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만성혈액투석환자에서 Beta2-microglobulin과 생존율과의 관계

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Higher Serum β2-microglobulin Levels are Associated with Better Survival in Chronic Hemodialysis Patients: A Reverse Epidemiology

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Background/Aims: β2-Microglobulin (β2-M) has been considered a surrogate marker of putative mid-molecular weight (MW) uremic toxins, compounds that are difficult to dialyze by low-flux dialysis membranes. This study was performed to evaluate the relationship between serum β2-M and survival of chronic hemodialysis (CHD) patients and the association of β2-M levels and factors associated with mortality.

Methods: Part I of this study was a retrospective cohort evaluation that determined the relationship between β2-M and mortality, and Part II was a cross-sectional study that evaluated the relationship between β2-M and factors associated with mortality. Laboratory parameters, including β2-M, albumin, prealbumin, creatinine, blood urea nitrogen (BUN), high-sensitivity C-reactive protein (hs-CRP), lipid battery, KT/V, and normalized protein nitrogen appearance (nPNA), were reviewed in Part I and measured in Part II. Clinical and demographic data, including age, sex, duration of hemodialysis, presence of cardiovascular disease, and presence of diabetes mellitus, were also recorded.

Results: Part I: During the follow-up period of 5 years, there were 95 all-cause deaths among the 289 patients. Comparison of survivors and non-survivors indicated that serum β2-M was higher in survivors (36.8±12.3 vs. 32.6±13.2 μg/mL, p=0.009). Kaplan-Meier analysis indicated that all-cause mortality in the lower β2-M group was significantly higher compared to the higher β2-M group (p<0.0001). Multivariate Cox regression analyses indicated elevated β2-M levels were significantly associated with lower mortality rate (relative risk: 0.608; 95% CI: 0.37 to 0.99; p=0.046). Part II: The mean serum β2-M concentration was 37.1±14.4 μg/mL. Univariate analysis indicated that β2-M was positively correlated with nPNA, duration of HD, BMI, and the concentrations of creatinine, albumin, BUN, and hs-CRP, but was negatively correlated with HDL-C concentration. Multiple regression analysis indicated that levels of nPNA (p<0.001), duration of hemodialysis (p<0.001), creatinine (p<0.001), albumin (p=0.006), BUN (p=0.011), and HDL-C (p=0.038) were independently associated with serum β2-M concentration.

Conclusion: Our results showed that higher serum β2-M levels are associated with better survival in CHD patients and that nutritional status might be an independent predictor of serum β2-M concentration in these patients.

Key Words: 베타2 마이크로글로불린, 만성혈액투석, 생존률
Beta2-microglobulin, Hemodialysis, Survival