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만성신부전환자에서 강화투석이 심기능에 미치는 영향

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Intensive Hemodialysis in Patients with ESRD Improves Cardiac Function through Inflammatory Regulation

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Purpose : Cardiovascular diseases are the leading cause of death in patients with ESRD. A hemodialysis can improve left ventricular ejection fraction of ESRD patients. A decrease in ECF volume, removal of myocardial depressant uremic toxins and a reduction of atrial pressure were proposed as a possible mechanism for this improvement. The aim of this study is to examine the other factors influencing the cardiac function and investigate the change of inflammatory cytokines before and after intensive hemodialysis.

Methods : Among the patients who were undergoing hemodialysis or peritoneal dialysis due to ESRD, patients with pulmonary edema and impaired systolic function or pericardial effusion were enrolled. They underwent daily 4 horus hemodialysis for 7 days. Clinical and laboratory data were prospectively collected and 2-D echocardiography was done before and after intensive hemodialysis. The patient's serums were collected before and after intensive hemodialysis and TNF-alpha, adiponectin and IL-10 were measured by ELISA. LPS-stimulated cytokines also were measured by ELISA.

Results : 25 patients were enrolled. The mean age was 51.8 years, and 12 patients were male. There was a significant increase in ejection fraction (3.59±6.32%, p=0.015) and a tendency to decrease in CRP (21.84 ± 54.99 mg/L, p=0.077) after intensive hemodialysis. There were significant differences in IL-10 (264.8±463.4 pg/mL to 22.15±28 pg/mL, p=0.047) and LPS-stimulated IL-10 (52±77 pg/mL to 251± 439.4 pg/mL, p=0.049). LPS-stimulated adiponectin had a tendency to increase after intensive hemodialysis (12.2±5.1 ug/mL to 15.8± 8.2 ug/mL, p=0.076).

Conclusion : Intensive hemodialysis increased in ejection fraction significantly and had a tendency to decrease in CRP. After intensive hemodialysis, IL-10 level was reduced but LPS-stimulated IL-10 level was increased. It means that appropriate immunological response and subsequent reduction of inflammation may be related to be the factor that improves cardiac function.