Rapidly Progressive Glomerulonephritis and Pulmonary Tuberculosis

B.	Bernardo	Sopeña ^a
J.	Jose	Sobrado ^a
A.J.	Javier	Pérez ^a
J.	Josefina	Oliver ^b
M.	Miguel	Courel ^a
L.	Luisa	Palomares ^a
L.	Luis	González ^a

^aNephrology Section and ^bPathology Service, Hospital Xeral Vigo, Vigo, Spain

José Sobrado, MD, Nephrology Section, Hospital Xeral, C/Pizarro 22, E-36204 Vigo (Spain)

Dear Sir,

Rapidly progressive glomerulonephritis accounts for 2–7% of renal biopsies. A number of etiologic factors have been incriminated, including drugs, malignancy, immune mechanism and viral and bacterial infections [1]. So far, a possible relationship between tuberculosis and glomerulonephritis has been suggested in a small number of cases, whose authors postulated that renal lesions could be the consequence of immune complex deposition [2, 3].

A 55-year-old man was initially hospitalized for fever and productive cough. A chest radiograph showed bilateral localized consolidations. In sputum cultures no abnormal flora grew, and by the Ziehl-Neelsen tinction there was no evidence of acid-fast bacilli in the specimens processed. Lowenstein culture was simultaneously performed in the smears obtained by bronchial washings. A clinical partial radiological improvement was observed after therapy with broad spectrum antibiotics. The arterial pressure, renal function and urinalysis were normal. The patient was allowed to leave hospital and he was well for 3 weeks. After this period of time, he began to develop edema and progressive oliguria. After 2 more weeks, he was again admitted to hospital for edema and oliguria. The arterial pressure was 180/110 mm Hg; the serum creatinine was 1,594 mmol/l (18 mg/dl), the serum total hemolytic complement 54 U/100/ml complement C3: 63 mg/dl were both reduced, and complement C4 was normal. Circulating immune complexes 1.8 µg/ml, measured by nephelometry, were slightly elevated (normal level up to 1.5 µg/ml). ANA, HBsAg and cryoglobulins were negative. Hemoglobin was 8.4 g/dl. Urinalysis showed microscopic hematuria and mild proteinuria (0.7 g/day). Urine culture was sterile and there was no evidence of acid-fast bacilli in urine. On ultrasonography, the kidneys were of normal size and shape. At this phase of the evolution, the process of the Lowenstein culture in the specimens taken by bronchial washings 6 weeks before was ended with positive evidence of acid-fast bacilli.

An open renal biopsy revealed diffuse mesangial proliferation and the formation of crescents involving 40% of the glomeruli (fig. 1). No vasculitis or interstitial abnormalities were present. Immunofluorescence was positive with complement C3 antisera in

Fig. 1. Glomerulus with epithelial crescent and mesangial proliferation. PAS. × 40.

a granular distribution within the glomeruli. He was promptly treated with regular hemodialysis for a time period of 21 days.

Ten days after the second admission, antituberculous treatment with rifampicin, INH and ethambutol was simultaneously initiated together with a combination of corticosteroids and cytotoxic agents, consisting of oral cyclophosphamide (1.5 mg/kg/day) and methyl-prednisolone given intravenously in three pulses (1 g/day) followed by oral prednisolone (1.5 mg/kg/day). Over an 11-day period we observed a progressive increase of diuresis with an initial improvement of renal function, and dialysis was discontinued. The patient became normotensive. Over a 1-month period, serum creatinine was 443 mmol/l (5 mg/dl) and over a 6-month period it was 168 mmol/l (1.9 mg/dl). After this 6-month period the prednisone dose was 15 mg/day and the cyclophosphamide dose was 75 mg/day, and he was still receiving rifampicin and INH. At this time, serum complement and the level of circulating immune complexes were within the normal limits. During the 6-month follow-up period, there was no new evidence of acid-fast bacilli and therapy was well tolerated.

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In our patient, the diagnoses of pulmonary tuberculosis and rapidly progressive glomerulonephritis were made simultaneously. At the time of presentation with renal failure, rifampicin was not yet initiated. Crescentic nephritis with rapidly progressive renal failure has been reported in association with rifampicin therapy [4]. We considered in this case the evidence of slightly elevated circulating immune complexes as being of limited value because immunoglobulin deposits were lacking. Independently, the presence of circulating immune complexes containing mycobacterial antigens has been reported in tuberculosis, though its possible immunopathogenetic role has not been proved [5].

After simultaneous therapy with antituberculous drugs, corticosteroids and cyclophosphamide, there was a partial recovery of renal function. So far, at least two cases of glomerulonephritis, reported as associated with tuberculosis, consisting of focal proliferative glomerulonephritis in 1 patient [2] and mesangiocapillary glomerulonephritis in the other patient [3], both had an improvement of the glomerular lesions after antituberculous treatment alone [2, 3].

In our patient, we cannot postulate a pathogenic relationship between tuberculosis and glomerulonephritis because he was treated with antituberculous and immunosuppressive therapy. Nevertheless, the occurrence of the two cases mentioned above together with our case lead us to argue that the etiopathogenetic spectrum of postinfectious glomerulonephritis, caused by immune mechanism (humoral and cell-mediated), could be wider than considered at present.

References

Couser WG: Rapidly progressive glomerulonephritis: Classification, pathogenic mechanisms, and therapy. *Am J Kidney Dis* 1988;11:449–464.

Shribman JH, Eastwood JB, Ubb J: Immune complex nephritis complicating miliary tuberculosis. *Br Med J* 1983;287: 1593–1594.

Meyrier A, Valensi P, Sebaoun J: Mesangio-capillary glomerulonephritis and the nephrotic syndrome in the course of disseminated tuberculosis. *Nephron* 1988;49:341–342.

Murray AN, Cassidy MJD, Templecamp C: Rapidly progressive glomerulonephritis associated with rifampicin therapy for pulmonary tuberculosis. *Nephron* 1987;46:373–376.