C5 Measurement in Membranoproliferative Glomerulonephritis Patients with C3 Nephritic Factor

H.	Hiroyuki	Ohi
S.	Shizuhiko	Watanabe
M.	Masato	Seki
T.	Takayuki	Fujita
F.	Fumihiko	Ohmori
M.	Michinobu	Hatano

Department of Internal Medicine II, Nihon University School of Medicine, Tokyo, Japan

Hiroyuki Ohi, MD, Department of Internal Medicine II, Nihon University, School of Medicine, 1-30, Oyaguchi Kamimachi, Itabashi-ku, Tokyo (Japan)

% normal

Dear Sir,

We confirmed the presence of a C3 nephritic factor (C3NeF), which is an auto-antibody to C3bBb, in sera from 14 patients with membranoproliferative glomerulonephritis (MPGN) who had a persistently low level of C3. The serum complement components in these patients were as shown, in figure 1, C1 being $98 \pm 22\%$ and C4 being $88 \pm 37\%$ normal (mean $\pm$ SD). It should be noted that C5 varied widely in the range of $55 \pm 35\%$ normal, in spite of the low value of C3. C3NeF activates C3 in the fluid phase, but neither forms C5 convertase nor activates C5; it forms C3 and C5 convertases and activates C3 and C5 from the terminal component in the solid phase¹. On this basis, we considered that, in such patients, the C5 level might reflect activation by C3NeF itself or a C3NeF-related factor in the kidney, and we examined the relationship between the changes in C5 level and responses to treatment of prognosis in C3NeF patients in whom long-term observations were possible.

It was found that patients whose C3 and C5 levels were persistently low tended to be refractory to treatment, and that in some of these patients the condition leaned towards renal insufficiency. Those whose C5 level did not decrease, although with a persistently low C3 level, and those whose C5 level was low initially and increased after treatment did respond to the treatment, and such patients showed no tendency to renal insufficiency. Similar results were obtained in persistently low C3 patients in whom C3NeF was not detected.

C3

C4

C1

C5 C9

($\bar{x}$ = 14)

Fig. 1. Complement components in MPGN patients with C3NeF (C3bBb stabilizing factor).

Measurement of the C5 level may provide an indication of how to treat such patients or of their prognosis. Hitherto, there has been no evidence suggestive of any clear relationship between the

prognosis of MPGN and low complement levels (C3 levels)². However, the complement system is considered to be affected by C3NeF and various other factors in MPGN³. It seems necessary therefore for the purposes of clarifying the nature of MPGN, to classify patients according to factors affecting the complement activity, as done for the C5 level in

218

Ohi/Watanabe/Seki/Fujita/Ohmori/Hatan

C3NeF patients, and to investigate the relationships between the clinical picture and complement components other than C3, according to the factor functions.

3 Ohi, H.; Amos, N.; Schifferli, J.A.; Peters, D.K.: Characterization of an alternative pathway activating factor in serum of a patient with MPGN. 9th Int. Complement Workshop (Abstract). *Molec. Immunol.* **79**:1392 (1982).

References

Sissons, J.G.P.; Liebowitch, J.; Amos, N.; Peters, D.K.: Metabolism of the fifth component of complement, and its relation to metabolism of the third component, in patients with complement activation. *J. Clin. Invest.* **59**:704–715 (1977).

Cameron, J.S.; Ogg, C.S.; White, R.H.R.; Glasgow, E.F.: The clinical features and prognosis of patients with normocomplementemic mesangio-capillary glomerulonephritis. *Clin. Nephrol.* **7**:8–13(1973).