Human Erythropoietin Improves Blood Plasma Phospholipids Concentration in Chronically Hemodialyzed Patients

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Dear Sir,

Hyperlipidemia is common in chronically hemodialyzed patients and is usually characterized by increased triglyceride, cholesterol, and very-low-density lipoprotein levels and a decrease in the high-density lipoprotein cholesterol concentration. Also an increased apolipoprotein B/apolipoprotein A-1 ratio, an increased concentration of apolipoprotein C-3, and a reduced level of apolipoprotein E are observed [1-3].

Phospholipids (PL) are important constituents of the blood cells membrane and play an essential role in hemostasis. Recent works from our laboratory have demonstrated a disturbed blood platelet PL composition and their altered membrane distribution in hemodialyzed patients [4]. Moreover, a positive influence of human erythropoietin (EPO) on platelet PL composition in these patients has been indicated [5]. Some investigators found an improvement in the lipid profile in uremic patients receiving long-term hemodialysis therapy during EPO treatment, e.g. a reduction of total serum cholesterol, serum triglycerides, the apolipoprotein B, and an increase in the apolipoprotein A1 [6]. Conversely, Mat et al. [7] and Prata et al. [8] showed no change in the lipid profile after EPO treatment.

Only few studies address the blood plasma PL concentration in uremic patients [9]. We decided to investigate the influence of EPO on blood plasma PL concentrations in hemodialyzed patients. The study included 14 patients (4 women and 10 men; 28-45 years of age, mean age 36 years) receiving

and phosphatidylcholine levels were shown, compared with the control group (15 healthy blood donors, matched for sex and age). During EPO therapy, PL levels approached normal values. We conclude that EPO administration has a positive influence on blood plasma PL in hemodialyzed patients. The detailed importance of this event is not known yet, but our observations suggest that EPO profoundly interferes with lipid metabolism.

repeated hemodialysis. Blood plasma PL were isolated by the method of Folch et al. [10], and their levels were measured by thin-layer chromatography method, according to Schick et al. [11].

Assessments were made before and 3 months after the beginning of EPO treatment. EPO (Eprex; Cilag, Schaffhausen, Switzerland) was administered sub-cutaneously, 2,000 U twice a week. The results are shown in table 1. In patients before EPO treatment decreased phosphatidylethanolamine, phosphatidylinositol

Table 1. Concentrations of individual phospholipid classes in blood plasma in examined patients and controls (mg/dl): values are given as means $\pm$ standard deviations

Significant difference ($p < 0.05$) between: a hemodialyzed patients and controls, and b patients before EPO treatment and during EPO administration.

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