Modification of Serum Beta-2-Microglobulin in Chronic Hemodialysis Patients

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Dear Sir,

Recently, extrarenal amyloid deposition has been recognized in long-term maintenance hemodialysis patients [1]. \( \beta_2 \)-Microglobulin (\( \beta_2 \text{M} \)) has been identified as the precursor of dialysis-related amyloid recovered from carpal tunnel or bone cysts [2].

By the way, presence of modified serum \( \beta_2 \text{M} \) which has \( \alpha \)-mobility and low \( \pi \) compared with native \( \beta_2 \text{M} \) has been reported in malignant lymphoma [3], small-cell lung cancer [4], AIDS [5], and modified urine \( \beta_2 \text{M} \) was found in the urine of patients with cadaveric renal transplant [6]. Nissen and Claësson [7] suggested that the modification of serum \( \beta_2 \text{M} \) due to serine protease digestion might reflect early events in allospecific responder cell activation. More recently, Forbes et al. [8] reported that heterogeneity of serum \( \beta_2 \text{M} \) between the above-mentioned diseases corresponded to the difference of converting activity, namely protease activity and no modified \( \beta_2 \text{M} \) was detected in the freshly drawn serum of these patients.

Nevertheless, we have found faint \( \alpha \)-mobility \( \beta_2 \text{M} \) in the freshly drawn serum of some patients on long-term maintenance hemodialysis (fig. 1a). However, after being kept at room temperature for 24 h, much \( \alpha \)-mobility form was observed (fig. 1b). Considering the converting activity as reported by Forbes et al. [8], careful examination of the modified form of serum \( \beta_2 \text{M} \) should be performed also in chronic hemodialysis patients.

References

Fig. 1. Immunoblot analysis of serum from chronic hemodialysis patients. The serum fractionated by nondenaturing polyacrylamide gel electrophoresis was transferred to the nitrocellulose membrane. Immunodetection using anti-human \( \beta_2 \text{M} \) antibody was performed. a, b
Freshly drawn serum of hemodialysis patients 1 = a patient hemo-dialyzed with cuprophan membrane for 3 years; 2 = a patient hemo-dialyzed solely with cuprophan membrane for more than 10 years). b The serum of the same patients kept at room temperature for 24 h. Arrowheads indicate the position of modified β2M.