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Association of hepcidin with anemia management in incident dialysis patients: is HD and PD different?

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Objectives: Regarding anemia management in chronic kidney disease, there are still no absolute parameters which can effectively reflect iron metabolism and erythropoiesis. Heparin has been considered to be a key regulator of iron homeostasis in recent years, however, its relationships to other variables are not yet well understood. This study aimed to evaluate association of serum hepcidin level with iron parameters and other clinical parameters in end-stage renal disease (ESRD) patients.

Methods: A total of 110 incident dialysis patients were enrolled from a multicenter prospective cohort study. All patients, 68 on peritoneal dialysis (PD) and 42 on hemodialysis (HD), were prospectively followed up for 6 months. Serum hepcidin level was measured by a commercial ELISA kit (DRG Instruments, Marburg, Germany). The relations of hepcidin at baseline and 6 months to clinical parameters were investigated using linear regression models.

Results: Heparin levels significantly increased after 6 months dialysis in both PD and HD groups compared to baseline (Δ hepcidin 26.8 ± 39.6 , $P < 0.001$, and 22.9 ± 43.8 , $P = 0.002$, respectively). PD group showed higher hemoglobin after 6 months dialysis than HD group (10.7 ± 1.3 vs. 10.0 ± 1.0 g/dL, respectively, $P < 0.001$) in spite of less use of erythropoiesis-stimulating agents during study period (CERA dose: 4.0 ± 2.8 vs. 5.3 ± 2.4 mcg/kg/month, respectively, $P < 0.013$), while hepcidin was significantly higher in PD group than HD group at 6 month follow-up (113.8 ± 27.6 vs. 101.7 ± 24.4 ng/ml, respectively, $P < 0.021$). A positive correlation was found between serum hepcidin and ferritin in incident ESRD patients and after 6 months dialysis irrespective of dialysis modality. Of note, there was a negative correlation between serum hepcidin level and urine volume in incident ESRD patients at baseline and PD patients at 6 months (both $P < 0.05$). The same tendency was observed in HD patients ($P = 0.060$).

Conclusions: Serum hepcidin level increased in both incident PD and HD patients. Heparin level is closely related to serum iron parameters. It is important to preserve urine volume in ESRD patients to reduce serum hepcidin level.

Keywords : ESRD; hemoglobin; hepcidin; incident dialysis; iron parameters; urine volume