

## 혈액투석환자에서 초기 체액저류가 심혈관질환 이환율에 미치는 영향

가천의과대학 내과

최성한, 신동수, 정을식, 성지윤, 장제현, 김세중, 이현희, 정우경, 정지용

### Early Interdialytic Fluid Retention is Associated with Cardiovascular Morbidity in Incident Hemodialysis Patients

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**Background:** Fluid retention is a major clinical problem in patients undergoing hemodialysis and is associated with cardiovascular morbidity and mortality. Patient with end stage renal disease have similarities to heart failure. Volume overload in heart failure is associated with worse outcome. Removal of fluid during the hemodialysis is the cornerstone of volume management in this population. Therefore, we hypothesized that greater interdialytic fluid retention (IDFR) is associated with poor cardiovascular outcomes in incident hemodialysis patients.

**Methods:** We retrospectively reviewed the 174 patients who newly started and maintained the hemodialysis over 6-month in Gachon University Gil Hospital between January 1, 2003 and December 31, 2008. We did not take the first 3 month IDFR into account by reason of stabilized period in incident hemodialysis patients. According to the average IDFR of 4~6 month, we divided into 2 groups by the median value: Lower IDFR (<2.17), Higher IDFR (Fluid retention  $\geq$ 2.17). The associations of IDFR with cardiovascular outcomes were evaluated with the use of Cox proportional regression analysis.

**Results:** Higher IDFR showed higher prevalence of diabetes, better nutritional status (higher phosphorus and nPNA level). 24 hour urine volume and diuretics usages were similar between two groups. In univariate analysis, higher IDFR, hemoglobin (Hb), total cholesterol and LDL cholesterol level were associated with cardiovascular morbidity. After multivariate adjustment, higher IDFR, low Hb, and high LDL cholesterol were associated with increased risk of cardiovascular event. The odds ratio (95% confidence interval) of cardiovascular morbidity 2.213 (1.011-4.846,  $p=0.047$ ) in the higher IDFR, 0.557 (0.355-0.876,  $p=0.011$ ) in Hb level, and 1.106 (1.003-1.028,  $p=0.014$ ) in LDL cholesterol level, respectively. However, all-cause and cardiovascular mortalities were not significantly different between two groups.

**Conclusion:** In incident hemodialysis patients, early greater IDFR is associated with higher risk of cardiovascular event. Further research with large subjects is needed to elucidate the pathophysiological mechanisms that link fluid retention to increased cardiovascular morbidity.

**Key Words:** 체액저류, 혈액투석, 심혈관질환이환

Fluid retention, Hemodialysis, Cardiovascular morbidity