Granuloma in a glomerulus in anti-glomerular basement disease

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A 55-year-old lady type 2 diabetic, hypertensive presented with history of fever of 2 days, followed by macroscopic haematuria of 2-day duration, oliguria of 4-day duration and anuria of 1-day duration. There was no antecedent history of exposure to smoke and hydrocarbons and renal calculous disease. Her investigations were: haemoglobin 8.5 g/dL, blood urea 64 mg/dL, serum creatinine 4.6 mg/dL, urine examination: albumin: 1+, plenty of red blood cells and red blood cell cast was present, and ultrasound: right kidney 12.6 × 5.4 cm, left kidney 13.0 × 5.2 cm, anti-glomerular basement IgG antibody was positive 120.9 RU (procedure: ELISA; reference range: > 30 RU is positive), anti dsDNA, cANCA and pANCA were negative. Renal biopsy revealed twelve glomeruli; all were enlarged, showed necrotising inflammation of the tuft and the presence of circumferential epithelial and fibroepithelial crescents. Some glomeruli showed granuloma which contained histiocytes and multinucleate giant cells (Fig. 1). Some glomeruli showed disruption of Bowman's capsule. The immunofluorescence revealed linear staining of anti-IgG. Patient was treated with methylprednisolone, cyclophosphamide and plasmapheresis. Patient remained dialysis dependent.

Wegner provided the first description of granulomatous glomerulonephritis in 1936 [1]. It was named “periglomeruläres Granulom”. In 1939, he proposed the term “granulomatöse Glomerulonephritis” as granulomata were prominent feature in the kidney [2]. It was present in all three of Wegener's original patients [2]. It was found in 13 of 24 autopsies on patients with granulomatosis with polyangiitis [3]. When seen the granulomatous change effects

only a small number of glomeruli, and in this study of 13 patients at autopsy, the involved glomeruli ranged from 0.7 to 35.3% [3]. There were other descriptions of granulomas in glomeruli—Davson et al. [4]—in periarteritis nodosa. Periglomerular granulomatous reaction was later reported as granulomatous crescent [5]. Rutgers and colleagues [6] identified periglomerular granuloma in 11% of patients with MPO-ANCA positive, 40% of patients with both MPO-ANCA and anti-GBM antibodies positive, but 0% in patients with anti-GBM positive but ANCA negative. Granulomatous glomerulonephritis, however, is rare in glomerulonephritis other than ANCA glomerulonephritis, so its presence should raise the possibility of ANCA glomerulonephritis or ANCA small-vessel vasculitis.

At low magnification, the granulomatous interstitial inflammation often has an irregular, jagged outline, whereas the granulomatous glomerulonephritis usually has a more spherical configuration. Special stains for basement membranes, such as periodic acid Schiff or methenamine silver stains may be required to detect residual glomerular basement membranes at the centre of a periglomerular granuloma to distinguish it from interstitial granulomatous inflammation.

Massive expression of IL-6 in many sites of the renal structure, including the multinucleated giant cells and tubular epithelial cells was noted in anti-GBM disease when pathology revealed multinucleate giant cells [7]. Granulomas were associated with eosinophilic infiltration [8].

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Fig. 1 Granuloma in a glomerulus, haematoxylin and eosin, $\times 20$

Compliance with ethical standards

Conflict of interest The authors declare that they have no competing interest.

Informed consent Obtained from the patient.

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