C9 Deposits in Renal Tissue

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Dear Sir,

Immune complex deposits can be visualized in kidney biopsies by immunofluorescence and are known to play a role in the pathogenesis of renal disease. Previous data suggest that the presence of membrane attack complex associated antigens in such tissues, indicating a complete activation of the complement system, might be related with alterations of basement membranes [1–3].

We report the results of systematic immunofluorescence studies which allowed the visualization of C9 deposits in 60 out of 81 kidney biopsies from glomerulonephritis (GN) patients.

Correlations with clinical data at the time of biopsy and through follow-up were also looked for. Direct immunofluorescence was performed on all renal samples to evidence immunoglobulins and C1q and C3 deposits (sera from Behring, Mannheim, FRG). C9 and factor B were looked for using an indirect immunofluorescence technique (sera from Behring, second-step reagent from Institut Pasteur, Paris, France). All reagents had previously been checked for monospecificity. These tests, together with histological observations, allowed the following classification of the 81 cases studied: 19 focal GN, 5 membranous GN, 15 membranoproliferative GN, 28 idiopathic IgA GN, 11 GN with minimal lesions. The remaining 3 cases were secondary GN, associated, respectively, with systemic lupus erythematosus, leprosy, and anaphylactoid purpura. Clinical evaluation of the patients included the measurement of blood pressure, haematuria, proteinuria, and serum creatinine. At the time of biopsy, 19 patients (24%) were hypertensive, 57 (70%) had significant proteinuria, and 51 (63%) haematuria. In 14 cases, the creatinine level was higher than 130 μmol .

Tubulointerstitial and vascular deposits of C9 were observed in all types of GN: in 33 (41%) and 45 (56%) cases, respectively.

Glomerular deposits were evidenced in 60 (74%) biopsies. The topography of C9 deposits was strongly correlated with that of immunoglobulin deposits, according to the type of GN. C9 was associated with mesangial IgA in Berger's disease ($p = 0.01$), with parietal IgM in focal and membranous GN ($p = 0.01$), and with extramembranous

IgG in membranous GN ($p = 0.01$). A significant correlation was also observed between the presence of C3 and C9 deposits ($p = 0.001$) which had a similar localization.

Surprisingly, the presence of C9 deposits appeared to be correlated with a satisfactory renal function, suggesting that patients with an altered renal function are more likely free from C9 glomerular deposits. This trend was confirmed by follow-up studies which indicated that, essentially within the 1st year of observation, a dramatic deterioration occurred in the C9-negative group. This was apparent from a joint analysis of all types of GN and also from a more specific analysis of each type of GN, apart from the IgA GN group where all patients had glomerular C9. These results were not dependent on the estimated duration of the disease at the time of biopsy.

Our data indicate that the assessment of C9 deposits in renal biopsies appears interesting in demonstrating a complete activation of the complement cascade in many cases. A correlation between this lytic sequence and glomerular alterations was not observed. Conversely, whatever the time of biopsy, the presence of C9 deposits appeared to be of better prognosis. However, further follow-up studies are necessary to confirm this trend and to evaluate its prognostic value.

References

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