Letters to the Editor

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Is There Any Relationship between Azathioprine Dosage and Erythrocytosis after Renal Transplantation?

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Dear Sir,

Erythrocytosis is a frequent complication after successful kidney transplantation. Its etiology is possibly multifactorial, and a clear cause-effect relationship has not been established with any of the different factors analyzed. On the other hand, the increased red cell mass is not always present in the patients with erythrocytosis after renal transplantation; reduction in plasma volume produces an increase of hematocrit which is similar to that present in patients with true erythrocytosis [1].

Recently, Webb et al. [2] have introduced a new variable in the analysis of this problem: their patients with erythrocytosis had been given a lower dose of azathioprine, and their white cell count was higher than in a control group. These authors conclude that erythrocytosis appears in those patients in whom azathioprine-induced bone marrow suppression was lower and suggest that substitution of azathioprine by ciclosporin could be associated with a higher incidence of this complication. But plasma volume and red cell mass were not studied, so they cannot establish if their patients had true erythrocytosis.

In 112 transplant patients treated with azathioprine and prednisone we observed 28 cases (25 %) with erythrocytosis during 34 ± 15 months of follow-up. Using an identical methodology as Webb et al. [2], we have compared the azathioprine dosage and the white cell count in the 28 patients with erythrocytosis and in 30 control patients with persistently normal hemoglobin and hematocrit values throughout a similar follow-up period. Both groups were similar with respect to age, sex, primary kidney disease, and renal function. There were no differences between the two groups in the azathioprine dosage (1.97 ± 0.44 vs. 2.06 ± 0.34 mg/kg/day) or in the white cell count (7.3 ± 1.6 vs. $7.2 \pm 1.9 \times 10^3/\text{ul}$).

In 20 patients with erythrocytosis, we determined the red cell mass and the plasma volume.

Fourteen patients

had a true erythrocytosis, and 6 had a relative erythrocytosis as a consequence of a plasma volume contraction. When we compared these two groups, we did not find differences between them (azathioprine dosage 2.02 ± 0.40 vs. 2.04 ± 0.31 mg/kg/day, white cell count 7.1 ± 1 vs. $7.3 \pm 1.3 \times 10^3/\text{ul}$).

Finally, we calculated the incidence of erythrocytosis in 51 transplant patients treated with ciclosporin and prednisone. The follow-up period is shorter (13 ± 4 months), but the prevalence of erythrocytosis at 1 year is similar (16 %) to that in the azathioprine-treated group (17%). Our results failed to confirm the findings of Webb et al. [2]. We did not observe either a relationship between azathioprine dosage and presence of erythrocytosis or evidence that the erythrocytosis could be blocked by the effect of azathioprine on the bone marrow. It was also not possible to show a higher incidence of erythrocytosis in the patients not treated with azathioprine. So, the relationship between the drug and the appearance of erythrocytosis is far from being demonstrated.

References

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