Pulmonary sarcoidosis and focal segmental glomerulosclerosis: case report and renal transplant follow-up

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Case report

The patient is a 29-year-old black woman who 5 months previously had fatigue, fever, weight loss, dry cough, progressive dyspnea, and a ventilatory-dependent left thoracic pain. The physical findings included tachypnea, tachycardia, and a blood pressure of 115/75 mmHg. A full blood count showed haemoglobin 13.9 g/dl, white cell count 6800/mm³, and platelet count 170 000/mm³. Liver and renal function tests were without abnormalities. Chest radiographs showed diffuse bilateral parenchymal reticulonodularity in a homogeneous pattern with bilateral hilar and paratracheal adenopathies. Pulmonary function tests were compatible with restrictive ventilatory disease, and a gallium-67 scan showed diffuse captation in both lungs. Finally, a lung biopsy disclosed a sarcoid granuloma in pulmonary parenchyma. By this time, she received corticosteroid therapy with prednisone (60 mg/day) for pulmonary sarcoidosis, improving her clinical manifestations.

Two months later, she returned with leg oedema, ascites, and oliguria. Chest radiography showed diffuse interstitial infiltrate with hilar and paratracheal adenopathies, and a bilateral pleural effusion. Laboratory tests showed serum creatinine 3.4 mg/dl, urea 52 mg/dl, serum albumin 1.6 g/dl, proteinuria 29.4 g/24 h, calcium 9.0 mg/kg/24 h. A renal ultrasound found normal sized and echogenic kidneys with a calculi in each. A renal percutaneous biopsy (figure 1) disclosed focal segmental glomerulosclerosis, with subendothelial and mesangial deposits of IgM (+) and C3 (+ +). Prednisone was maintained in the same dose with tapering after 8 weeks. During the subsequent year, pulmonary sarcoidosis remained inactive, but there was a progressive deterioration in renal function, and her serum creatinine increased to 9.6 mg/dl. A second renal biopsy revealed global segmental glomerulosclerosis with granular deposits of IgM (+ +) and C1q (+ +) in mesangium, severe tubular atrophy, and interstitial fibrosis.

She entered into a dialysis program which was maintained for 42 months, and at the end of this time she received a HLA-identical living-related renal transplant. The renal allograft had immediate function, withincluded no rejection episodes. The patient has been maintained on immunosuppressive therapy with oral azathioprine 75 mg/day and prednisone 10 mg/day. During an 18-month post-transplant follow-up, her renal function has remained stable and pulmonary sarcoidosis continued in clinical remission. At present, her serum creatinine is 1.1 mg/dl and proteinuria 0.18 g/24 h.

Discussion

The most frequent manifestations of systemic sarcoidosis in the kidney are sarcoid granuloma and nephrocalcinosis. Although the glomerular involvement is uncommon, several lesions have been described in the literature, mainly membranous, membranoproliferative and crescentic nephritis [1–3]. The occurrence of focal segmental glomerulosclerosis (FSGS) is rare, and only four cases have been reported so far [4–7].

The association between granulomatous disease and glomerulonephritis has yet not been well-established. In systemic sarcoidosis, a depressed delayed-type hypersensitivity and an increased helper/ suppressor T-lymphocyte ratio (CD4/CD8) are repeatedly observed in the sarcoid tissue [8]. Circulating immune complexes along with signs of B-cell hyperactivity may also be detected [8]. There are some suggestions that a T-cell dysfunction may play a role in the pathogenesis of the glomerular lesion [7]. Other possible mechanisms are the production of some cytokines (interleukin-2)
or related substances that could increase the glomerular membrane permeability, as speculated for primary minimal change nephropathy and FSGS [9].

In the case described here, the clinical and pathological features lead to the diagnosis of pulmonary sarcoidosis simultaneous to nephrotic syndrome due to FSGS. During four years, her pulmonary disease was kept in remission by corticosteroid therapy. However, FSGS progressed to end-stage renal failure and a HLA-identical renal transplant was performed. At the present moment, she is in the 18th month of follow-up and her serum creatinine remains stable with near normal proteinuria and no rejection episodes while on prednisone and azathioprine immunosuppression. This clinical course was similar to another case of pulmonary sarcoidosis and FSGS described by Hakaim et al. [6]. Their patient also presented progressive renal failure, despite corticosteroid therapy. She received a one-haplotype living-related renal transplant and had a 25-month follow-up with excellent renal function. On the other hand, Peces et al. [7] reported a successful prednisone treatment in a patient with pulmonary sarcoidosis and nephrotic syndrome secondary to FSGS. After 5 months, the proteinuria disappeared and corticosteroid therapy was progressively reduced and discontinued.

Godin et al. [5] published a case of retroperitoneal sarcoidosis and unilateral renal stenosis. A bilateral kidney biopsy disclosed focal and segmental hyalinosis only in the non-stenotic kidney. However, in this patient the glomerulosclerosis was related more probably to altered intrarenal haemodynamics in a context of renal artery stenosis and severe hypertension than to systemic sarcoidosis.

In conclusion, sarcoidosis is a multisystemic disease with an immunological basis that may affect the kidney. Glomerulonephritis is rare (except membranous nephropathy), and the association between pulmonary sarcoidosis and FSGS can only be suggested in the presence of idiopathic nephrotic syndrome. The potential risk for recurrent nephritis in the allograft remains unknown and, in spite of its rarity, there is a report of relapsed glomerulonephritis associated with sarcoidosis in a grafted kidney [10]. The cases here described suggest that renal transplantation should be performed with good results, at least in the first 2 years.

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