



ORIGINAL

Experience of a Maastrich type II non heart beating donor program in a small city: Preliminary results[☆]



E. Miñambres^{a,b,*}, B. Suberviola^a, C. Guerra^c, N. Lavid^b, M. Lassalle^c,
A. González-Castro^a, M.A. Ballesteros^{a,b}

^a Servicio de Medicina Intensiva, Trasplantes Hospital Universitario Marqués de Valdecilla, Santander, Spain

^b Unidad de Coordinación de Trasplantes, Hospital Universitario Marqués de Valdecilla-IDIVAL, Santander, Spain

^c Servicio Cántabro de Salud, Gerencia de Atención Primaria 061, Santander, Spain

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KEYWORDS

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Non-heart beating
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Transplantation

Abstract

Objective: To study the results of a non-controlled cardiac death (Maastricht type II) donor program in a city of 200,000 inhabitants. The study was initially focused on lung donation and was extended to kidney donation after 9 months.

Design: A prospective observational study was conducted between October 2012 and December 2013.

Setting: The Intensive Care Unit of Marqués de Valdecilla University Hospital in Santander (Spain), and surrounding areas.

Populations: Patients (<55 years) who died of out-of-hospital cardiac arrest.

Interventions: All out-of-hospital cardiac arrests were treated with mechanical cardiac compression (LUCAS II). The diagnosis of death and organ preservation were performed in the ICU.

Results: A total of 14 calls were received, of which three were discarded. Of the 11 potential donors, 7 were effective donors with a median age of 39.5 years (range: 32–48). A total of 5 single lung transplants and four kidney transplants were performed. In addition, corneas and tissues were harvested. The non-valid donors were rejected mainly due to technical problems. There were no donation refusals on the part of the patient relatives. The lung transplant patient survival rate was 100% after one month and 80% after one year. One month after transplantation, the kidney recipients had a serum creatinine concentration of <2 mg/dl. The interval from cardiac arrest to renal preservation was 80 min (range: 71–89), and the interval from cardiac arrest to lung preservation was 84 min (range: 77–94).

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* Corresponding author.

E-mail address: eminambres@yahoo.es (E. Miñambres).

PALABRAS CLAVE

Parada
cardiorrespiratoria;
Asistolia;
Donante en muerte
cardiaca;
Trasplantes

Conclusions: A Maastricht type II donation program in a small city is viable for both abdominal and thoracic organs. The program was initially very cautious, but its potential is easily improvable by increasing donor and by equipping mobile ICU ambulances with mechanical cardiac compression systems. Full management of the donor in the ICU, avoiding the emergency department or operating rooms, reduces the warm ischemia time, thereby improving transplant outcomes.

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Experiencia de un programa de donación en asistolia Maastricht II en una ciudad de pequeño tamaño: resultados preliminares

Resumen

Objetivos: Analizar los resultados de la implantación de un programa de donación Maastricht II en una ciudad de 200.000 habitantes. Inicialmente solo donación pulmonar y tras 9 meses se amplió a donación renal.

Diseño: Estudio observacional prospectivo de octubre de 2012 a diciembre de 2013.

Ámbito: UCI del Hospital Universitario Marqués de Valdecilla y área metropolitana de Santander.

Población: Pacientes < 55 años fallecidos por parada cardiaca extrahospitalaria.

Intervención: La asistencia extrahospitalaria fue con cardiocompresor mecánico (LUCAS II). El diagnóstico de muerte, la asistencia y preservación de los injertos a donar se realizó íntegramente en la UCI.

Resultados: Se recibieron un total de 14 llamadas, descartándose 3. De los 11 potenciales donantes, 7 fueron donantes utilizados con edad mediana de 39,5 años (rango: 32–48). Se realizaron 5 trasplantes unipulmonares, 4 trasplantes renales, además de córneas y tejidos. Los donantes no válidos se debieron a problemas técnicos. No hubo negativas. La supervivencia de los trasplantados pulmonares fue 100% al mes y 80% al año. Todos los trasplantados renales presentaban creatinina al mes < 2 mg/dl. El tiempo parada-preservación renal fue 80 minutos (rango intercuartílico: 71–89) y el tiempo parada-preservación pulmonar fue 84 minutos (rango intercuartílico: 77–94).

Conclusiones: Un programa Maastricht II en una ciudad pequeña es viable tanto para órganos abdominales como torácicos. La potencialidad es mejorable al incrementar la edad de valoración y disponer de cardiocompresores mecánicos en todas las ambulancias. El tratamiento íntegro del donante en la UCI reduce los tiempos de isquemia caliente mejorando los resultados postrasplante.

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Introduction

Donation under conditions of brain death has been the most widely adopted strategy for obtaining organs. In Spain, 90% of all donors correspond to individuals in which death has been certified according to neurological criteria.¹ However, this type of donation has decreased as a result of epidemiological factors, including fewer traffic accidents, fewer occupational accidents, improved management of cerebrovascular risk factors, and more widespread application of novel neurosurgical techniques such as decompressive craniectomy. For this reason, new strategies are needed with a view to expanding the pool of organ donors, such as non-heart beating donation.

Maastricht type II non-heart beating donation (Table 1) has complex logistic requirements, with the simultaneous participation of many professionals. The latter in turn must be highly qualified, due to the narrow time margins available

for making decisions.² Traditionally, this type of donation has been limited to cities with large populations (over 500,000 inhabitants), though very recently non-heart beating donation programs such as those developed in Granada and Alicante (Spain) have shown that this type of donation is also viable in small- to middle-sized cities.³

The organs obtained from Maastricht type II programs are fundamentally kidneys and, to a lesser extent, liver grafts. To date, only the programs in San Carlos Hospital and Doce de Octubre Hospital have been able to harvest and transplant lung grafts.⁴

Recently, our group has designed and implemented a Maastricht type II non-heart beating donation program in the city of Santander (Spain) and its surroundings (225,000 inhabitants). A distinguishing feature of this program is that the diagnostic and organ preservation procedures are entirely performed in the Intensive Care Unit (ICU), thus making it possible to shorten the warm ischemia

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