

Renal Limited Lupus-Like Nephritis: A Case Report & Review of Literature

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Introduction

Lupus nephritis is a common feature of systemic lupus erythematosus (SLE) usually occurring in young females and diagnosed by renal biopsy (1). There have been some cases of lupus nephritis with negative serology and no extra-renal features of SLE, which is referred to as Renal-Limited Lupus-Like Nephritis (RLLLN). So far, only 10 cases of RLLLN in adults have been reported in the literature. The prognosis of these patients varied depending on their clinical presentation.

This case studies an elderly female with RLLLN who presented with massive proteinuria and acute kidney injury with crescents; however, unlike similar reported cases, she had a good outcome.

Case Presentation

A 63-year-old female with no previous history of renal or autoimmune disease presented to an outside facility with a one day history of gross hematuria and decreased urine output. She subsequently became anuric with signs of volume overload, severe hyponatremia and worsening renal function requiring urgent hemodialysis. She was referred to JHAH for further care and management. She had no history of joint pain/swelling, rash, oral ulcers, recent infections, fever, or other constitutional symptoms.

On examination, she had stable vital signs, no rash, or evidence of active synovitis. She had minimal bilateral pitting edema, and the remainder of the examination was unremarkable.

Laboratory investigations showed creatinine 6.1 mg/dL, serum sodium 128 mEq/L, Hemoglobin 11.4 g/dL, platelets 310,000 and leukocytes 12.8 k with no left shift. Urine analysis showed gross hematuria with dysmorphic RBCs. Serum albumin was 2.9 g and total urinary protein excretion 23 g. There was no abnormal "M" spike or monoclonal protein on serum protein electrophoresis. She had a borderline ANA (titer 1:80), speckled pattern, negative Anti dsDNA, Anti-Sm and Anti-neutrophil cytoplasmic antibodies. Her C4 level was normal and C3 was borderline suppressed 8 mg/dL (normal 9-180). HIV, Hepatitis B & C were negative.

CT-guided percutaneous renal biopsy revealed endocapillary proliferative, crescentic and membranous GN consistent with class IV & V lupus nephritis. Most glomeruli showed marked global mesangial and endocapillary hypercellularity with abundant intracapillary infiltrating lymphocytes, monocytes, and neutrophils. The basement membranes were thickened, and 43% of glomeruli showed active crescents (Figure 1). Immunofluorescence showed a "full-house" pattern with positive mesangial and capillary wall staining for IgG, IgA, IgM, C1q, kappa, and lambda. On electron microscopy, there was segmental duplication of basement membrane with cellular interposition and abundant global mesangial, intramembranous, subendothelial, and segmental subepithelial electron dense granular deposits (Figure 2). Few endothelial tubuloreticular inclusions were present. These findings are consistent with Renal Limited Lupus-Like Nephritis.

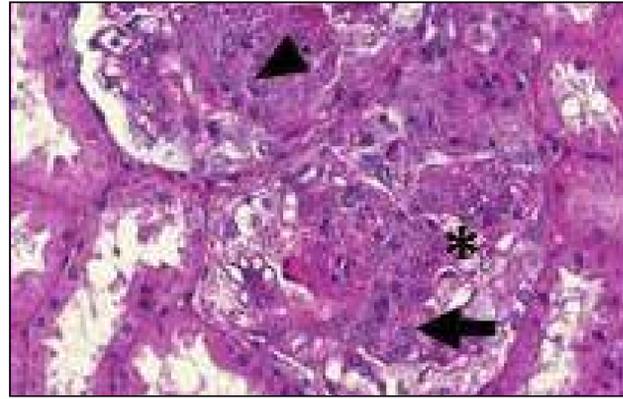


Figure 1 - Glomeruli exhibiting mesangial and endocapillary hypercellularity (arrow), infiltrating neutrophils (arrow head) and lymphocytes, thickened basement membranes, and segmental cellular crescents (*).

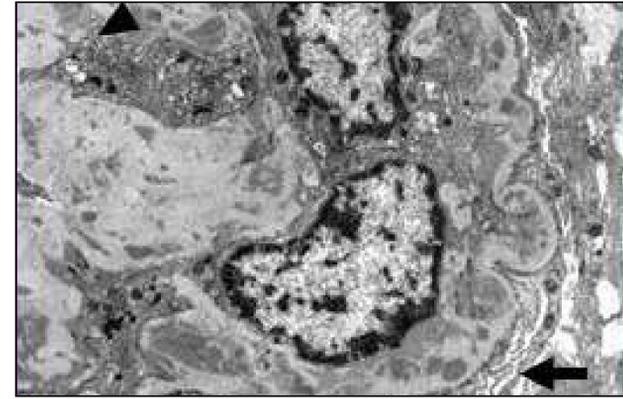
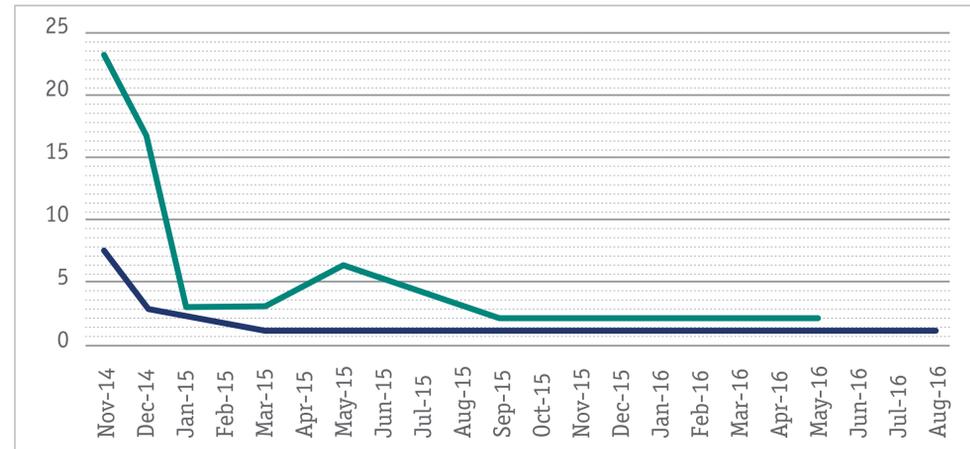


Figure 2- EM showing abundant intramembranous (*) and mesangial deposits (arrow) with diffuse foot-process effacement of podocytes (arrow).

She continued dialysis and was started on Methylprednisolone and Cyclophosphamide (CYC) as per NIH protocol. She completed her therapy and was weaned off dialysis. 2 years after initial presentation, she continues to be in remission with normal creatinine level and only moderate proteinuria (30 mg/dL) (Graph 1). She follows up regularly with nephrology and has no change in serology status and no signs or symptoms of SLE.



Discussion

Biopsy diagnosis of lupus nephritis with no extra-renal features of SLE, normal complement levels, negative or weakly positive ANA and negative other serology is a rare entity known as Renal-Limited Lupus-Like Nephritis. The majority of cases reported are in children with some subsequently developing SLE features or positive serology. Based on a literature review, there are only 10 reported adult cases (Table 1).

This study presents the first case of RLLLN in an elderly female with excellent outcome despite her initial presentation of acute kidney injury, Cr of 6.1, and crescentic nephritis. All reported cases were in younger adults (< 55 yrs). The majority presented with proteinuria or microscopic hematuria; the two most common findings in lupus nephritis (2). This patient presented at an older age (66 yrs), and proteinuria in addition to gross hematuria and acute kidney injury, which occur in 1-2% of patients (2). Various protocols have been suggested for management. Treatment followed the standard protocol published by NIH in 1992, which includes monthly IV CYC for 6 months as induction, followed by IV pulse CYC quarterly for 2 years as maintenance therapy (3).

Achieving remission is reported to be associated with better renal and patient survival (4). Remission may be complete where proteinuria is less than 0.5 g/day, or partial, where there is a decrease in proteinuria to less than or equal to 50% from baseline (5). Reported outcomes were variable. It was noted that all cases with good outcome had normal creatinine on initial presentation but found no predicting association between those of poor outcome and their initial creatinine. 80% of patients with poor outcome had crescents involving 43-75% of glomeruli. Only one patient with a good outcome had crescents but were seen in < 20% of glomeruli. The presence of crescentic lupus nephritis indicates a poor prognosis with derangements of renal function. And the percentage of crescents is related to severity of renal failure (6).

In contrast to the literature, this patient went into remission with no residual effect on renal function despite her severe disease, elevated creatinine on initial presentation and presence of crescents involving 43% of glomeruli.

We thus propose a possible good prognosis for this disease spectrum and emphasize the importance of early diagnosis and early initiation of aggressive treatment for management of similar cases.

Year/Author	# of Cases	PT's age (yrs)	Initial presentation	Initial Cr (mg/dL)	Crescents	Management	Outcome
2013 Chi Young	1	40	Proteinuria	Normal	None	1. CYC & Methylprednisolone 2. MMF & Prednisone	- Good: Normal renal function - Proteinuria <43 g/day
2012 Ana Huerta	4	36	Proteinuria & Microscopic hematuria	Normal	46%	1. Prednisone & MMF 2. CYC 3. CYC with MMF & Prednisone 4. HD	- Poor: ESRD then Renal Tx
	19	19	Proteinuria & Microscopic hematuria	Elevated (1.7)	55%	1. Prednisone 2. MMF 3. Methylprednisolone 4. MMF & Prednisone	- Poor: ESRD then Renal Tx
	50	50	Leg edema & worsening HTN	Elevated (2)	43%	1. Prednisone 2. Temporary HD	- Poor: CKD stage 3
	46	46	Fever, Vomiting & Nephrotic Syndrome	Elevated (3.5)	75%	1. Prednisone & CYC 2. Switched to MMF 3. HD	- Poor: ESRD on HD
1992 Edward Jones	5	19	Nephrotic Syndrome	Normal (0.7)	None	Prednisone & AZA	- Good: Normal renal function - Moderate proteinuria 2.9 mg/day
	31	31	Proteinuria & Microscopic hematuria	Normal (0.8)	None	None	- Good: Normal renal function - Moderate proteinuria 2.8 mg/day
	18	18	Nephrotic Syndrome & Microscopic hematuria	Normal (0.8)	<20%	Prednisone & AZA	- Good: Normal renal function - Moderate proteinuria 2.6 mg/day
	38	38	Proteinuria & Microscopic proteinuria	Normal (1.2)	None	AZA	- Poor: some decrease in renal function (Cr 1.8) - Moderate proteinuria 2.6 mg/day
30	30	Microscopic hematuria	Normal (1.3)	None	None	- Good: Normal renal function - Microscopic hematuria - Moderate proteinuria 75 mg/dL	

Table 1 - Literature review on reported cases of RLLLN in adults

References
 1. Saxena, R., Mahajan, T., & Mohan, C. (2011). Lupus nephritis: Current update. *Arthritis Res Ther* Arthritis Research & Therapy, 13(5), 240.
 2. Cameron, J. S. (1999). Lupus Nephritis. *JASN*, 10(2), 413-424.
 3. Boumpas, D., Austin, H., Balow, J., Vasujan, E., Yarboro, C., Klippel, J., & Steinberg, A. (1992). Controlled trial of pulse methylprednisolone versus two regimens of pulse cyclophosphamide in severe lupus nephritis. *The Lancet*, 340(8822), 741-745.
 4. Chen, Y. E., Korbet, S. M., Katz, R. S., Schwartz, M. M., & Lewis, E. J. (2008). Value of a Complete or Partial Remission in Severe Lupus Nephritis. *Clinical Journal of the American Society of Nephrology*, 3(1), 46-53.
 5. Ruggiero, B., Vivarelli, M., Gianviti, A., Pecoraro, C., Peruzzi, L., Benetti, E., & Emma, F. (2016). Outcome of childhood-onset full-house nephropathy. *Nephrol. Dial. Transplant. Nephrology Dialysis Transplantation*, 0.1-10.
 6. Gupta, V., Sachdeva, S., Khan, A. S., & Haque, S. F. (2012). Diffuse Proliferative Crescentic Lupus Nephritis with Normal Renal Function. *Saudi J Kidney Dis Transpl*, 23(2), 343-345.

