Long-Term Monitoring of Iron Stores in Renal Transplant Recipients

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Dear Sir,

In a recent article [1] the authors found that serum ferritin (SF) levels in renal transplant recipients (RTR) 3 years after transplantation were similar in all patients and concluded that iron deficiency anemia is not clinically relevant because dietary iron is sufficient to normalize iron stores.

In some situations, however, SF alone may not be indicative of the iron store status [2–4].

Recently we have developed a more sensitive criterion [4] than SF assay alone for iron store assessment in maintenance hemodialysis patients. In order to make clear whether this method is effective even in iron store assessment in RTR, we re-evaluated retrospectively iron stores in our RTR by SF levels and by this criterion.

We studied 22 RTR (17 males and 5 females) with good graft function (serum creatinine < 2 mg/dl). The follow-up period after transplantation was between 13 and 97 months (mean $\pm$ SE: 50 ± 6 months). The patients were divided into three groups (A, B and C) according to their SF basal levels before transplantation: high (6 cases), normal (11 cases) and low level (5 cases), respectively. The normal reference range (19–191 μ g/l) was calculated in 250 healthy volunteers [4]. In each patient we considered the following parameters monthly during the first 6 months and every 3 months thereafter: SF, hemoglobin (Hb), mean corpuscular volume (MCV), mean corpuscular hemoglobin (MCH), red cell distribution width (RDW), serum iron (Fe), total iron binding capacity (TIBC), saturation index of transferrin (SI). On these parameters we calculated the score according to our criterion [4] (score = $2.4 \text{ SF} + 11.4 \text{ Fe} - 0.8 \text{ TIBC} + 2.3 \text{ SI} + 1.8 \text{ MCV} + 30.5 \text{ MCH} \pm 55.1 \text{ RDW}$; optimal discriminant value = 451).

Changes in Hb and SF levels after transplantation are summarized in figure 1. Hb value rise was quicker in group A. At 6 months, however, Hb values were similar in all groups. Four patients of group A showed a very slow decrease of SF values (3 reverted to the normal range after 18, 42 and 51 months, respectively, and 1 had SF

GROUP A GROUP B GROUP C

0 2 4 6 9 12 18 24 30 36 48

Months

Fig. 1. Changes in the Hb and SF values after renal transplantation. Data are presented as mean $\pm$ SE; statistical analysis was performed by ANOVA table and Tukey's test after conversion of

ferritin values into natural logarithms. * $p < 0.05$; ** $p < 0.01$ versus groups B and C; $p < 0.05$; $p < 0.01$ versus group C.

values over the normal range after 15 months of follow-up). In the other 2 patients of group A, SF decreased rapidly after transplantation, with values below the normal range at 4 months. The latter patients did not show iron deficiency when evaluated by our criterion. No patient of this group had anemia ($Hb < 12.5$ g/dl) after

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the first year. In group B, SF decreased progressively, and many patients showed SF values below the normal range. In group C, SF did not change after transplantation. In contrast with Teruel et al. [1], only 4 of our patients (3 of group B and 1 of group C) showed again an increased SF value 24–36 months after transplantation.

The prevalence of anemia in these two groups varied at different times after transplantation: 8/n patients of group B and 5/8 of group C were anemic at 6 months and 6/11 of group B at 12 months. Thereafter (follow-up range: 13–78 months), 4 patients remained anemic and another 6 (3 of group B and 3 of group C) developed anemia. Four of these had normal SF values and 6 lower values. When evaluated by our criterion 100% had iron store depletion. The latter patients showed an increased Hb value after oral iron therapy. Six RTR of groups B and C were not anemic after the first year; one of them had normal SF values and 5 lower values. When evaluated by our criterion, none showed iron store depletion.

From these data we may infer that iron deficiency is frequent in RTR, and dietary iron, at least in some patients, may not be sufficient to normalize iron stores in a reasonable time. Iron store assessment by our criterion is more sensitive than SF assay alone, even in RTR.

References

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