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ORIGINAL ARTICLE

Results of kidney transplantation from controlled donors after cardio-circulatory death: a single center experience

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Summary

The aim of this study was to determine results of kidney transplantation (KT) from controlled donation after cardio-circulatory death (DCD). Primary end-points were graft and patient survival, and post-transplant complications. The influence of delayed graft function (DGF) on graft survival and DGF risk factors were analyzed as secondary end-points. This is a retrospective mono-center review of a consecutive series of 59 DCD-KT performed between 2005 and 2010. Overall graft survival was 96.6%, 94.6%, and 90.7% at 3 months, 1 and 3 years, respectively. Main cause of graft loss was patient's death with a functioning graft. No primary nonfunction grafts. Renal graft function was suboptimal at hospital discharge, but nearly normalized at 3 months. DGF was observed in 45.6% of all DCD-KT. DGF significantly increased postoperative length of hospitalization, but had no deleterious impact on graft function or survival. Donor body mass index ≥30 was the only donor factor that was found to significantly increase the risk of DGF ($P < 0.05$). Despite a higher rate of DGF, controlled DCD-KT offers a valuable contribution to the pool of deceased donor kidney grafts, with comparable mid-term results to those procured after brain death.

Introduction

Confronted with the universal critical organ shortage, many transplant centers have started the use of donation after cardio-circulatory death (DCD) as an alternative donor source. Results of kidney transplantation (KT) from DCD over the past 30 years showed comparable results with those from donation after brain death (DBD) [1–7]. These results of DCD-KT have led Belgian transplant centers to revisit this option and urged the Belgian National Council of Physicians on organ procurement from DCD [8]. The first DCD-KT was performed in Belgium in 2000, and up to now all seven Belgian transplant centers have active DCD-KT programs [9,10]. In 2009, there were 60 DCD procurements [21.7% of the deceased donor (DD) pool] and 74 DCD-KT (17.3% of the DD kidney pool) in comparison with 9 DCD procurements (3.8%) and 14 DCD-KT (3.9%) in 2005. A preliminary report over 44 DCD-KT in Belgium during the 2003–2005 period showed a delayed graft function (DGF) rate of 20.5% and a primary nonfunction (PNF) rate of 9.1%. DCD kidneys preserved by machine perfusion had a significant lower rate of DGF than cold-stored kidneys (25% vs. 42%) and the risk of graft loss of 3% [8].

The University Hospital of Liège initiated a program of controlled DCD-KT in 2005 [11]. This study was aimed at evaluating results of DCD-KT at our institute with regard to short- and mid-term graft function, graft and patient survival, rejection and surgical complications. The influence of DGF on graft function and survival as well as the potential DGF risk factors were also analyzed as secondary end-points.