Recombinant Human Erythropoietin Treatment May Induce Antithrombin III Depletion

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Dear Sir,

One of the most frequent adverse effects of the treatment of anemia of chronic renal failure with recombinant human erythro-poietin (r-HuEPO) is thrombosis [1]. Several mechanisms including increased blood viscosity [2] and platelet counts [1] and alteration of the coagulation-fibrinolysis balance have been proposed in the pathogenesis of increased thrombotic tendency. The effect of r-HuEPO on coagulation inhibitors, namely, protein C (PC), protein S and antithrombin-III (AT-III), has been studied by many investigators; however, the results of these studies show much controversy. We, therefore, planned a study in order to clarify the short-term effect of r-HuEPO on PC and AT-III.

The study group included 34 patients (23 males, 11 females), mean age 37 ± 4 years (range 17-70) with end-stage renal failure on regular hemodialysis (HD) treatment carried out 2 or 3 times a week for 37 ± 7 months (range 4-144). r-HuEPO (EPREX, Cilag, Switzerland) was administered in a dose of 75 U/kg by the intravenous route just after the discontinuation of every HD session. Before and at the 6th week of treatment, blood samples were drawn before HD for complete blood count, fibrinogen, PC activity and AT-III measurements.

As seen in table 1, whilst Hb, Hct, RBC, platelet count and PC activity values showed Table 1.

Hematologic parameters before and 6 weeks after r-HuEPO treatment (n = 34)

treatment on AT-III levels show controversy, as well. A significant decline in AT-III levels has been reported by some [5, 8] but not all groups [3, 4, 6].

In the present study, the ratio of AT-III-deficient patients showed a rise from 11 to 38%. Thus, it may be suggested that changes in AT-III levels during r-HuEPO treatment may take part in the pathogenesis of increased thrombotic tendency.

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