Hemodialysis-related induction of interleukin-6 and interleukin-8 production by peripheral blood mononuclear cells

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Objective: To investigate whether interleukin-6 (IL-6) and interleukin-8 (IL-8) can be used as the evaluating indices of dialyzer biocompatibility.

Methods: The levels of plasma IL-6 and IL-8 were measured by the sandwich enzyme linked immunosorbent assay (ELISA) method in 15 hemodialysis (HD) patients with end-stage renal failure (ESRF) before and post HD. Those patients were randomly divided into three groups according to the dialysis membrane used: cellulose acetate (CA) membrane group, Hemophan (HE) membrane group and polysulfone (Psu) membrane group respectively. Another five non-HD (NHD) ESRF patients and five healthy subjects were selected as controls.

Results: The plasma of IL-6 and IL-8 levels in the CA and HE groups were significantly higher than that of patients in the Psu group, NHD patients and normal subjects (p < 0.05). Moreover, no significant difference could be demonstrated in the plasma IL-6 and IL-8 concentrations between patients in the CA and HE groups (p > 0.05), and among patients in the Psu group, NHD patients and normal subjects (p > 0.05). There was also no difference in the levels of IL-6 and IL-8 in patients dialyzed with the three different dialyzers between pre- and post-dialysis. However, a significant positive linear correlation existed between the plasma IL-6 and IL-8 levels (p < 0.05).

Conclusions: Our results suggest that the levels of plasma IL-6 and IL-8 were related to the type of dialyzers and could be used as indices evaluating the biocompatibility of dialyzers. Furthermore, the change of one cytokine can indirectly reflect the tendency of the other. (Hong Kong J Nephrol 2001;3(1):33-37)

Key words: Biocompatibility, Dialyzer, Hemodialysis (HD), Interleukin-6 (IL-6), Interleukin-8 (IL-8)