Estimation of Beta-2-Microglobulin Production from Lymphocytes in Hemodialysis Patients

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Dear Sir,

Recently, β_2 -microglobulin (β_2 -MG) has been recognized as the major precursor protein of dialysis-associated amyloidosis in long-term hemodialysis (HD) patients [1], and several investigators have reported that β_2 -MG production increased by HD with cuprophane membrane [2,3]. However, none has reported the result of direct evaluation of whether β_2 -MG production from lymphocytes in HD patients did increase or not.

Nineteen patients on regular HD, 5 patients with chronic renal failure under conservative therapy (CRF), and 9 healthy volunteers (control) were studied. Lymphocytes, separated from the venous blood by the double-gradient method, were adjusted to 1×10^6 ml with culture medium (RPMI 1640; MA Bioproducts, Walkersville, Md.) containing 10% fetal calf serum. One milliliter of medium containing lymphocytes and 10 μ l of stimulants, IFN- α (103 U/ml), IFN- β (103 U/ml), IFN- γ (103 U/ml), interleukin (IL)-1 (103 U/ml), or IL-2 (2×10^2 U/ml) were added to each well. After 96 h of incubation, β_2 -MG concentrations in supernatant and lymphocytes, separated by centrifugation, were measured by the enzyme immunoassay (Fuji Rebio, Tokyo).

Results were summarized in table I. β_2 -MG was produced by various stimulants from lymphocytes. IFN- γ was the strongest stimulator for the β_2 -MG production. IL-1 did not stimulate β_2 -MG production. After the stimulation, no significant difference in the increase in supernatant concentrations of β_2 -MG was observed among the groups of control, CRF, and HD. β_2 -MG in lymphocytes after 96 h of incubation could not be detected. In HD patients, divided into two groups by the membrane materials of dialyzer, there was no significant difference in the level of β_2 -MG production between the group treated with regenerated cellulose and that with

Mean $\pm$ SE. * $p < 0.05$, ** $p < 0.01$, vs. no stimulant.

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polymethylmethacrylate membrane. Furthermore, in HD patients, no significant correlation was observed between serum β_2 -MG concentration and β_2 -MG production from lymphocytes.

In conclusion, β 2-MG production from lymphocytes in HD patients does not increase compared to that in control or CRF, and it is affected neither by the membrane materials of dialyzer nor by serum β 2-MG concentration.

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References