Association of Membranoproliferative Glomerulonephritis with Papillary Carcinoma Thyroid

Sir,

Malignant tumors are one of the causes of nephrotic syndrome. Mainly, the association of membranous glomerulonephritis with lung tumors, gastrointestinal tumors, and minimal change disease with Hodgkin's lymphoma are well-known.[1] We report a case of malignancy associated glomerulonephritis.

A 14-year-old boy presented with swelling of both the lower limbs and hypertension of 3 months duration. On further probing revealed a history of on and off low-grade fever, and examination revealed cervical lymphadenopathy. Urine examination showed albumin 3+ (7 g/day), with no erythrocyturia. Patient had renal dysfunction (serum creatinine 3.1 mg/dl) and hypoalbuminemia (2.7 g/dl). Hemoglobin was 10.5g/dl; leucocyte count was 8700cells/mm^3; blood and urine cultures were sterile; serum procalcitonin (0.15ng/ml) was normal; and antinuclear factor, antineutrophil cytoplasmic antibodies, and viral markers were negative. The serum complement levels (C3 and C4) were normal. Contrast-enhanced computerized tomography revealed hypo-dense nodules in both the lobes of the thyroid with calcification and multiple coarsely calcified cervical lymph nodes. Fine-needle aspiration cytology (FNAC) from the thyroid lesion was suggestive of papillary carcinoma of the thyroid. Thyroid function tests were normal. The patient underwent a renal biopsy during the same admission after 2 days of the FNAC. Light microscopy (LM) revealed 23 glomeruli: three glomeruli were globally sclerosed; rest had a variable degree of mesangial proliferation with basement membrane thickening; two glomeruli showed segmental endocapillary proliferation; and interstitial fibrosis/tubular atrophy was around 10% [Figure 1a]. Immunofluorescence (IF) microscopy revealed 3+ positivity for IgG, IgA, IgM, C3, kappa, lambda, and 2+ for C1q along glomerular capillary loop and mesangium [Figure 1b]. Electron microscopy (EM) showed sub-endothelial deposits [Figure 1c]. The LM, IF, and EM were consistent with the diagnosis of immune complex-mediated membranoproliferative glomerulonephritis (MPGN). The positron emission tomography showed lesion in the thyroid gland with cervical and supraclavicular lymph nodes likely to be metastasis. The patient underwent total thyroidectomy [Figure 1d] with lymph node dissection and was initiated on L-thyroxine and ramipril. One month post-surgery patient's proteinuria, serum creatinine, and albumin were 0.2 g/day, 0.9mg/dl, and 3.6g/day, respectively.

Although renal cell cancer, melanoma, lung cancer, and tumors in the urogenital system are known associations,

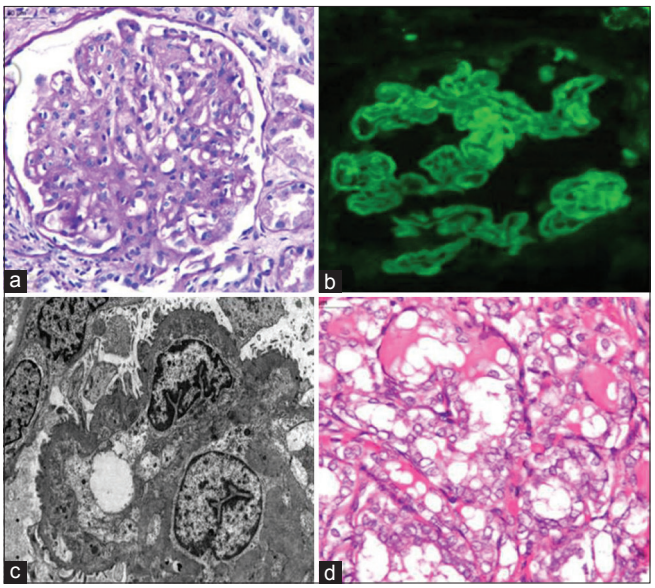

Figure 1: (a) (Renal biopsy)- LM- Membranoproliferative pattern with segmental endocapillary proliferation and mesangailhypercellularity (PAS × 40); (b) (IF)-3 + fine granular positivity for IgG, IgA, C3, kappa, lambda along the glomerular capillary loop, and mesangium; (c) (em)- showing sub-endothelial deposits; and (d) (Thyroid gland)- Papillary carcinoma thyroid, cells arranged in follicles with nuclear chromatin clearing, nuclear overcrowding, and nuclear grooving (H and E, ×40)

MPGN rarely develops in solid tumors.[2] The data regarding the association between thyroid carcinoma and glomerulopathies are limited. Previously, Han *et al*.[3] published a case of simultaneous development of thyroid papillary carcinoma and MPGN, but there was no improvement in renal function with tumor resection. However, in the current case report, we highlight two facts: nephrotic syndrome with renal dysfunction was the presenting feature that led to the diagnosis of carcinoma thyroid and complete remission[4] of the nephrotic syndrome (with renal dysfunction) immediately after the surgical resection. The cause-and-effect relation is confirmed as the patient had a complete remission in proteinuria and renal function after the surgical resection of a tumor.

To best of our knowledge, the present case is the first report of carcinoma thyroid associated MPGN, successfully responding to total thyroidectomy. To conclude, a proper physical examination is crucial as an initial screening for a secondary cause of nephrotic syndrome and treatment of malignancy may cure the nephrotic syndrome.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have

given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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