Effect of Erythropoietin Administration on Thyroid Functions of the Patients Undergoing Regular Hemodialysis

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Dear Sir,

Impaired hypothalamic-hypophyseal-gonadal regulation in uremic patients may induce endocrine disturbances [1]. It has been suggested that administration of erythropoietin (Epo) may improve these endocrinological changes as well as correct anemia in patients with chronic renal failure [2]. In the present study, we investigated the influence of Epo administration on the thyroid function tests in patients undergoing regular hemodialysis (HD).

Fifty-nine clinically euthyroid patients, 31 males and 28 females, with an average age of 38.1 ± 14.8 years (range 15-60) on regular HD, were studied. Patients with goiter, known thyroid disease or with severe systemic illness were excluded. The underlying diseases were glomerulonephritis (n = 17), tubulointerstitial nephritis (n = 11), hypertension (n = 23), autosomal dominant poly-cystic kidney disease (n = 3) and unknown (n = 5). Patients were dialyzed for 4 h 2-3 times/week, receiving subcutaneous Epo 150 IU/kg/week (for 6 months) and oral fer-rum preparations. Serum hematocrit (Hct), total protein, albumin, triiodothyronine (T3), thyroxine (T4) and thyroid-stimulating hormone (TSH) were taken immediately before HD. Hematocrit, total protein and albumin were measured by autoanalyzer, T3 and T4 were analyzed by using radioimmunoas-say, and TSH was analyzed by ELISA. Results of the measurements of thyroid function were compared between patients receiving and patients not receiving Epo (controls).

T3 and T4 were below the normal range in 69 and 5% of the study group, respectively. TSH was above the normal range in 6.7% of the study group. Of the patients who were receiving Epo, T3 was low in 21 (70%), T4 was low in 1 (3%) and TSH was elevated in 2 (6.6%). On the other hand, T3 was low in 20 (69%), T4 was low in 2 (6.8%) and TSH was elevated in 2 (6.8%) of the patients who were not receiving Epo.

Epo therapy-associated well-being of patients on HD has been due not only to the correction of the anemia, but also to an associated correction of endocrine abnormalities. Lundin et al. [3] have reported that an Epo-associated increase of hair thickness

Student’s t test and Pearson’s correlation were used for statistical analysis.

Of the 59 patients, the mean Hct, total protein, albumin, total T3, total T4 and TSH were 19.7 ± 4.1%, 7.9 ± 1.2 g/dl, 4.3 ± 0.9 g/dl, 53.1 ± 25.5 ng/dl, 6.1 ± 1.6 µg/dl and 1.8 ± 1.6 mIU/ml, respectively. The results of the patients in respect to receiving Epo are summarized at table 1.
Serum $T_3$, $T_4$, and TSH were similar in the two groups and there was no statistical difference between the two groups. No significant correlation was demonstrated between Hct and $T_3$, $T_4$, TSH in patients who were receiving Epo. But a correlation was found between albumin and $T_3$ in this group ($r = 0.3863$, $p < 0.05$).

Table 1. Characteristics of the patients

References
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