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Lupus Nephritis in a 2.5 Year Old Girl- An Uncommon Presentation

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Summary:

Systemic lupus erythematosus (SLE) is very rare and difficult to diagnose before 5 years of age. We are reporting a case of SLE at 2.5- year who presented with recurrent episodes of fever, haematuria , proteinuria and rash . Diagnosis of SLE was confirmed by reduced serum complement level and positive anti double stranded DNA (anti ds DNA). Class IV histological type of Lupus nephritis was evaluated by renal biopsy.

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Introduction:

Systemic Lupus Erythematosus (SLE) is the prototype multisystem autoimmune disease characterized by widespread inflammation of the blood vessels and connective tissues. There is significant morbidity and mortality in both adult and children with SLE. [1-3] The prevalence of SLE is approximately 40 per 100,000 children in Europe and North America[4] but the prevalence of SLE in our country as well as in other developing country is not known. In more than 80% of cases, SLE affects female after puberty. The female to male ratio increases from 2:1 in prepubertal children to 4.5:1 in adolescents and 8:1 in adults.[5] In children most cases of lupus occur after the age of 5 years with a peak incidence in late childhood and adolescence and only 20% of SLE cases begin early childhood.

The presentation of SLE in children varies both in terms of gravity of symptoms and the diversity of clinical manifestations. Moreover the disease affecting multiple organs more acutely and severely in children compared to adults. [6-9]Two thirds of the children with SLE at some stage of their illness manifest ranging from asymptomatic microscopic haematuria, rarely macroscopic haematuria, nephrotic syndrome to rapidly progressive glomerulonephritis. Among various histologic types of lupus nephritis diffuse proliferative glomerulonephritis (class -IV) carries the worst prognosis, resulting in 11-40% of patients with end stage renal disease at 5 years. [10-13] We are reporting a 2.5- year old female child with lupus nephritis having class 4 histologic type with other severe and acute extra renal manifestations considering her age and worst prognosis.

Case report:

A 2.5-year-old female child was admitted in Paediatric nephrology unit of Bangabandhu Sheikh Mujib Medical University (BSMMU) with the complaints of low grade fever for 14 days and passage of red coloured urine for 3 days. Fever was low grade and irregular in nature and the child used to cry during the act of micturition .The child suffered from repeated episodes of fever which was associated sometimes with red coloured urine, respiratory

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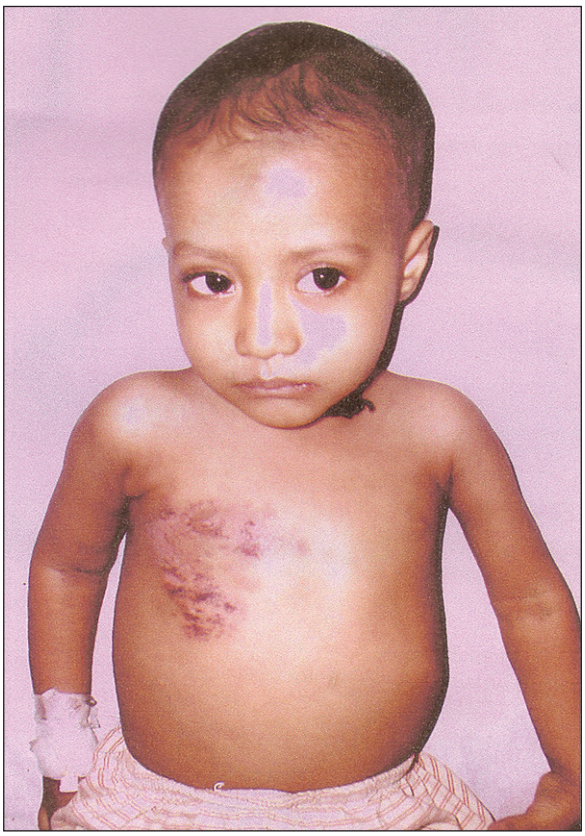

Fig.-1: *2.5 years old girl with lupus nephritis*

distress and diarrhoea since her 3.5 months of age. Sometimes mother noticed erythematous rashes over the malar area, on the neck and behind the auricle, which became prominent on exposure to sunlight. There was no history of any central nervous system manifestations. On examination the child was conscious, restless, febrile, moderately pale; blood pressure was 100/80 mm of Hg, heart rate was 120/minute, respiratory rate was 52/minute , lymphnodes were not palpable , skin survey showed patchy erythematous rashes over the malar area. Her weight was 10 Kg (weight for age Z score was -2.8), height was 82 cm (height for age Z score was - 2.9) ,bed side urine for albumin was 2+ and oral thrush was present. Her liver was enlarged 3.5 cm from right costal mergin along the mid clavicular line, her spleen was just palpable. Her apex beat was in the left 5th intercostal space lateral to mid clavicular line, heart sounds were audible in all the areas. Pericardial rub was present in the left mid clavicular and axillary line. The child was dyspnoeic, respiratory rate was 52/min, chest indrawing was present and on auscultation bilateral crepitation and rhonchi was present.Investigations showed urine for routine examination, protein 3+, pus cell 5-8/HPF, RBC –plenty, 24 hours urinary total protein (UTP) was o.8 gm/ day. Her hemoglobin was 6 gm/ dl, ESR was 160 mm in the first hour, total count was 2,000/cmm, neutrophil was 10%, lymphocyte was 90%, platelet count was 40,000/cmm, peripheral blood film showed severe microcytic hypochromic anaemia with tear drop and target cells. Her serum cholesterol was 250 mg / dl, serum albumin was 28 gm/L serum electrolytes showed Na- 134m mol/L, K 4.5 m mol/L , Cl – 102mmol/ L , TCo2 – 23mmol/L serum creatinine was o.6 mg/dl , serum Complement-3 level was o.528 gm/L . Her anti nuclear antigen (ANA) was positive (40.5 U /ml in ELISA method), anti double stranded DNA (Anti Ds DNA) was positive (287.5IU/ml) and direct Coomb's test was also positive. Her seum bilirubin was 10.2 micromole /L, SGPT was 25 U/L, HBs Ag was negative. Her blood culture showed no growth, ultra sonography of kidney ureter and bladder was suggestive of cystitis, X- ray chest showed pneumonitis in the left upper and mid zone with pericardial effusion. Her echocardiography (ECG) showed mild pericardial effusion. Her serum IgG was 36.86 g/L, IgM was o.64gm /L Her renal biopsy showed diffuse proliferative glomerulonephritis which was compatible with class IV Lupus nephritis according to WHO classification. Patient was treated with intra venous antibiotics ceftazidime and amikacin, her hypertension was controlled by oral nifedipine. Initially immunosuppressive therapy was started with methyle prednisolone (25 mg/kg) daily for three days, later on therapy was switched over to oral prdnisolone (1.5mg/kg) every day in divided dose along with monthly cyclophosphamide pulse (500mg/m^2). During the course of treatment the patient developed herpes zoster infection, which was treated by intravenous acyclovir therapy.

The child improved as her infection was controlled, respiratory distress was subsided, haematuria stopped and urine became protein free. The patient was discharged and advised to come for clinical, serological and biochemical assessment, for follow up and monthly pulse cyclophosphamide therapy.

Discussion:

Paediatric and adult SLE patients with class IV LN have worse renal and overall survival rate, though both morbidity and mortality rates are improving with better supportive and medical care.[14,15] Beside histological class of lupus nephritis risk of progression also depends on other factors like age , gender , race, hypertension , initial serum creatinine concentration , delay between onset of renal disease and treatment and the response to therapy after the first year.[16] Our patient a girl of 2.5 years old with class IV histological type lupus nephritis, initially presented with typical manifestations of SLE with both renal and extra renal manifestations which is not as common at this age like older children and adolescents. We treated the patient with proper nutritional support, intravenous broad spectrum antibiotics to combat infections and patients general wellbeing was improved after 7 days of treatment. We started anti inflammatory and immunsuppressive treatment after controlling infection with intravenous pulse methyle prednisolone for three days which was maintained with oral corticosteroid at a dose of 1.5 mg/ kg/day in three divided doses and intravenous monthly pulse cyclophosphamide. Thereby our patient showed signs of both clinical and serological improvement after one month of therapy. It has been observed by different authors in their study that both pulse methyleprednisolone and cyclophosphamide have synergistic and superior effects in inducing remission.[17,18] Austin et al [19] and Bounepas et al [20] observed that intravenous pulse cyclophosphamide with higher cumulative dose was superior over oral cylophosphamide both in the context of fewer side effects and preservation of renal function and also rate of relapse of nephritis beyond 5 years. Most of the authors concluded that corticosteroid pulse and an extended course of pulse cyclophosphamide over 30 months becomes the standard protocol for the initial treatment of aggressive LN in many centers, which was followed in our case also. Herpes zoster is a very common viral infection in SLE [18] occurred in our patient during the course of treatment, which was treated by I/V acyclovir. Even after aggressive treatment in advanced LN 10 to 20% patient may develop end stage renal failure after a mean period of 5 years.[21,22] So it is obligatory to closely supervise the patient both clinically, serologically and by evaluation of renal function at close interval throughout the life.

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