Different Answer to Recombinant Human Erythropoietin in Anephric and Non-Anephric Haemodialyzed Patients

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Dear Sir,

The utilization of recombinant human erythropoietin (rhEPO) recently allowed the treatment of many kinds of anaemia, in particular that in subjects suffering from renal insufficiency.

Such a therapy brought about the occurrence of some side effects, i.e. arterial hypertension, thrombotic phenomena with occlusion of vascular lumina, convulsions and allergic phenomena of different kinds, imposing its use in specialized centres. As the utilization of the drug has not yet been extensively tested, no particular markers are available which allow to identify patient subgroups particularly subjected to side effects.

In our Ward of Nephrology (Institute of Internal Medicine) we treated with rhEPO 10 subjects (6 males, 4 females, mean age 45 ± 6 years) dialyzed and suffering from important anaemia disorders of a superimposable degree.

The subjects, after dialysis, were injected with rhEPO, 50 IU/kg i.v. thrice a week. The dose was increased every 4 weeks, by 25 IU/kg.

Four patients out of 10 were anephric. These subjects showed a faster and more marked response to rhEPO administration. In fact, both the number of injections and the total rhEPO amount needed to reach the end point -haematocrit (Hct) 30–35%, haemoglobin (Hb) 10–12 g -were significant fewer in the anephric subjects compared with the dialyzed ones (1,184 vs. 2,400 IU/kg, $p < 0.01$; fig. 1, table 1). One of the anephric subjects was also obliged to discontinue rhEPO treatment because of the onset of thrombosis of the arterovenous fistula (the only important side effect recorded during our study). Our data seem to confirm the existence of important differences between anephric and non-anephric subjects concerning EPO physiopathology.

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Time, weeks

Fig. 1. Time to arrive at the end point in anephric (—) and non-anephric (■) patients.

Table 1. Principal parameters before rhEPO treatment (means $\pm$ SD)

It is well known that after nephrectomy, following a sudden decrease in EPO plasma levels, there occurs a progressive increase in the latter as a token of a vicarious synthesis very likely from a hepatic source [1]. The existence of an erythropoiesis inhibitor, from a renal source, which might be lacking in anephric subjects was also reported [2].

Finally, in the serum of anephric subjects, a little peptide of 8 kD, different from EPO and able to stimulate

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in vitro the development of erythroid colonies in the absence of exogenous EPO has been recently found [3].

In summary, we believe that rhEPO administration in anephric subjects must be done carefully using lower doses, lower increases and more frequent haematochemical tests compared with other dialyzed subjects, and that anephric patients must be considered as risk subjects for the onset of more serious and frequent side effects.