Treatment with Erythropoietin Increases Intravascular Volume Contraction during a Hemodialysis Session

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HT=Predialysis hematocrit; Δ WT=absolute weight loss during a dialysis session; % Δ WT=relative weight loss during a dialysis session (weight/postdialysis weight $\times$ 100).

Dear Sir,

Improvement of anemia with erythropoietin (EPO) in uremic patients is not associated with total blood volume changes, as the increase of red cell mass is counterbalanced by a decrease of plasmatic volume [1, 2]. We have observed increased incidence of intradialytic symptomatic hypotension and cramps in some of our patients receiving EPO [un-publ. data], and we hypothesized that impairment in hemodialysis (HD) tolerance could be a consequence of the aforementioned plasmatic volume contraction.

We have assessed the effect of EPO treatment on blood volume decrease during an HD session in 72 patients: Group A (n = 28) receiving EPO and group B (n = 44) not receiving EPO. Relative blood volume (RBV) at the end of treatment was calculated according to the equation:

$RBV = \frac{\text{Hematocrit predialysis}}{\text{Hematocrit postdialysis}}$, where RBV is the postdialysis blood volume as a percentage of the predialysis value [3]. Hematocrit and absolute and relative weight loss at the end of the HD session were similar in both groups. However, RBV was lower in EPO-treated patients (table 1). End-HD RBV was not influenced by sex (39 male, 33 female; 0.88 ± 0.06 vs. 0.89 ± 0.08), preexisting hypertension (27 hypertensive, 45 normotensive; 0.89 ± 0.06 vs. 0.89 ± 0.07) or dialysis technique (42 acetate, 20 bicarbonate, 10 hemodiafiltration; 0.89 ± 0.07 , 0.88 ± 0.06 and 0.89 ± 0.1 respectively).

Considering these data, blood volume contraction during an HD session seems to be more intense in EPO-treated patients than in patients with similar predialysis hematocrit and intradialysis weight loss not receiving the drug. This behavior might be explained by the decrease in plasmatic volume reported after partial anemia correction with EPO and could be a reasonable explanation for the impairment in HD tolerance we have observed in some of our patients receiving this treatment.

References

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