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]. β_2 -Microglobulin (β_2 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 β_2 M which has α -mobility and low pI compared with native β_2 M has been reported in malignant lymphoma [3], small-cell lung cancer [4], AIDS [5], and modified urine β_2 M was found in the urine of patients with cadaveric renal transplant [6]. Nissen and Claesson [7] suggested that the modification of serum β_2 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 β_2 M between the above-mentioned diseases corresponded to the difference of converting activity, namely protease activity and no modified β_2 M was detected in the freshly drawn serum of these patients.

Nevertheless, we have found faint α -mobility β_2 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 α -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 β_2 M should be performed also in chronic hemodialysis patients.

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1 Anti-human β_2 M rabbit serum was generously supplied by Iatron Laboratory Inc., Tokyo, Japan

2 1 2
 β_2 M
a b

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 β_2 M antibody was performed 1. a

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 β_2 M.

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