CASE REPORT

Yuko Fujita · Tetsuya Kashiwagi · Hiroyuki Takei
Daisuke Takada · Hiroshi Kitamura · Yasuhiko Iino
Yasuo Katayama

Membranous nephropathy complicated by renal cell carcinoma

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Abstract
We experienced a patient with membranous nephropathy (MN) and renal cell carcinoma (RCC). Although MN is known to be commonly associated with malignant tumors, association with RCC is rare. In our patient, no malignant focus was found in the major organs examined, except for a small lesion in the right kidney. Diagnosis of a small RCC (1.6 × 1.6cm), which was made by renal biopsy and histology, was impossible by other, imaging, methods. As surgical treatment for the patient, laparoscopic partial nephrectomy was performed successfully, alleviating the symptoms of nephrotic syndrome for up to 21 months.

Key words Nephrotic syndrome · Membranous nephropathy · Renal cell carcinoma

Introduction
Membranous nephropathy (MN) is a pathological state presenting as nephrotic syndrome in relatively older individuals, and it is often associated with malignant tumors or other chronic diseases. Typically, gastric cancer or lung cancer is observed as the malignancy associated with MN, whereas cancer in the kidney is relatively rare. The reason why RCC is rarely associated with MN is unknown; however, only four cases have been reported to date.

Recently we experienced a patient with MN complicated with RCC (Table 1), in whom noninvasive diagnosis was difficult. Definitive diagnosis was made histologically through examination of a biopsy specimen. Here we report the clinical features of a patient with MN associated with RCC, as the fifth reported case. Evaluation of the clinical appearance and time course may provide novel evidence for the contribution of tumor tissue to the generation of nephrotic syndrome in MN. We also discuss the reason for the rare association of MN with RCC.

Case report
A 62-year-old man was admitted to our institution with edema of both legs that had persisted for about 2 months. Proteinuria had been detected 5 months previously. On laboratory examination, low proteinemia (total protein, 5.1g/dl) and low albuminemia (albumin, 2.6g/dl) were apparent. The patient had a 4-year history of untreated hypertension, hyperlipidemia, and hyperuricemia. He smoked 10 to 20 cigarettes per day and drank approximately 500ml of alcohol daily (usually, Japanese sake). However, he had no other diseases.

On examination, blood pressure was 176/106mmHg. Bilateral ankle edema was evident. Laboratory data were as follows: leukocyte count, 10100/µl; erythrocyte count, 45910⁴/µl; hemoglobin, 14.9g/dl; platelet count, 32.2 × 10⁵/µl; aspartate aminotransferase, 25IU/l; alanine aminotransferase, 21IU/l; lactate dehydrogenase, 604IU/l; alkaline phosphatase, 157IU/l; γ-glutamyl transpeptidase, 75IU/l; creatine kinase, 415IU/l; total bilirubin, 0.3mg/dl; total cholesterol, 348 mg/dl; triglycerides, 279 mg/dl; sodium, 144mEq/l; potassium, 4.2 mEq/l; chloride, 107mEq/l; calcium, 8.4 mg/dl; uric acid, 8.5 mg/dl; blood urea nitrogen, 12.0 mg/dl; creatinine, 1.05mg/dl; C-reactive protein, 0.14mg/dl; erythrocyte sedimentation rate, 68mm/h; and antinuclear antibody, 1:80 (speckled and nucleolar patterns). All serum immunoglobulin concentrations were within normal limits. Rheumatoid factor, hepatitis B surface antigen, hepatitis C virus antibody, cryoglobulins, myeloperoxidase (MPO)-antineutrophil cytoplasmic anti-
body (ANCA), and proteinase 3 (PR3)-ANCA were not detected. Urinalysis data were as follows: pH, 6.0; specific gravity, 1.011; protein by dipstick, 3+/H11001; glucose, –; bilirubin and ketones, –; occult blood, 1+; erythrocytes, 5 to 9/high-power field (HPF); leukocytes, 1 to 4/HPF; squamous cells (SE) less than 1/HPF; transitional cells (TE) less than 1/HPF; renal tubular casts, 1 to 4/HPF; hyaline casts, 5 to 9/wide-power field (WPF), granular casts, 1 to 4/WPF; epithelial casts, 5 to 9/WPF, and fatty casts, 5 to 9/WPF. Quantitatively, urinary protein was 600mg/dl, with urinary protein excretion totaling 5.3g/day. The creatinine clearance was calculated at 40.1ml/min. Findings on urinary cytological examinations showed no apparent malignancy.

A chest radiograph showed no abnormal shadow. Noncontrast computed tomography (CT) of the abdomen was employed to examine pathological changes in kidneys.