Long-Term Evolution of Erythropoietin after Successful Renal Transplantation

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Dear Sir,

Earlier studies have shown that successful renal transplantation leads to normalization of erythropoietin (EPO) concentration and anemia [1-3]. A first peak of EPO appears within the first 3 days after transplantation. This peak seems to be independent of graft function [1]. A second peak occurs 1 month later and is associated with graft recovery (decrease in plasma creatinine) and resolution of anemia [1-3]. The EPO production by the grafted kidneys tends to decline again once anemia ameliorates, indicating an intact regulation of erythropoiesis. These studies were performed up to 3 months following transplantation, and the respective long-term evolution of EPO levels and graft function has not been clearly defined. Moreover, graft function is usually assessed by serum creatinine which is known not to be the most accurate index of renal function. We measured plasma EPO levels, glomerular filtration rate (GFR) and hematocrit at 1,3,6 and 12 months after successful renal transplantation. Thirty-four patients whose graft function was stable between the 1st and the 12th months after renal transplantation were enrolled. All patients were cadaveric kidney graft recipients and received conventional immunosuppressive treatment with ciclosporin, azathioprine and prednisolone.

Plasma EPO concentration was evaluated using an enzyme immuno assay method (EPO EIA, BioMérieux, Marcy-l'Étoile, France). GFR was assessed by inulin clearance, using the constant infusion technique as previously described [4].

Statistical analysis was performed using ANOVA followed by the Fisher test.

As shown in figure 1 GFR (fig. 1a) remained unaltered during the 12-month observation period according to the selection criteria. However, EPO (fig. 1b) decreased significantly between the 1st and the 3rd months and remained stable thereafter above normal values (3.7-15.1 mU/ml). Hematocrit (fig. 1c) shows an opposite evolution, but reached normal values from the 3rd month.

These data show that GFR remained constant during 1 year after transplantation and that after a significant decrease between the 1st and the 3rd months, EPO concentrations remained stable without reaching normal values. This later result suggests that, in contrast to patients

with chronic renal failure and similarly decreased GFR, grafted kidneys are able to produce EPO and that a higher level of EPO is needed to achieve normal erythropoiesis.

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70

60

50

40

3 6 9

Months after transplantation

12

12

0 3 6 9

Months after transplantation

3 6 9

Months after transplantation

Fig. 1. Evolution of GFR (a) plasma EPO concentrations (b) and hematocrit (c) in 34 patients 1, 3, 6 and 12 months after successful renal transplantation (mean $\pm$ SEM). * $p < 0.05$ vs. 1st month. Normal ranges are depicted in dark areas.

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