Silent Lupus Nephritis among Patients with Discoid Lupus Erythematosus

JEAN CLAUDE ROUJEAU,[1, 2] DOMINIQUE BELGHITI,[2] GENEVIEVE HIRBEC,[2] FLORENCE POLI,[1] ALAIN T. SOBEL,[3] JEAN REVUZ[1] and RENE TOURAINE[1]

[2]*Department of Dermatology,* [2]*Department of Pathology and* [3]*Department of Nephrology, Hospital H. Mondor, Créteil, France*

Roujeau JC, Belghiti D, Hirbec G, Poli F, Sobel AT, Revuz J, Touraine R. Silent lupus nephritis among patients with discoid lupus erythematosus. Acta Derm Venereol (Stockh) 1984; 64: 160–163.

A kidney biopsy was performed in 7 hypocomplementemic discoid lupus erythematosus patients despite the absence of overt renal involvement. Five patients had glomerular immune deposits and 2 patients with disseminated discoid lupus erythematosus exhibited definite proliferative glomerulonephritis. Those findings show that silent lupus nephritis may be encountered in discoid as well as in systemic lupus erythematosus, providing additional evidence supporting the unity of the disease. We suggest that hypocomplementemic patients with discoid lupus erythematosus must be carefully screened for renal disease by periodic urinalysis examinations. *Key words: Disseminated discoid lupus erythematosus; Hypocomplementemia; Kidney biopsy.* (Received August 27, 1983.)

J. C. Roujeau, Department of Dermatology, Hospital H. Mondor, F-94010 Créteil, France.

Discoid lupus erythematosus (DLE) is rarely associated with clinical kidney involvement as assessed by urinary abnormalities. For exemple, Dubois (1) reported abnormal urinalysis in 8% of DLE patients and in 1 out of 15 patients with disseminated discoid lupus (DDLE). Overt renal disease was considered as even less frequent by others (2). Kidney biopsies were performed in 5 DLE patients with overt renal disease (3). This study underlined the possibility of glomerular changes consistent with mild lupus nephritis indicating that multivisceral involvement may occur in so-called skin restricted lupus. On the other hand it is well known that histologically defined lupus nephritis may exist without clinical renal abnormalities. This is called "silent lupus nephritis" (4, 5).

Therefore considering the eventuality of multivisceral lupus in DLE, the possibility of silent nephritis and the recognized role of complement as a marker of systemic lupus (6), it was decided to study the kidney pathology of those patients with DLE and DDLE who exhibited hypocomplementemia. This definition selected patients at risk for glomerulonephritis, potentially severe enough to require a specific therapeutic strategy.

PATIENTS AND METHODS

Seven patients entered the study over 6 years. All patients had clinical discoid cutaneous lesions, absence of overt viscal involvement (≤ARA criteria) and absence of antinuclear antibody by indirect immunofluorescent test.

Four patients had a disseminated discoid lupus erythematosus (DDLE) with cutaneous lesions involving sun protected areas. All patients had a decreased value in at least one of the following complement determinations: C4 (normal value: 20 to 60 mg/100 ml), C3 (normal value: 80 to 120 mg/100 ml), CH50 (normal value: 44±8 U). None had overt renal disease (normal BUN and creatinine levels, proteinuria ≤100 mg/24 hours and less than 5 white or red cells per high power field).

Kidney bopsies were performed after informed consent by percutaneous needle puncture without any morbidity. A portion of kidney biopsy specimen was fixed in Duboscq Brazil solution for examination by light microscopy. Tissue sections (2 μm) were stained with trichromic and silver stains. Another portion was frozen in liquid nitrogen before processing for immunofluorescent studies with fluoresceinated antisera against human IgG, IgA, IgM, C3 and fibrin (Hyland Laboratories). The renal histology was examined by 2 pathologists and classified into five categories: minimal glomerular change, mesangial nephropathy, focal glomerulonephritis, diffuse glomerulonephritis, membranous nephropathy. The histologic criteria of activity were hypercellularity, necrosis, epithelial crescents, hematoxylin bodies, hyalin thrombi and wire loops. Immunofluorescence deposits were rated on a scale from 0 to 4+.

RESULTS

Pathologic data and selective criteria are detailed in Table I. Two kidney specimens were normal in light and fluorescence microscopy. Five biopsies exhibited immune deposits along the glomerular capillary walls. In three cases, this was associated with minimal glomerular changes: patient 3 with pseudo-linear deposits, patient 6 with mesangial C3 deposits and patient 7 with granular IgM deposits. The remaining 2 specimens displayed definite glomerulonephritis. Patient 4 had large immune deposits along glomerular capillary walls, in the lumen of capillaries and within the mesangium. All glomeruli were involved with lobular accentuation and increase of endocapillary cellularity. This patient had genetic hypocomplementemia (C2 deficiency). Patient 5 had focal glomerulonephritis with mild mesangial cell hyperplasia and irregular immune deposits along capillary walls

Table I. *Pathologic data and selective criteria*

DDLE = disseminated discoid lupus erythematosus, DLE = discoid lupus erythematosus

				Immunofluorescence				
	Selection criterion[a]	Light microscopy	IgA	IgG	IgM	C3	Fg
1. G. P. DDLE	C4<10 mg/100 ml	Normal	–	–	–	–	–
2. L. A. DLE	C3=70 mg/100 ml	Normal	–	–	–	–	–
3. L. A. DDLE	C3=62 mg/100 ml	Minimal glomerular change	–	1+	–	1+	–
4. S. M. DDLE	CH50=0 U C2=0 (% of normal)	Diffuse glomerulonephritis 3+	–	4+	–	2+	–
5. L. J. DDLE	C4=10 mg/100 ml	Focal glomerulonephritis 2+	–	2+	–	3+	–
6. D. A. DLE	C4=15 mg/100 ml	Minimal glomerular change	–	–	–	1+	–
7. L. L. DLE	C4=15 mg/100 ml	Minimal glomerular change	–	–	1+	–	–

[a] See Methods section for normal values.

and within the mesangium. It should be noted that both cases with definite glomerulonephritis were associated with DDLE.

DISCUSSION

This study was designed in order to investigate whether DLE and/or DDLE patients with hypocomplementemia may have lupus nephritis eventually requiring specific treatment. Indeed hypocomplementemic DLE and DDLE patients could represent a group at risk since complement abnormalities are significantly linked with lupus nephritis (6) and this should increase the apparently low percentage of DLE/DDLE patients with abnormal urinalysis. Moreover this could detect "silent lupus nephritis" in this population. In this regard, it should be emphasized that complement consumption as mainly revealed by low C4 was occasionally reportd in DLE (7) as well as DDLE (2, 8). On the other hand, diminished C3 levels may provide a better indicator of renal involvement than low C4 (6). In our study C3, C4 as well as CH50 were measured (and C2 in one case). This group comprised 4 patients with predominantly or exclusively low C4, 2 patients with decreased C3 and one with genetic complete C2 deficiency. None of these had clinical evidence of renal disease. However 5 had glomerular immune deposits and 2 biosies exhibited definite proliferative lesions.

Even if our small group of hypocomplementemic patients is not representative of discoid lupus patients, our findings suggest that silent lupus nephritis may be encountered in DLE as well as in SLE. That provides additional evidence supporting the unity of lupus.

The clinical significance of silent lupus glomerulonephritis remains debatable. Among the systemic form of lupus, systematic kidney biopsies have shown that glomerular involvement is almost constant (4). In the majority of these cases, there is only immune deposits with minimal or mesangial histologic changes. However, several investigators have reported cases of clinically silent severe diffuse lupus glomerulonephritis (5). Following that finding, it has been suggested that renal biopsy may be necessary in every patient with systemic lupus at the time of diagnosis. More recent studies, with follow up of such silent lupus nephritis over several years have shown that most cases have a benign course. A few cases may lead to progressive renal failure, but always after advent of overt urinalysis disturbances (9, 10). So systematic renal biopsy in the absence of overt renal involvement has a debatable value in SLE (9).

With such questions about the value of kidney biopsy in SLE it is obviously out of our purpose to suggest the use of kidney biopsy among DLE patients. But we emphasize that hypocomplementemic patients with DLE and DDLE must be carefully screened for renal disease by periodic urinalysis examination.

REFERENCES

1. Dubois EL. Lupus erythematosus. 2nd ed. Los Angeles: Univ. of South California Press.
2. O'Loughlin S, Schroeter AL, Jordon RE. A study of lupus erythematosus with particular reference to generalized discoid lupus. Br J Dermatol 1978; 99: 1–11.
3. Pekin TJ, Maher JF, Zvaifler NJ, Antonovich T, Horvath PN. Renal evaluation in discoid lupus erythematosus (DLE). Arthritis Rheum 1967; 10: 304.
4. Appel GB, Silva FG, Pirani CL, Meltzer JI, Estes D. Renal involvement in systemic lupus erythematosus (SLE). A study of 56 patients emphasizing histologic classification. Medicine 1978; 57: 371–410.
5. Mahajan SK, Ordonez NG, Feitelson PJ, Lim VS, Spargo BH, Katz AI. Lupus nephropathy without clinical renal involvement. Medicine 1977; 56: 493–502.
6. Garin EH, Donnelly WH, Shulman ST, Fernandez R, Finton C, Williams RL, Richard GA. The significance of serial measurements of serum complement C3 and C4 components and DNA binding capacity in patients with lupus nephritis. Clin Nephrol 1979; 12: 148–155.

7. Millard LG, Rowell NR. Abnormal laboratory test results and their relationship to prognosis in discoid lupus erythematosus. Arch Dermatol 1979; 115: 1055–1058.
8. Risum G. Third component of complement (C3) and fourth component of complement (C4) in discoid and systemic lupus erythematosus. Dermatologica 1973; 145: 381–390.
9. Bennett WM, Bardana EJ, Norman DJ, Houghton DC. Natural history of "silent" lupus nephritis. Am J Kidney Dis 1982; 1: 359–363.
10. Leehey DJ, Katz AI, Azaran AH, Aronson AJ, Spargo BH. Silent diffuse lupus nephritis. Long term follow up. Am J Kidney Dis 1982; 2: 188–196.