

Clinical Course of Arterial Tension During Erythropoietin Therapy

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Introduction

Recombinant human Erythropoietin (rHu-EPO) is nowadays used even more in treating anemia in kidney-patients. According to medical literature data, the patients undergoing chronic hemodialysis program, during rHu-EPO therapy can develop or aggravate already existing hypertension. The cause to this remains unclear: increase of viscosity and peripheral vascular resistance (larger susceptibility of blood vessels to vasoconstrictive effect of angiotensine-2 and norepinephrine).

The goal to this study is to analyze the clinical course of arterial tension during rHu-EPO therapy. Effect of hemoglobin and hematocrite increase to clinical course of arterial hypertension was also followed-up.

Methods

For the period of January to May 2003, from the total of 118 patients in Department for Hemodialysis, 41 (34.74%) were examined, all of them underwent rHu-EPO therapy. They were treated with regular hemodialysis three times per week, for 4 hours. Therapeutic dosage of rHu-EPO was 3x30 IU/kg/BW/week, and for that purpose were used ampoules of β -erythropoietin for subcutaneous application. The patients were divided into groups at the beginning of the trials: I hypotensive 6 (14.63%), II normal tensive without therapy 3 (7.31%), III normal tensive with therapy 32 (78.04%). Using this retrospective analyses we were able to monitor: sex, age, average duration of dialysis, prevalence of primary kidney disease, participation of antihypertensive drugs, average values of arterial tension, hemoglobin and hematocrite before and during rHu-EPO therapy.

Results

The trialed population consisted of 27 men (65.85%) and 13 women (31.70%), average age 38.24 \pm 8.74 years and of average dialysis duration 4, 82 \pm 3.79 years. Most common diseases in examined population were: secondary glomerulopathy (39.02%), primary glomerulopathy (34.14%) and others (26.82%). Following drugs were used for the implementation of the medicament therapy of hypertension: ACE inhibitors (68.75%), Calcium channel blockers (65.62%), beta-adrenergic blockers (65.62%) and centrally acting symphatholytic agents (56.25%).

Average values of arterial tension before the implementation of rHu-EPO therapy, of each group were: I

(101.66/61.66), II (123.33/80), III (145.66/83.33), and in the course of treatment with rHu-EPO: I (118.33/76.66), II (125.00/83.33), III (151.56/83.75)mmHg. In group III: with 7 (21.87%) patients, hypertension therapy needed to be corrected, with 2 (6.25%) patients therapy was aborted due to hypertensive crisis, while with 2 (6.25%) patients arterial tension normalized, and therefore they stopped using anti-hypertensive therapy. Average hemoglobin values (g/l) and hematocrite (l/l) before implementation of rHu-EPO therapy of each group were: I (99.60/0.26), II (104.66/0.31), III (85.53/0.25), and in the course of treatment with rHu-EPO: I (107.80/0.31) II(118.66/0.35), III (108.70/0.32). After the period of six months, targeted values of hemoglobin and hematocrite were accomplished, which indicates the existence of a positive correlation between correction of anemic syndrome and regulation of arterial tension.

Conclusion

rHu-EPO therapy had no significant influence to blood pressure level in normotensive patients without treatment, while in the group of patients that were using antihypertension therapy in 28.12% cases, statistical significance ($p < 0.01$), the therapy effected the values, in concept of blood pressure elevation. Most prone to the hypertensive reaction were the patients with severe anemia and inadequately regulated hypertension. From the same group, in 6.25% patients, even with implementation of rHu-EPO, tension normalized, and they stopped using antihypertensive therapy, which can be explained with adequate hypervolemia correction, but can not claim with certainty (atrial natriuretic peptide (ANP) is not being processed in everyday practice). With the group of hypertensive patients, the values of arterial tension have significantly approached normal values, which had effect on the quality of hemodialysis treatment.

References

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