

Special article

Spanish Heart Transplantation Registry. 26th Official Report of the Spanish Society of Cardiology Working Group on Heart Failure and Heart Transplantation (1984–2014)



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ABSTRACT

Introduction and objectives: We present the characteristics and outcomes of heart transplantation in Spain since it was first performed in 1984.

Methods: A descriptive analysis of the characteristics of recipients, donors, the surgical procedure, and the outcomes of heart transplantations performed in Spain until 31 December 2014.

Results: In 2014, 266 procedures were performed, making a time series of 7289 transplantations. The temporal analysis confirmed a significant worsening of the clinical profile of recipients (higher percentage of older patients, patients with severe renal failure, insulin-dependent diabetes, previous cardiac surgery, and previous mechanical ventilation), of donors (higher percentage of older donors and greater weight mismatch), and of the procedure (higher percentage of emergency transplantations, reaching 41.4% in 2014, and ischemia time > 240 min). Mechanical assist devices were used less than in 2013; in 2014 they were used in 18.8% of all transplant recipients. Survival at 1, 5, 10, and 15 years was 76%, 65%, 52%, and 38%, respectively, and has remained stable since 1995.

Conclusions: Cardiac transplantation activity in Spain has remained stable in recent years, at around 250 procedures per year. Despite a clear deterioration in donor and recipient characteristics and surgical times, the mortality outcomes have remained comparable to those of previous periods in our environment. The growing use of circulatory assist devices before transplantation is also confirmed.

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RESUMEN

Introducción y objetivos: Se presentan las características y resultados del trasplante cardíaco en España desde que empezó su actividad en mayo de 1984.

Métodos: Se realiza un análisis descriptivo de las características de los receptores, los donantes, el procedimiento quirúrgico y los resultados de los trasplantes cardíacos realizados en España hasta el 31 de diciembre de 2014.

Resultados: Durante 2014 se han realizado 266 procedimientos, con lo que la serie histórica consta de 7.289 trasplantes. El análisis temporal confirma un empeoramiento significativo del perfil clínico de los receptores (mayor porcentaje de pacientes añosos, con insuficiencia renal grave, diabetes

Palabras clave:

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The collaborators are listed in the [appendix](#).

insulinodependiente, cirugía cardíaca previa y ventilación mecánica), de los donantes (mayor porcentaje de donantes añosos y con mayor discordancia de peso) y del procedimiento (mayor porcentaje de trasplante urgente, que en 2014 alcanza el 41,4%, y con tiempo de isquemia > 240 min). El uso de dispositivos de asistencia mecánica ha disminuido respecto a 2013, y en 2014 supone el 18,8% del total de pacientes. La supervivencia a 1, 5, 10 y 15 años es del 76, el 65, el 52 y el 38% respectivamente, y permanece estable desde 1995.

Conclusiones: La actividad de trasplante cardíaco en España permanece estable en los últimos años, con alrededor de 250 procedimientos al año. A pesar del claro empeoramiento de las características de donantes, receptores y tiempos quirúrgicos, se mantienen unos resultados en mortalidad comparables a los del entorno y se confirma un uso creciente de los dispositivos de asistencia circulatoria antes del trasplante.

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Abbreviations

ECMO: extracorporeal membrane oxygenation

INTRODUCTION

Since 1991, the Spanish Heart Transplantation Registry has published reports of the clinical and surgical characteristics and the overall results of cardiac transplant procedures performed in Spain.^{1–25} This article describes the data on the transplant population to 31 December 2014. As is already well-known, the greatest strength of the Spanish Heart Transplantation Registry is the inclusion and exhaustive updating of all heart transplant procedures performed in all hospitals in Spain since May 1984, regardless of their characteristics and outcomes. Also, data are collected prospectively in a common database and are agreed upon and updated by all the transplantation groups.

METHODS

Patients and Centers

Nineteen centers contributed data to the Spanish Heart Transplantation Registry, 18 of which are currently still active (Table 1). Two centers are dedicated solely to pediatric transplantation and 3 others perform both adult and pediatric transplantation. The number of procedures performed annually is summarized in Figure 1. The whole series consists of 7289 procedures. Data were lost in 12 cases, including information on follow-up. Those cases were not included in the analysis, and the final sample size was 7277 cases. Of the 266 procedures carried out in 2014, 12 (4.5%) were performed in pediatric patients (age < 16 years). The types of procedures carried out in 2014 and in the whole series are summarized in Table 2.

Procedures

The database comprises 175 clinical variables, pre-established by consensus from all groups, collecting data on the recipient, donor, surgical technique, immunosuppression, and follow-up. As of 2013, data are introduced and updated electronically and in real

time using an application available on the internet and specifically designed for this purpose. The database support is a Microsoft Excel file. This method replaces the previous one, in which each center sent data to the registry director in Microsoft Access format via e-mail. An external CRO (contract research organization)—currently ODDS, S.L.—is responsible for database maintenance, quality control, and statistical analysis.

Ethics committee approval, auditing, and registration with the Ministry of Health were carried out in line with the Spanish Organic Law on Data Protection 15/1999.

Statistics

Continuous quantitative variables are reported as mean \pm standard deviation, and categorical quantitative variables are reported as percentages. Results are organized according to year of transplantation, dividing the total sample into 3 groups (1984–1993, 1994–2003, and 2004–2014). In some variables (such as donor age, emergency transplant, and ischemia time), the data were also

Table 1

Centers (by Order of First Transplantation Performed) Participating in the Spanish Heart Transplantation Registry (1984–2014)

1.	Hospital de la Santa Creu i Sant Pau, Barcelona
2.	Clínica Universitaria de Navarra, Pamplona
3.	Clínica Puerta de Hierro, Majadahonda, Madrid
4.	Hospital Marqués de Valdecilla, Santander
5.	Hospital Reina Sofía, Córdoba (adult and pediatric)
6.	Hospital Universitario y Politécnico La Fe, Valencia
7.	Hospital Gregorio Marañón, Madrid (adult and pediatric)
8.	Fundación Jiménez Díaz, Madrid (1989–1994)
9.	Hospital Virgen del Rocío, Seville
10.	Hospital 12 de Octubre, Madrid
11.	Hospital Universitario de A Coruña, A Coruña (adult and pediatric)
12.	Hospital Bellvitge, L'Hospitalet de Llobregat, Barcelona
13.	Hospital La Paz, Madrid (pediatric)
14.	Hospital Central de Asturias, Oviedo
15.	Hospital Clínic, Barcelona
16.	Hospital Virgen de la Arrixaca, El Palmar, Murcia
17.	Hospital Miguel Servet, Zaragoza
18.	Hospital Clínic, Valladolid
19.	Hospital Vall d'Hebrón, Barcelona (pediatric)

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