TRANSPLANTATION

Kidneys from non-heart-beating donors

The shortage of kidney grafts available for transplantation could be alleviated by using kidneys from donors who had an out-of-hospital cardiac arrest (non-heart-beating donors), Fieux *et al.* report. “The rates of kidney retrieval and renal transplantation were elevated and finally represented 20% of our transplantation activity, with good functional results after months of observation,” comments lead researcher Laurent Jacob from the Hôpital Saint-Louis, Assistance Publique-Hôpitaux de Paris, Université Diderot Paris 7, France.

The USA and several countries in Europe have implemented organ transplantation programs using non-heart-beating donors, with encouraging results on organ retrieval rate and graft function. In light of these promising results, a similar program of organ retrieval from non-heart-beating donors was developed in France. “The French law was modified in 2005 to allow this type of organ donation, with the new concept of presumed consent,” Jacob points out, which enabled his team to begin their study.

The researchers specifically investigated retrieval of viable kidneys from ‘uncontrolled’ non-heart-beating

donors—donors who had an out-of-hospital cardiac arrest, for which resuscitation attempts failed (category 1 and 2 donors of the Maastricht classification). “These are very different from Maastricht 3 donors who die after withdrawal of life-sustaining therapies,” explains Jacob. Kidneys were protected by surgical insertion of an intra-aortic double-balloon catheter with perfusion of a hypothermic solution. After retrieval, the kidneys were preserved in a hypothermic pulsatile perfusion machine.

Of 122 potential donors referred to the hospital between February 2007 and June 2008, 27 were eligible for kidney retrieval. A total of 31 kidneys were transplanted and at least 27 of these transplants were ultimately successful. A high delayed graft function rate (92% of grafts) was observed initially (Figure 1); however, at 6 months, graft survival rate was 89%, and transplanted kidneys had good creatinine clearance.

Commenting on these results, Jacob says that “...uncontrolled donation after cardiac death may represent a significant proportion of the functional organs provided for transplantation despite rather long periods of no-flow

Figure 1 | Renal biopsy performed 3 months after transplantation. Courtesy of Dr Jérôme Vérine, Department of Pathology, Hôpital Saint-Louis, Assistance Publique-Hôpitaux de Paris, France.

and low flow.” The group plan to develop this procedure by intensifying the collaboration with out-of-hospital care teams and to investigate organ preservation mechanisms in the controlled ischemia-reperfusion setting.

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Original article Fieux, F. *et al.* Kidney retrieval after sudden out of hospital refractory cardiac arrest: a cohort of uncontrolled non heart beating donors. *Crit. Care* **13**, R141 (2009).