

## 혈액투석환자에서 심신증후군에 철결핍성 빈혈이 미치는 영향

양산부산대학병원 신장내과

김일영, 이동원, 이수봉, 이경남, 곽임수, 성은영, 양병윤, 이하린

### Cardiorenal-Anemia-Iron Deficiency Syndrome (CRIDS) in Hemodialysis (HD) Patients

Il Young Kim, Dong Won Lee, Soo Bong Lee, Kyung Nam Lee, Ihm Soo Kwak  
Eun Young Seong, Byeong Yun Yang, Harin Lee

Yongsan Pusan National University Hospital, Nephrology Department

**Introduction:** Recently, growing awareness that HF, renal impairment, and anemia are frequent co-morbidities which can exacerbate one another in a vicious circle has led to the concept of the “cardiorenal anaemia syndrome (CRAS)”. Many researchers expected higher dose administration of ESA could improve prognosis of CRAS. However some study reported adverse effects of ESA worsening vascular diseases. However, iron therapy got cardiac function improved in some studies of patients with HF. The role of iron deficiency (ID) within the complex interplay of HF, anemia, and renal dysfunction for patient undergone HD has been less well examined, although ID is highly prevalent in this setting. Therefore we sought to assess how ID affects heart function and clinical prognosis in HD patients with anemia.

**Methods:** We included patients with anemia defined as hemoglobin level <12 g/dl in women and <13 g/dl in men. All patients had been on HD lasting over 3 months and checked echocardiogram (echoCG) between 1. 2008-7. 2012. Demographic, clinical, laboratory, and echoCG data were reviewed from electronic records. The study population was divided into 2 subgroups according to the presence of presence of ID. ID was defined as serum ferritin <100 µg/L, or serum ferritin ≥100 µg/L and ≤300 µg/L with T<sub>sat</sub> <20%. We compared echoCG between 2 groups. The end points were all-cause mortality and adverse cardiac event including ACS or acute pulmonary edema required hospitalization.

**Results:** Total subjects were 243 (ID:Non ID=113:130 patients). The baseline characteristics were not different between groups. Interestingly EF and CO represented systolic heart function were not different in echoCG, but E/E' reflected diastolic heart function was statistically different (non ID: ID, 14.3±4.73:17.0±7.65, p 0.018). ID group showed higher adverse cardiac event rate and all cause mortality. During a median follow-up of 12.3 months, the multivariate-adjusted OR of ID group for adverse cardiac event was 4.11 (95% CI:1.28-13.3; p 0.018).

**Conclusion:** In patients undergone HD with anemia, ID is common and constitutes a predictor of unfavorable cardiac and survival outcome. ID can cause diastolic heart dysfunction as well. Therefore the management of ID is becoming an important therapeutic target in patients with CKD. But the exact mechanisms are still vague. Further studies are needed to figure it out and to set the therapeutic goal for treatment ID in CKD patients.

**Key Words:** 심신증후군, 철결핍성 빈혈, 혈액투석

Cardiorenal syndrome, Iron, Hemodialysis