NEPHROTIC SYNDROME IN YOUNG ADOLESCENT

Tee Tat Khoo, Christopher Thiam Seong Lim, Haidi Mohamad, Elmina Mohamad Mokhtar, Bak Leong Goh
Department of Nephrology, Hospital Sultan Idris Shah, Serdang
Nephrology Unit, Department of Medicine, Hospital Sultan Abdul Aziz Shah, Universiti Putra Malaysia
Department of Pathology, Hospital Sultan Idris Shah, Serdang

Correspondence:
Tee Tat Khoo
Department of Nephrology, Hospital Sultan Idris Shah, Serdang
Email: te3tat@gmail.com

CASE PRESENTATION

A 13-year-old female presented with a one-week history of bilateral lower limb swelling associated with cough and sore throat. There was no fever, breathlessness, hematuria, or frothy urine. She denied connective tissue disease-related symptoms. There was also no family history of autoimmune disease or chronic kidney disease. On examination, her blood pressure was 135/91 mmHg with conjunctival pallor and lower limb pitting oedema. Her initial investigation showed haemoglobin of 9g/dL, LDH 390U/L, positive Coombs test with IgG 2+ and C3D 3+, and peripheral blood film showed spherocytes with no schistocytes or agglutination. Her creatinine was 40 µmol/L, urine protein 4+ blood 1+, 24-hour urinary protein of 7.4g/day and low albumin of 20g/dL. Her viral screening was non-reactive, and an immunology workup revealed negative ANA with normal C3 and C4 levels as well as negative ASOT.

DIFFERENTIAL DIAGNOSIS

Our initial impression was nephrotic syndrome secondary to minimal change disease with autoimmune hemolytic anaemia. Differential diagnoses would be lupus nephritis and focal segmental glomerulosclerosis.

She was treated empirically with high-dose prednisolone of 1mg/kg/day. Her haemoglobin normalised to 13g/dL after 6 weeks of high-dose prednisolone. However, she developed steroid toxicity and was still in a heavy nephrosis state as evidenced by low albumin of 25g/dL with urinalysis protein 4+ blood 2+ and urine protein creatinine index of 6.7g/day. Her repeated ANA serology came back positive and she subsequently underwent renal biopsy.

Her renal biopsy showed a diffuse membranous pattern with immunofluorescence study demonstrating positivity of all immunoglobulin heavy chain and complement favouring immune complex-mediated glomerulonephritis.

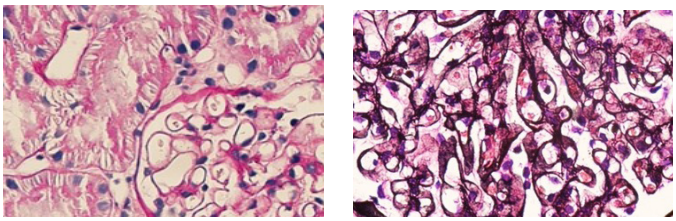

Fig 1. (A) Rigid capillary loops within glomeruli (Periodic acid-Schiff,100x) (B) Diffuse and global but subtle membrane lucencies within the capillary walls (Methenamine Silver,400x)

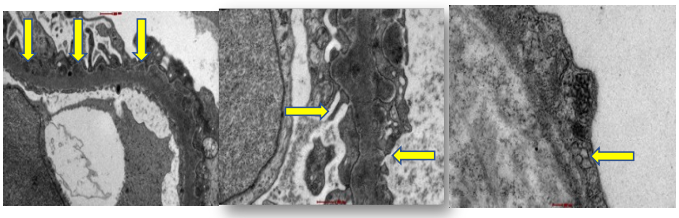

Fig 2. Electron micrographs demonstrating the ultrastructure of the glomerular capillary walls (A) Sparse subepithelial electron dense deposits (EDD) (B) Concomitant subepithelial and subendothelial EDDs (C) Tubuloreticular inclusions present within the endothelial cell (indicated by arrows)

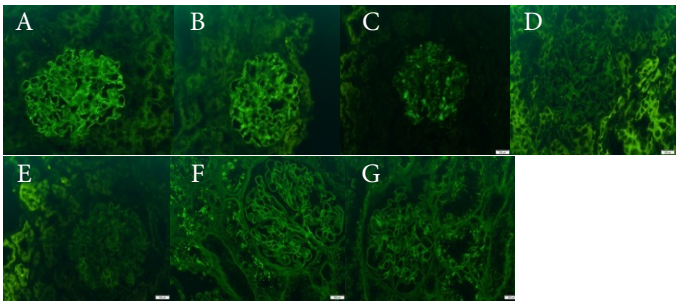

Fig 3. Composite image showing immunofluorescence microscopy at different magnifications with strong granular positivity along the capillary walls for IgG, IgA & IgM, and to much lesser intensity for C3, C1q, Kappa and Lambda light chains (Kappa & Lambda staining was done on paraffin tissue sections). A.IgG B.IgA C.IgM D.C3 E.C1q F.Kappa G.Lambda

FINAL DIAGNOSIS

Membranous lupus nephritis, ISN/RPS class V.

LEARNING POINTS

1. The presentation of nephrotic syndrome in association with autoimmune haemolytic anaemia should raise suspicion of autoimmune disease like systemic lupus erythematosus (SLE), especially in female patient.
2. ANA serology is not always detectable during the initial disease presentation.
3. Young adolescents with nephrotic syndrome should always be counselled for renal biopsy rather than empirical treatment with high-dose steroid due to the risk of steroid toxicity.
4. Lack of response to high-dose prednisolone in presumed minimal change disease should alert clinicians of other differential diagnoses.