Renal Cell Carcinoma Presenting with Acute Renal Failure and IgA Glomerulonephritis

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Dear Sir,

The association of IgA glomerulonephritis (IgA-GN) with tumors such as bronchial carcinoma [1], mucin-secreting tumors [2], multiple myeloma [3], and nasopharyngeal tumors [4] has been documented. In the following case report, a renal cell carcinoma, for the first time to our knowledge, is described in association with IgA-GN in a clinical setting.

Case Report

A 50-year-old male was admitted to the hospital because of acute renal failure. He was well until 5 weeks prior to admission when he noted raised, greyish spots over the upper and lower extremities. Urinalysis revealed proteinuria and microscopic hematuria, serum creatinine $120 \mu\text{mol/l}$, and C3 and C4 were 0.3 and 0.13 g/l, respectively (normal range 0.55–1.2 and 0.2–0.5 g/l). The antistreptolysin O titer was less than 200 U, and investigation of serum immunoglobulins revealed IgA 5.5 g/l (normal 0.7–3.7 g/l). Antinuclear antibodies and cryoglobulins were negative. Fifteen days later, the serum creatinine concentration was still $122 \mu\text{mol/l}$, and urinalysis continued to show proteinuria and hematuria. In the week prior to admission he felt progressively weak and noted diminished urine output.

He was not taking any medications and only reported bronchial asthma for the previous 2 years. In particular, there was no history of alcohol intake or liver disease. The blood pressure was 160/110 mm Hg; greyish papular rash was evident on the forearms and the feet. Bilateral basal rales were present; the rest of the physical examination was unremarkable. Urinalysis showed excess red blood cells, red cell casts, granular casts (but no eosinophils), and proteinuria (3 g/24 h). Blood urea was 45 mmol/l, creatinine $1,158 \mu\text{mol/l}$, and the liver function tests were normal. The urine output over the next 24 h was only 200 ml, the patient became more uremic, and hemodialysis was commenced. Abdominal ultrasound revealed a large mass replacing the lower pole of the right kidney which was confirmed by angiography, and the patient underwent right radical nephrectomy. Postoperatively, the patient needed hemodialytic support only on two occasions, after which the renal function improved gradually. The serum creatinine, 2 weeks later, was

Fig. 1. Photomicrograph showing mesangial cell proliferation and crescents. HE. $\times 240$.

$300 \mu\text{mol/l}$, the skin rash disappeared, and both serum IgA and complement became normal.

Four weeks later, urinalysis was normal and serum creatinine $160 \mu\text{mol/l}$.

Sections from the tumor showed renal cell carcinoma mainly papillary in type. Sections from the renal tissue adjacent to the tumor and biopsy from the contralateral kidney, both revealed

mesangioproliferative glomerulonephritis with one third of the glomeruli showing crescents of various stages of development. The tubules contained proteinaceous material and were otherwise unremarkable. Vessels and interstitium were normal (fig. 1). Immunofluorescent studies revealed diffuse mesangial deposition of IgA, C3,

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and fibrin. Electron microscopy showed increased mesangial matrix with paramesangial dense deposits. The glomerular basement membrane was normal.

Discussion

The relationship of IgA-GN to the underlying renal cell carcinoma in our patient was intriguing, since several laboratory (IgA hyperglobulinemia, hypocomplementemia) and clinical (nephritic state, skin rash) parameters have spontaneously reverted to normal after the tumor resection. This association of renal cell carcinoma with immunofluorescent deposition in the nontumorous glomeruli was previously documented for IgG and IgM [5] and, more recently, for IgA in a diffuse linear pattern [6]. Moreover, out of 3 patients with clear-cell carcinoma reported by Ozawa et al. [7], 1 patient displayed mesangial hypercellularity with IgA deposition; specific immunological studies suggested a common antigen determinant between renal tubular epithelium and plasma membrane of renal cell carcinoma. These findings as well as our observation suggest that the nephropathy was secondary to circulating immune complexes mediated by tumor antigen-antibody.

The association of IgA-GN with acute renal failure, in our patient, is interesting and requires a brief comment. Kincaid-Smith et al. [8] observed episodes of acute renal failure in 16 out of 244 patients with mesangial IgA nephropathy; renal biopsies were done, at the time of the episode of acute renal failure, in 13 of those patients. Crescents were seen in all of those biopsies; however, they were not sufficiently widespread to account for the impaired renal function. Instead, the renal tubules showed morphological changes of acute tubular necrosis. Nevertheless, the tubulointerstitium in our patient was fairly unimpressive, and the recovery pattern was slower than one would have expected with acute tubular necrosis.

Whether the association between IgA-GN and renal cell carcinoma in our patient is a mere coincidence or is causally related is practically impossible to ascertain, and further studies are needed.

References

- Cairns, S.A.; Mallick, N.P.; Lawler, W.; Williams, G.: Squamous cell carcinoma of bronchus presenting with Henoch-Schönlein purpura. *Br. med. J.* ii: 474–475 (1978).
- Sinniah, R.: Mucin-secreting cancer with mesangial IgA deposits. *Pathology* 14:303–308 (1982).
- Dosa, S.; Cairns, S.A.; Mallick, N.P.; Lawler, W.; Williams, G.: Relapsing Henoch-Schönlein syndrome with renal involvement in a patient with an IgA monoclonal gammopathy. *Nephron* 26: 145–148 (1980).
- Mustonen, J.; Pasternack, A.; Helin, H.: IgA mesangial nephropathy in neoplastic diseases. *Contr. Nephrol.*, vol. 40; pp. 283–291 (Karger, Basel 1984).
- Pascal, R.R.; Iannaccone, P.M.; Rollwagen, F.M.; Harding, T.A.; Bennett, S.J.: Electron microscopy and immunofluorescence of glomerular immune complex deposits in cancer patients. *Cancer Res.* 36:43–47 (1976).
- Fivush, B.; Melvin, T.; Solez, K.; McLean, R.H.: Idiopathic linear glomerular IgA deposition. *Archs Pathol. Lab. Med.* 110: 1189–1191 (1986).

Ozawa, T.; Pluss, R.; Lache, J.; Boedecker, E.; Guggenheim, S.; Hammond, W.; McIntosh, R.: Endogenous immune-complex nephropathy associated with malignancy. *Q. J. Med* 44:523–541 (1975).

Kincaid-Smith, P.; Ryan, G.B.; Dowling, J.P.; Nicholls, K.: Acute renal failure in mesangial IgA nephropathy. *Contr. Nephrol*, vol. 40, pp. 182–186 (Karger, Basel 1984).