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Pathology Page

Chronic lithium nephropathy

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A 49-year-old man presented to Tzu Chi General Hospital, Taipei, Taiwan, with cough, dyspnea, and general malaise. He had a history of bipolar disorder for > 20 years with regular follow-up at Taipei City Psychiatric Center (Taipei, Taiwan) and was under lithium therapy. He was admitted for antibiotic treatment under the impression of pneumonia and sepsis. Laboratory data revealed leukocytosis (white blood cells, 27.0×10^9/L), normocytic anemia (hemoglobin, 8.0 g/dL; mean cell volume, 88.5 fL), and azotemia (blood urea nitrogen, 111.6 mg/dL; creatinine, 3.69 mg/dL). In spite of aggressive management of respiratory failure and septic shock, the patient died 3 days later.

At autopsy, the kidneys were grossly symmetrical. Several irregular, depressed scars were noted on the renal parenchyma. Microscopically, cortical and medullary interstitial fibrosis, interstitial lymphocytic infiltration, diffuse tubular atrophy, and tubular cysts with pericystic fibrosis (Fig. 1) indicated chronic tubulointerstitial nephritis accompanied by focal segmental (Fig. 2) and global glomerulosclerosis, diagnostic of chronic lithium nephropathy.

The most common form of lithium nephropathy in patients on long-term lithium therapy is chronic tubulointerstitial nephritis, presenting most commonly as tubular atrophy, interstitial fibrosis, and lymphocytic infiltration. The presence of tubular cysts with pericystic fibrosis originating from the distal tubules and collecting ducts is highly characteristic of lithium nephropathy. Markowitz et al [1] reported global glomerulosclerosis in 24 of 24

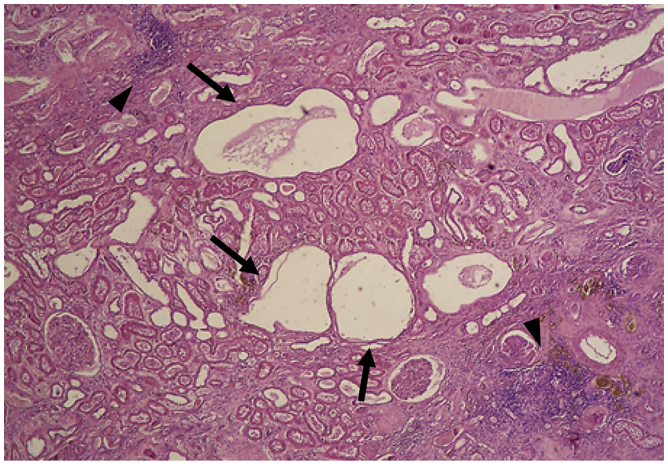

Fig. 1. Chronic tubulointerstitial nephritis with interstitial fibrosis and tubular atrophy. There are several tubular cysts (arrows) and focal lymphocytic infiltrations (arrowheads; hematoxylin and eosin stain, ×40).

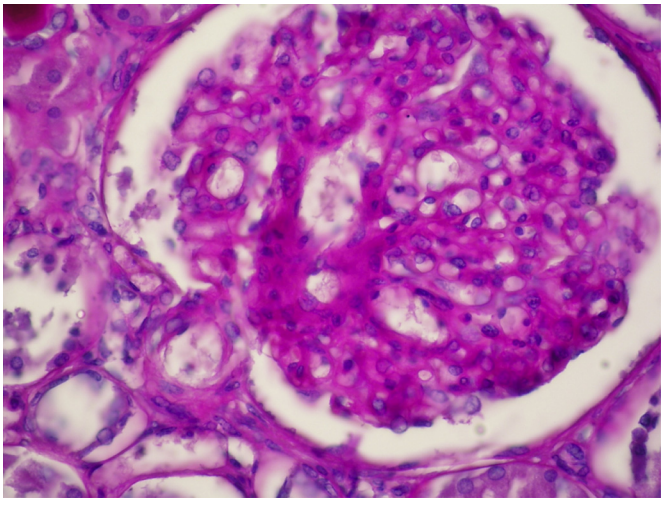

Fig. 2. Focal segmental glomerular sclerosis (periodic acid-Schiff stain, ×400).

Conflict of interest: none.

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biopsies (100%), and focal segmental glomerulosclerosis in 12 of 24 biopsies (50%) of patients with lithium-induced renal toxicity. The focal segmental glomerulosclerosis lesions were probably caused by direct lithium glomerular toxicity or hyperinfiltration injury.

Recent studies show that long-term lithium therapy unequivocally causes chronic kidney disease and even end stage renal disease. Lithium-induced chronic renal disease is slowly progressive. Its rate of progression is related to the duration of lithium administration. Regular monitoring of the estimated creatinine clearance is mandatory in patients on long-term lithium therapy.

Further reading

[1] Markowitz GS, Radhakrishnan J, Kambham N, Valeri AM, Hines WH, D'Agati VD. Lithium nephrotoxicity: a progressive combined glomerular and tubulointerstitial nephropathy. J Am Soc Nephrol 2000;11:1439–48.
[2] Boton R, Gaviria M, Batlle DC. Prevalence, pathogenesis, and treatment of renal dysfunction associated with chronic lithium therapy. Am J Kidney Dis 1987;10:329–45.
[3] Presne C, Fakhouri F, Noël LH, Stengel B, Even C, Kreis H, et al. Lithium-induced nephropathy: rate of progression and prognostic factors. Kidney Int 2003;64:585–92.
[4] Bendz H, Schön S, Attman PO, Aurell M. Renal failure occurs in chronic lithium treatment but is uncommon. Kidney Int 2010;77:219–24.