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Effects of Dopamine Donor Pretreatment on Graft Survival after Kidney Transplantation: A Randomized Trial

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Abstract

Background and objectives Donor dopamine improves initial graft function after kidney transplantation due to antioxidant properties. We investigated if a 4 µg/kg per minute continuous dopamine infusion administered after brain-death confirmation affects long-term graft survival and examined the exposure-response relationship with treatment duration.

Design, setting, participants, & measurements Five-year follow-up of 487 renal transplant patients from 60 European centers who had participated in the randomized, multicenter trial of dopamine donor pretreatment between 2004 and 2007 (ClinicalTrials.gov identifier: NCT00115115).

Results Follow-up was complete in 99.2%. Graft survival was 72.6% versus 68.7% ($P=0.34$), and 83.3% versus 80.4% ($P=0.42$) after death-censoring in treatment and control arms according to trial assignment. Although infusion times varied substantially in the treatment arm (range 0–32.2 hours), duration of the dopamine infusion and all-cause graft failure exhibited an exposure-response relationship (hazard ratio, 0.96; 95% confidence interval [95% CI], 0.92 to 1.00, per hour). Cumulative frequency curves of graft survival and exposure time of the dopamine infusion indicated a maximum response rate at 7.10 hours (95% CI, 6.99 to 7.21), which almost coincided with the optimum infusion time for improvement of early graft function (7.05 hours; 95% CI, 6.92 to 7.18). Taking infusion time of 7.1 hours as threshold in subsequent graft survival analyses indicated a relevant benefit: Overall, 81.5% versus 68.5%; $P=0.03$; and 90.3% versus 80.2%; $P=0.04$ after death-censoring.

Conclusions We failed to show a significant graft survival advantage on intention-to-treat. Dopamine infusion time was very short in a considerable number of donors assigned to treatment. Our finding of a significant, nonlinear exposure-response relationship disclosed a threshold value of the dopamine infusion time that may improve long-term kidney graft survival.

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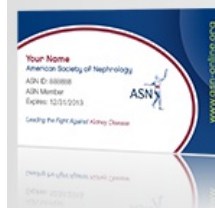
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