

# One kidney biopsy: double trouble

## Acute tubulointerstitial nephritis associated with mantle cell lymphoma

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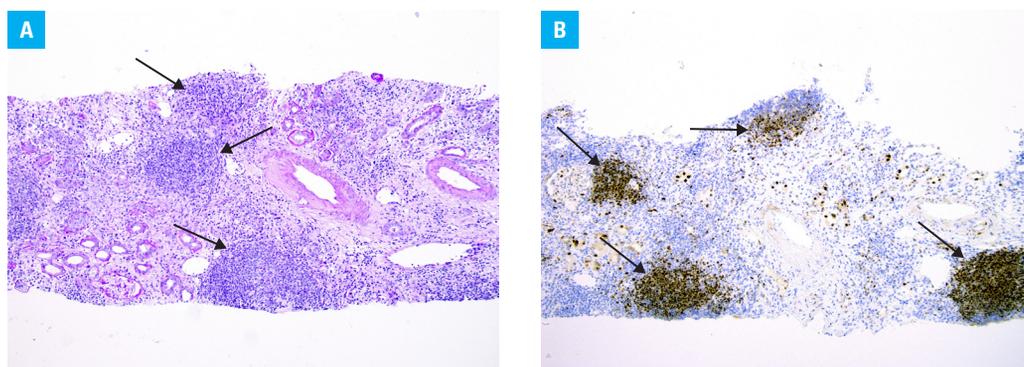
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Mantle cell lymphoma (MCL) is a rare subtype of mature B-cell non-Hodgkin lymphoma. The pathogenesis of MCL is associated with gene translocation, which leads to overexpression of cyclin D1.<sup>1</sup> Even though half of cases have kidney infiltration present at autopsy,<sup>2</sup> renal involvement in living patients is rare.

A 74-year-old woman with a 9-year history of MCL was admitted to our hospital due to acute kidney injury. Over the years, several episodes of recurrence had been diagnosed, and each time she was treated according to guidelines. The last course of chemotherapy ended 10 months before current hospitalization, and complete remission was achieved. On physical examination, the patient showed signs of volume depletion and no palpable peripheral lymphadenopathy. Laboratory findings revealed serum creatinine level of 5.93 mg/dl (vs 2.2 mg/dl 2 weeks earlier), normocytic normochromic anemia (hemoglobin, 9.5 g/dl), and C-reactive protein level of 15.51 mg/l without any clinical signs of infection.

Minimal proteinuria (190 mg/d) and hematuria (8–10 red blood cells/high power field) were present. Renal ultrasound was normal. The patient did not receive any new medications or supplements in the last 6 months. Despite achieving euvolemia, kidney function did not improve, and renal biopsy was performed. Light microscopy revealed 9 glomeruli (3 atherosclerotic; 6 without pathologic findings) and diffuse lymphomatous infiltration of the interstitium, which was partially nodular (FIGURE 1A). The nodular regions were positive for CD20, CD5, and cyclin D1 (a highly specific marker of MCL) (FIGURE 1B). There were also features of acute tubulointerstitial nephritis (ATIN): infiltration of the interstitium with CD3-positive T lymphocytes. On the other hand, staining for CD3 was negative in the previously mentioned nodular areas (FIGURE 1C). Based on these findings, the patient was diagnosed with ATIN associated with MCL. Steroid therapy was initiated and a rapid improvement of renal function was noted (serum creatinine levels decreased



**FIGURE 1** **A** – periodic acid–Schiff staining ( $\times 100$ ); kidney biopsy showing a diffuse and dense lymphomatous infiltration, partially nodular (arrows); **B** – cyclin D1 immunostaining; strong cyclin D1 expression in nodular regions (a highly specific marker of mantle cell lymphoma) and in a small number of tubular cells (arrows)

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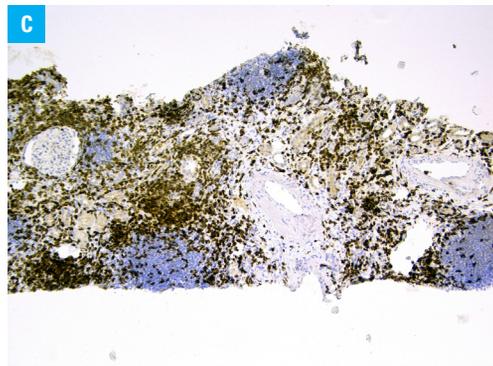
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**FIGURE 1 C – CD3**

immunostaining; infiltration of the interstitium with CD3-positive cells (T lymphocytes) destroying tubular structures. Staining for CD3 was negative in the nodular area.



to 2.77 mg/dl). MCL treatment was continued in the Hematology Department.

The most interesting aspect of this case is that kidney biopsy revealed 2 seemingly unrelated disorders. The cells infiltrating the interstitium comprised CD3-positive T lymphocytes, as in most cases of ATIN regardless of the cause. In contrast, in the area of nodular infiltration, the CD3 staining was negative, while the cells pathognomonic for MCL were present. Since we excluded the most common causes of ATIN (drugs and infection), these findings suggested a link between the 2 conditions.

We identified only one case report of ATIN secondary to MCL. However, it differed significantly from ours because renal biopsy showed MCL infiltration of the tubulointerstitium (consistent with B cells) without CD3-positive T lymphocytes.<sup>3</sup> Even though lymphomas can affect the kidney in many ways, the number of reported cases of renal involvement in MCL remains small. Apart from renal failure associated directly with tumor mass, non-Hodgkin lymphomas can also present as a wide range of paraneoplastic glomerulonephritides secondary to the disease.<sup>4</sup>

We illustrate, for the first time, nodular MCL infiltration concomitant with ATIN secondary to the underlying disease. Importantly, patients with MCL can develop direct infiltration of other organs by lymphomatous cells. On the other hand, acute kidney injury could be the first presentation of a lymphoma. Renal biopsy remains crucial for diagnosis confirmation, as the possibility of a malignant etiology should always be considered.

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**REFERENCES**

- 1 Berton F, Rinaldi A, Zucca E, Cavalli F. Update on the molecular biology of mantle cell lymphoma. *Hematol Oncol.* 2006; 24: 22-27. [↗](#)
- 2 Xiao JC, Walz-Mattmüller R, Ruck P, et al. Renal involvement in myeloproliferative and lymphoproliferative disorders: a study of autopsy cases. *Gen Diag Pathol.* 1997; 142: 147-153.
- 3 Colak N, Dede F, Canbakan B, et al. Acute tubulo-interstitial nephritis associated with mantle cell lymphoma presented as acute renal failure. *Nephrology (Carlton).* 2007; 12: 107-108. [↗](#)
- 4 Li SJ, Chen HP, Chen YH, et al. Renal involvement in non-Hodgkin lymphoma: proven by renal biopsy. *PLoS One.* 2014; 9: e95190.