

EFFICACY OF FERRIC CITRATE HYDRATE IN PERITONEAL DIALYSIS PATIENTS WITH RENAL ANEMIA.

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Introduction and objectives

Ferric citrate hydrate(FCH) is a novel iron-based phosphate binder with shown efficacy and additional effects on iron stores and use of erythropoiesis-stimulating agents(ESAs) in patients with dialysis¹. The aim of this study is to assess the effect of FCH against iron stores and ESAs in peritoneal dialysis patients.

Methods

We performed a retrospective analysis of 34 peritoneal dialysis patients prescribed with FCH in a single center from June 1, 2014 to March 31, 2016. We provided detailed analyses of monthly change in serum phosphate, serum iron parameters, hemoglobin and ESA usage over 6 months. Statistical analysis was performed using the JMP[®] 10 software(SAS Institute Inc., Cary, NC, USA). Differences between before and after the administration of FCH were examined for statistical significance using Dunnett's test.

Results

➤ Note:The weekly dose of ESA was converted into erythropoietin-beta units. (darbepoetin alfa (DA) : continuous erythropoietin receptor activator (CERA) =1:1 DA/CERA : erythropoietin-beta=200 : 1)

Table 1. Baseline characteristics of subjects (n=34)

| | |
|-------------------------------------|------------------------|
| Age, yr (mean \pm SD) | 64.4 \pm 2.8 |
| Sex (male / female) | M 21(62%) / F13(38%) |
| Systolic /Diastolic BP (mmHg) | 139 \pm 1/78 \pm 7 |
| BW (kg) | 62.4 \pm 5.5 |
| PD duration (month) | 34.3 \pm 2.2 |
| Etiology of ESRD,n(%) | |
| Diabetic nephropathy | 11(32%) |
| Nephrosclerosis | 15(44%) |
| Chronic GN | 5(15%) |
| Other | 3(9%) |
| Efficacy parameters (mean \pm SD) | |
| ESA dose(U/wk) | 10,088 \pm 3,527 |
| Transferrin saturation (TAST) (%) | 30.8 \pm 1.6 |
| Ferritin (ng/mL) | 146.8 \pm 137 |
| Hemoglobin(Hb) (g/dL) | 10.0 \pm 1.0 |
| Serum Phosphate (mg/dL) | 5.8 \pm 1.0 |

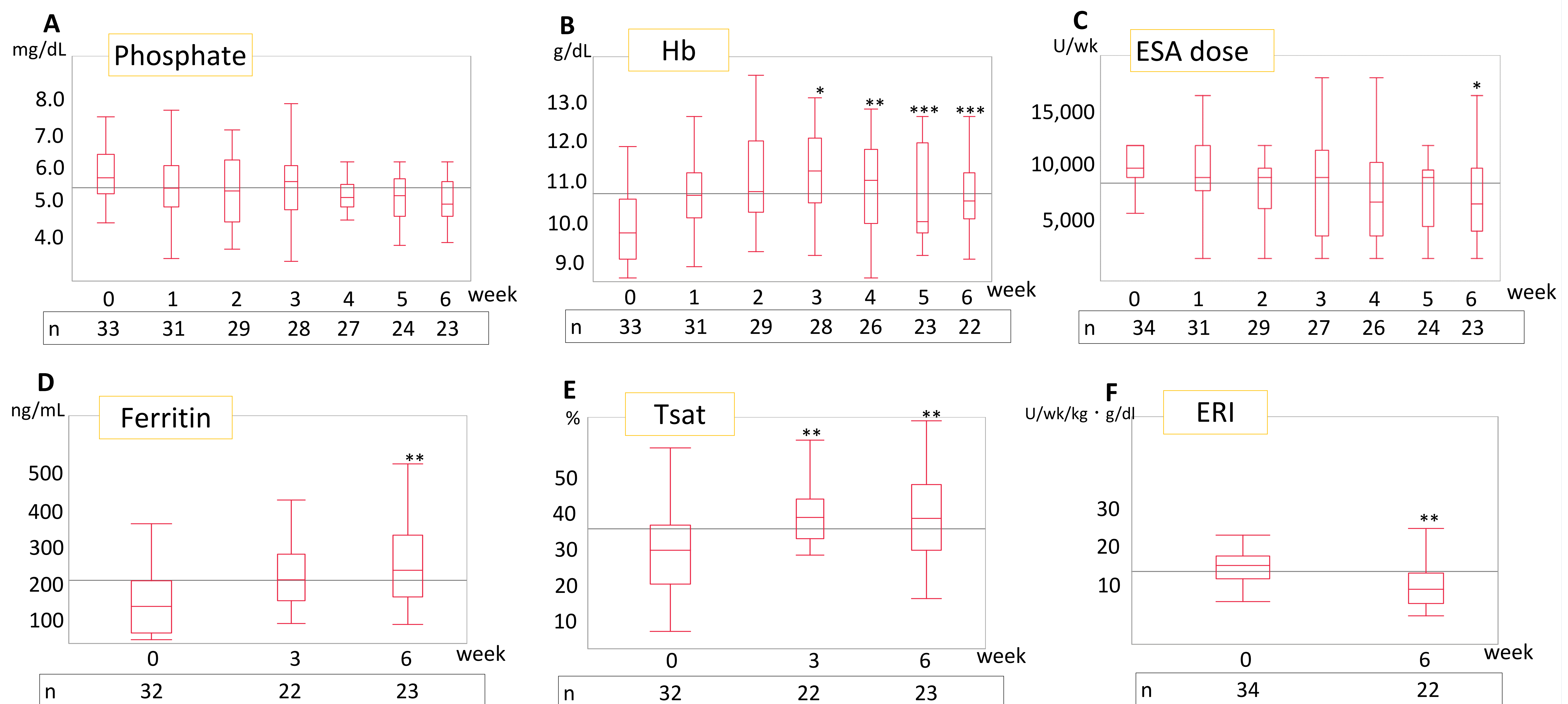


Figure 1. Effect of 6-month administration of FCH on serum phosphate(A), Hb(B), ESA dose(C), Ferritin(D), Tsat(E) and ERI(Erythropoietin resistance index)(F). FCH increased hemoglobin levels (B), ferritin(D) and TSAT levels(E) over 6 months. FCH reduced ESA dose (C) and reduced ESA resistance index(ERI)(F).

ERI was calculated as the ration between the weekly weight-adjusted ESA dose and Hb concentration.

All values are expressed as the means \pm SEM. * p <0.05, ** p <0.01, *** p <0.001

Table 2. Variation of FCH dose over 6 months

| Initial dose (mg) | n | 6 months after dose (mg) | n |
|-------------------|----|--------------------------|----|
| 500 | 1 | 500 (maintain) | 1 |
| 750 | 29 | 500 (down) | 1 |
| | | 750 (maintain) | 21 |
| | | 1,500 (Up) | 2 |
| | | *0 (withdrawal) | 5 |
| 1,500 | 8 | 1,500 (maintain) | 6 |
| | | 750 (down) | 2 |

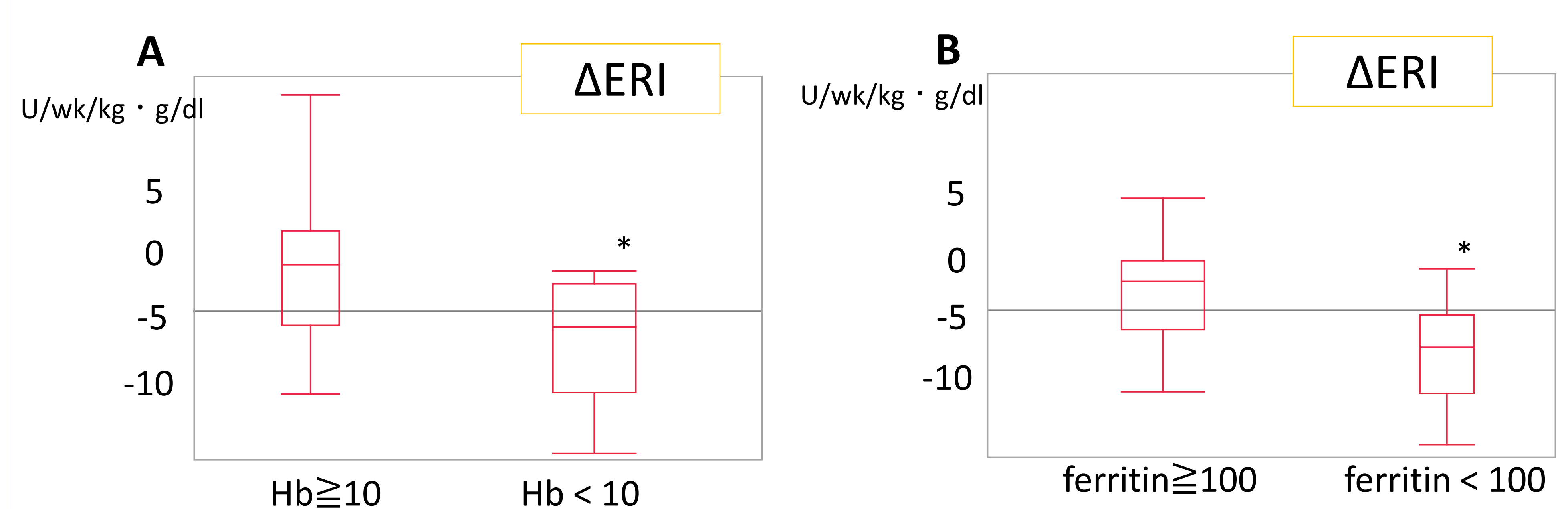


Figure 2. Analysing Δ ERI by iron parameters at baseline, low Hb level (<10 g/dL)(p =0.04)(A) and low ferritin levels (<100 ng/ml)(p =0.046)(B) statically improved Δ ERI.

Conclusion

In peritoneal dialysis patients, treatment with FCH as a phosphate binder resulted in increased iron parameters and reduced ESA use while maintaining hemoglobin levels over 6 months. The efficacy of FCH against renal anemia was demonstrated.

References

1) Yokoyama K., Akiba T., Fukagawa M., Nakayama M., Sawada K., Kumagai Y., et al. Long-term safety and efficacy of a novel iron-containing phosphate binder, JTT-751, in patients receiving hemodialysis. J Ren Nutr 24:261-267,2014.

