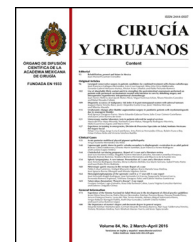




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CLINICAL CASE

Routine hormonal therapy in the heart transplant donor[☆]



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KEYWORDS

Cardiac transplantation;
Hormonal rescue;
Donor;
Levothyroxine

Abstract

Background: Successful heart transplantation depends largely on donor heart function. During brain death many hormonal changes occur. These events lead to the deterioration of the donor hearts. The 2002 Crystal Consensus advises the use of a triple hormonal scheme to rescue marginal cardiac organs.

Material and methods: A prospective, longitudinal study was conducted on potential donor hearts during the period 1 July 2011–31 May 2013. All donor hearts received a dual hormonal rescue scheme, with methylprednisolone 15 mg/kg IV and 200 mcg levothyroxine by the enteral route. There was at least a 4 h wait prior to the harvesting. The preload and afterload was optimized. The variables measured were: left ventricular ejection fraction cardiac graft recipient; immediate and delayed mortality.

Results: A total of 30 orthotopic heart transplants were performed, 11 female and 19 male patients, with age range between 19 and 63 years-old (Mean: 44.3, SD 12.92 years). The donor hearts were 7 female and 23 male, with age range between 15 and 45 years-old (mean 22.5, SD 7.3 years). Immediate mortality was 3.3%, 3.3% intermediate, and delayed 3.3%, with total 30 day-mortality of 10%. Month survival was 90%. The immediate graft left ventricular ejection fraction was 45%, 60% intermediate, and 68% delayed. The causes of death were: 1 primary graft dysfunction, one massive pulmonary embolism, and one due to nosocomial pneumonia.

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PALABRAS CLAVE

Trasplante cardiaco;
Rescate hormonal;
Donador;
Levotiroxina

Conclusion: It was concluded that the use of double rescue scheme hormonal therapy is useful for the recovery and preservation of the donor hearts. This scheme improves survival within the first 30 days after transplantation.

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Terapia hormonal de rutina en el donador para trasplante cardiaco**Resumen**

Antecedentes: El éxito de un trasplante cardiaco depende en gran parte de la función del corazón donado a que, durante la muerte cerebral ocurren cambios hormonales importantes y estos conducen al deterioro del órgano donado; por lo que el Consenso Cristal de 2002 recomienda el uso de triple esquema hormonal para el rescate de los órganos cardiacos marginales.

Material y métodos: Estudio prospectivo, longitudinal. Reunimos a potenciales donadores de corazón durante el periodo del 1 de julio del 2011 al 31 de mayo del 2013. Todos recibieron doble esquema de rescate hormonal, con metilprednisolona 15 mg/kg por vía intravenosa y levotiroxina 200 µg por vía enteral. Se esperó un lapso mínimo de 4 h antes de la procuración. Se optimizaron la precarga y poscarga. Se evaluaron: mortalidad del receptor y fracción de expulsión del ventrículo izquierdo, del injerto inmediata, mediata y tardía.

Resultados: Fueron realizados 30 trasplantes cardiacos ortotópicos, en 11 mujeres y 19 varones, con edad promedio: 44.3 ± 12.92 (rango 19-63 años). Los donadores de corazón, 7 mujeres y 23 hombres, con rangos de edad de 15 a 45 años (promedio 22.5 ± 7.3). La mortalidad inmediata fue del 3.3%, mediata 3.3% y tardía 3.3%. La sobrevida al mes fue del 90%. La fracción de expulsión del ventrículo izquierdo del injerto fue 45% inmediata, mediata 60% y tardía 68%. Las causas de mortalidad fueron: disfunción primaria del injerto (un caso), una tromboembolia pulmonar masiva y una neumonía nosocomial.

Conclusión: El uso de doble esquema de terapia de rescate hormonal es útil para la recuperación y la preservación del corazón y mejora la sobrevida dentro de los primeros 30 días postrasplante.

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Background

Since Dr. Christian Barnard¹ performed the first heart transplant in 1967, heart transplant success has lain in the control of acute or hyperacute rejection, and long term survival.² A key point in the control of these factors came about with the advent of calcineurin inhibitors in 1987.

A new challenge was simultaneously presented, upon which the success of a heart transplant outcome depends: primary graft dysfunction and sufficient assessment to obtain an optimum donor heart, mainly from marginal cardiac organs donated.

During brain death a number of hormonal, metabolic and systemic changes occur, including: the reduction of circulating thyroid hormones,³ the depletion of vasopressin reserves after 6 h,⁴ raised inflammatory response⁵ and the well known 'adrenergic storm'.^{6,7} All these hormonal, metabolic and systemic changes will lead to function deterioration of the donor heart, and to the increase in acute posterior rejection of the transplanted organ.⁸ Due to the above and since its acceptance in the 2002 Crystal Consensus, a triple hormonal scheme to rescue marginal donor cardiac organs⁹ has been

implemented and there have been many reports of increases of solid organs recuperated with the use of this scheme or algorithm.¹⁰

We are reporting our experience based on the Crystal Consensus scheme, with its modification, which consists in using it in all potential heart donors, with normal left ventricle ejection fraction, in a routine manner and not only in marginal transplants, as our main source of donors is distant procurements. We report its repercussion in immediate postoperative survival and the single use of a dual hormonal scheme with steroids and thyroid hormone by the enteral route through a nasogastric tube.

Material and methods

We conducted a prospective, longitudinal study which began on July 1, 2011 and terminated on May 31, 2013. All potential heart donors, aged between 15 and 45 and of both sexes were brought together. The potential donors were initially assessed using: anthropometry, electrocardiogram, echocardiogram (if available) and laboratory testing. If optimum

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