Ciprofloxacin-Associated Tubulointerstitial Nephritis with Linear Tubular Basement Membrane Deposits

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Dear Sir,

Ciprofloxacin has been associated with acute renal failure [1-4], interstitial nephritis [4-10] and hematuria [11]. We report a case of interstitial nephritis with linear peritubular IgG deposition probably related to ciprofloxacin.

A 45-year-old nurse had repeated urinary tract infections. In September 1989 her serum creatinine was 1.2 mg/dl. In December 1989 she was treated with norfloxacin 800 mg daily for 10 days because of urinary tract infection. Symptoms recurred and she received oral ciprofloxacin for 10 days. But, while on ciprofloxacin, she complained of a pruritic erythematous rash. At this time serum creatinine was 2.2 and urinalysis showed microhematuria. There was never oliguria or eosinophilia. In March 1990 she was studied at our center because of persistent impaired renal function. Physical examination was unremarkable and blood pressure was normal. Serum creatinine was 2.2 with a creatinine clearance of 45 ml/min. Microhematuria persisted and red blood cells had marked morphological changes. Proteinuria was absent. A percutaneous renal biopsy showed diffuse lymphocytic interstitial infiltrate with occasional eosinophils, mild tubular epithelial damage, mild mesangial hyperplasia and normal vessels. Immunofluorescence showed linear IgG deposition on the tubular basement membranes. Prednisone 40 mg/day was prescribed for 1 month. In August 1990 serum creatinine was back to 1.2 mg/dl.

Acute interstitial nephritis was rarely reported with both ciprofloxacin and norfloxacin [4-10, 12]. In this patient the rash and

impaired renal function simultaneous with ciprofloxacin therapy suggested allergic interstitial nephritis, which was confirmed by biopsy. Although prolonged therapy with high dose fluorquinolones may cause tubulointerstitial damage in the dog [13], human cases of ciprofloxacin-related interstitial nephritis are usually associated with allergic symptoms, suggesting an immunologic mechanism. The finding of linear immunoglobulin deposits in our patient supports this concept. Linear immunofluorescence along the tubular basement membrane and circulating antitubular basement membrane antibodies were reported in nephritis induced with methicillin and other drugs [14], but not with fluorquinolones. Ciprofloxacin crystalluria occurred and caused transient hematuria in animals with alkaline urine, but was not associated with abnormal urinalysis in humans [13]. One patient had several bouts of hematuria with hematic casts associated with repetitive ciprofloxacin challenges [12], but the hematuria in our patient was persistent, probably of glomerular

origin. As previously reported for interstitial nephritis related to ciprofloxacin and other drugs, prednisone therapy resulted in improvement in renal function [5, 7, 14], despite the persistence of high serum creatinine for 3 months before steroids.

In summary, interstitial nephritis is a rare complication of fluorquinolone therapy. Linear immunoglobulin deposits along the tubular basement membrane may be present, suggesting an immunologically mediated pathogenesis. Steroid therapy can restore renal function to normal even after several months of persistent renal function impairment.

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