A Course in Histopathology

Periglomerular granulomatous reaction in kidney biopsy

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Periglomerular granulomatous reaction, also reported as granulomatous crescent, is an infrequent histopathological lesion. It is most frequently seen in Wegener granulomatosis, but may also occur in idiopathic rapidly progressive glomerulonephritis, anti-GBM disease, and microscopic polyarteritis nodosa.

Figures 1–6 relate to a kidney biopsy with 62 glomeruli, 31 of which were hyalinized. Some glomeruli exhibit well developed cellular crescents (Figure 1), others partly cellular and partly hyalinized crescents. The reader will note fibrinoid necrosis of the tuft with granulocytic infiltration in some glomeruli (Figure 2). Periglomerular granulomatous reaction with epithelioid cells and palisade forming is found around the necrotizing, partly sclerosed or obsolete glomeruli (Figures 2–4). In the interstitium moderate fibrosis, with severe lymphocytic and polymorphonuclear leukocytic infiltration, but without granulomas, is found. Casts of proteinaceous material are seen in some tubules (Figure 5). Vessels were not lesioned (Figure 6), except for fibrinoid necrosis of one small afferent or efferent arteriole (Figure 7). The diagnosis thus is a severe crescentic form of glomerulonephritis with signs of vasculitis.

What is the clinical presentation of this case? A 28-year-old woman was hospitalized with an acute abdomen with severe abdominal pain, leading to surgical intervention which yielded no specific findings. On admission, serum creatinine was markedly elevated (16.1 mg/dl) but the patient had no symptoms of uraemia. Dialysis was started. The patient was oliguric. Urinalysis showed microscopic haematuria. When a complete history could be taken, it was found that 6 months previously she had had a transient episode of rhinitis for which she had received a brief course of local steroids. Three months later she complained of fatigue, arthralgia and a slowly progressive loss of body weight. Eleven days after surgery and intensive dialysis treatment a renal biopsy was performed (see above). Further investigation revealed normal values of C3, ANF, anti-double-stranded DNA and ANCA antibodies.

What conclusions do we draw from this constellation of anatomical and clinical findings? This lady presumably suffers from Wegener granulomatosis.

![Fig. 1. Glomerulus with cellular crescent and few granulocytes in it and in the glomerular tuft. Around the glomerulus marked interstitial cellular infiltration. HE × 200.](image1)

![Fig. 2. Glomerulus with fibrinoid necrosis and granulomatous crescent. Granulocytic infiltration with few eosinophils is seen in the necrotizing tuft, the granulomatous crescent and the interstitium. HE × 200.](image2)
Fig. 3. Periglomerular granulomatous reaction with palisading of the epithelioid cells. The tuft is partly sclerosed. In the granuloma mononuclear cells are seen. HE × 200.

Fig. 4. Fibrotic scarring glomerulus with palisading granulomatous reaction (sunburst granuloma). Severe mononuclear cellular infiltration is seen in the interstitium. HE × 200.

Fig. 5. Proteinaceous material in tubules lumen and mononuclear cells in the peritubular interstitium. HE × 200.

Fig. 6. Normal wall of small arteries and heavy, predominantly mononuclear cells, infiltration in the interstitium. HE × 200.

Fig. 7. Fibrinoid necrosis in the wall of very small vessels in the centre of the figure. HE × 200.

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