiff (PAS) stain; magnification x 400)

She was given parenteral furosemide for oedema and hyperkalaemia and potassium was lowered to 5.4 after 5 days of diuretic treatment. The patient was given intrvenous methyl prednilone infusion for three consecuitive days followed by oral prednisolone 1 mg/kg body weight and oral Mycophenolate mofetil 500 mg one tablet three times daily for lupus nephritis and her laboratory normalized after two months of treatment. She was also given atorvastatin for hypercholesterolemia. Her laboratory results after one month of treatment revealed neither protein nor red blood cells, serum albumin was 40 g/L, serum cholesterol was 5.9mmol/L and serum creatinine was 0.9 mg/dl.

Discussion

Systemic lupus erythematosus (SLE) is an autoimmune disease with variable manifestations. It is a heterogeneous disease of disordered immunity, with multi-system inflammatory involvement. Renal involvement is a frequent feature occurring in 40%-75% of patients, most often within five years of the disease onset.[7,8,9,10]

The course of lupus nephritis (LN) is highly variable and multiple clinical, serological, histopathological, and time-dependent factors are responsible for its ultimate prognosis.[11,12]

The clinical features of SLE have been extensively described from different geographical parts in the world, with some variations among different racial groups. The data on SLE among Bangladeshi patients are rare in the literature.

The present study which included both adult patients and children was carried out to observe the clinical profile and outcome of patients suffering from SLE in this south-western region of Bangladesh. Mean age of the patients was 25.4 ± 9.05 years. Baqui *et al* showed the mean age of LN 26 ± 11.97 years.[13]

This is an autoimmune condition in which immune complexes play important role in causing tissue injury involving multiple organs and systems.[14]

Affected tissues in SLE show marked inflammation with deposition of antibodies and complements. The antibodies are autoantibodies directed against double stranded DNA of affected cells. Female are more affected with SLE and Africans arereported to be more commonly than other ethnic groups.[15]

Musculoskeletal and dermatological manifestations in the form of arthritis and discoid rashes are common presentation of SLE.[16]

These features were also reported by our patient. However the typical malar rashes of SLE were not reported. The patient also presented with pleural and pericardial effusion which are part of multi-organ

involvement in patients with SLE.[17]

The diagnoses of SLE is usually made clinicallywith presence of at least four of the 11 American College of Rheumatology Classification criteria; malar rash, discoid rash, photosensitivity, oral ulcers, arthritis, serositis (pleural effusion,pericardial effusion), renal disorder, neurological disorder, haematological disorder, immunologic disorder and antinuclear antibodies.[17] Our patient fulfilled the above criteria and the diagnosis of SLE with lupus nephritis was made. Management of lupus nephritis requires a biopsy to histologically classify the condition based on the extent, activity and chronicity. The extent of renal involvement is also assessed and provides a baseline subsequent follow.[18]

Lupus nephritis is histologically classified into six classes based on the International Society of Nephrology/ Renal Pathology Society classification.[19] The six classes have been well described by Seshan & Jennete (2009)[18], Our patient was classified as lupus nephritis class IV-S which signify segmental involvement of >50% of the glomeruli examined histologically. Mycophenolate mofetil (MMF) with prednisolone has been associated with high remission rates when used as induction treatment for lupus nephritis.[20] Pecoraro *et al* published an abstract of 14 children with lupus nephritis (mean age 12.4 years) with more than 3 gm of proteinuria daily and normal renal function who were treated with IV methyprednisolone followed by MMF (mean dose 29 mg/kg daily) and oral prednisolone for 2 years.[20]

This report describes the case of histologically proven lupus nephritis in a patient presenting with nephrotic syndrome at Community Based Medical College Hospital Bangladesh (CMCHB). It is therefore important to evaluate patients presenting with nephrotic syndrome for SLE serologically and then histologically for those with SLE to determine the extent of disease and appropriate treatment.

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