

Review article

Current Status and Future Perspectives of Hepatocyte Transplantation[☆]

Eugenia Pareja,^{a,b,*} Miriam Cortés,^c M. José Gómez-Lechón,^{b,d} Javier Maupoey,^a Fernando San Juan,^a Rafael López,^a Jose Mir^{a,b}

^aUnidad de Cirugía Hepato-Bilio-Pancreática y Trasplante Hepático, Hospital Universitario La Fe de Valencia, Valencia, Spain

^bUnidad de Terapia Celular Hepática, Hospital Universitario La Fe de Valencia, Valencia, Spain

^cUnidad de Cirugía Hepato-Bilio-Pancreática y Trasplante Hepático, King's College Hospital, Institute of Liver Study, London, United Kingdom

^dUnidad de Hepatología Experimental, Centro de Investigación, Hospital Universitario La Fe de Valencia, Valencia, Spain

ARTICLE INFO

Article history:

Received 24 March 2013

Accepted 29 April 2013

Available online 11 March 2014

Keywords:

Liver transplantation

Hepatic cell transplantation

Inborn errors of metabolism

Cryopreservation

Preconditioning liver

Progenitor stem cell

Induced pluripotent stem cells

A B S T R A C T

The imbalance between the number of potential beneficiaries and available organs, originates the search for new therapeutic alternatives, such as hepatocyte transplantation (HT). Even though this is a treatment option for these patients, the lack of unanimity of criteria regarding indications and technique, different cryopreservation protocols, as well as the different methodology to assess the response to this therapy, highlights the need of a consensus conference to standardise criteria and consider future strategies to improve the technique and optimise the results. Our aim is to review and update the current state of hepatocyte transplantation, emphasising the future research attempting to solve the problems and improve the results of this treatment.

© 2013 AEC. Published by Elsevier España, S.L. All rights reserved.

Estado actual y perspectivas futuras del trasplante de hepatocitos

R E S U M E N

Existe un gran número de enfermedades hepáticas para las cuales el único tratamiento efectivo es el trasplante hepático. La disparidad entre el número de potenciales beneficiarios y de órganos disponibles motiva la búsqueda de nuevas alternativas de tratamiento, entre las que se encuentra el trasplante celular hepático (TCH). Esta terapia representa una alternativa de tratamiento en estos pacientes, sin embargo, la falta de unanimidad de criterios respecto a las indicaciones y técnica, los diferentes protocolos de criopreservación así como la distinta metodología para valorar la respuesta a esta terapia pone de manifiesto

Palabras clave:

Trasplante hepático

Trasplante celular hepático

Errores congénitos del metabolismo

Criopreservación

Preacondicionamiento hepático

Células madre progenitoras

[☆] Please cite this article as: Pareja E, Cortés M, Gómez-Lechón MJ, Maupoey J, San Juan F, López R, et al. Estado actual y perspectivas futuras del trasplante de hepatocitos. Cir Esp. 2014;92:74-81.

* Corresponding author.

E-mail address: gomez_mjo@gva.es (E. Pareja).

2173-5077/\$ - see front matter © 2013 AEC. Published by Elsevier España, S.L. All rights reserved.

Células madre pluripotentes inducidas

la necesidad de una conferencia de consenso que unifique criterios, planteando posibles estrategias futuras que mejoren la técnica y optimicen los resultados. Nuestro objetivo es realizar una revisión y puesta al día del estado actual del TCH, enfatizando las futuras líneas de investigación que tratan de solucionar los problemas y mejorar los resultados de esta terapia.

© 2013 AEC. Publicado por Elsevier España, S.L. Todos los derechos reservados.

Introduction

At the moment, advances in the field of regenerative medicine are providing ways of approaching certain diseases which involve the cellular deterioration of an organ and where performing a solid transplant of the organ does not always constitute the first therapeutic option or treatment of choice.

At present the only effective treatment for end-stage liver disease is orthotopic liver transplant (OLT). Although donor selection criteria have been broadened in an attempt to increase their number, the results obtained have not been satisfactory. The imbalance between offer and demand of organs is the main limitation of OLT, and alternatives to this treatment are needed. Liver cell transplantation (LCT) or human hepatocyte transplantation is the most promising alternative in terms of results obtained and is considered a cutting-edge therapeutic strategy complementary to solid organ transplant. Despite the fact that at present LCT is not a definitive therapeutic option, it does apply to patients with

acute liver failure, where the intention is to replace or serve as a bridge for OLT and for paediatric patients with congenital metabolic defects where the defective enzyme is expressed in the hepatocyte.

Clinical observations have demonstrated the safety of the procedure and of patients who have undergone LCT. However, most publications refer to clinical cases with no unanimity of criteria as to indications, methodology, cellular cryopreservation or assessment of the response to the LCT.⁶⁻¹²

The objective of this manuscript is to review and update the current status of LCT and to highlight new lines of research which are attempting to find a solution to the scarcity of hepatocyte sources, their cryopreservation and their implantation in the recipient (Fig. 1).

Evolution of Liver Cell Transplantation

Liver cell therapy is currently considered a cutting-edge therapeutic strategy complementary to solid organ liver

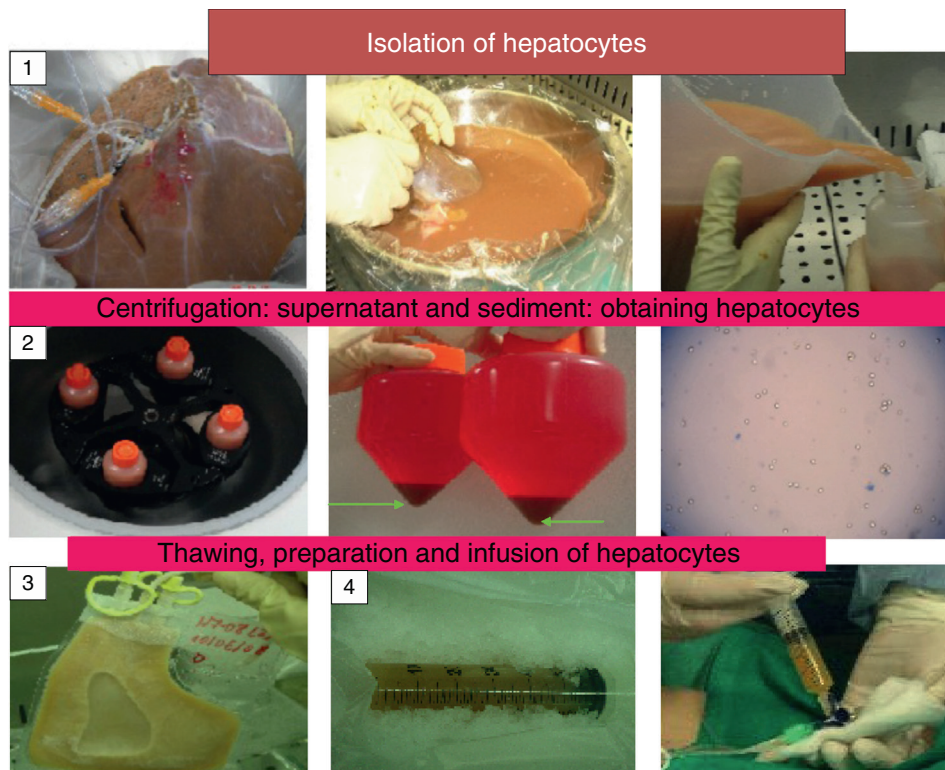


Fig. 1 – Technique for the transplantation of hepatocytes: (1) obtaining hepatocytes, (2) preparation of cell suspensions, (3) cryopreservation in liquid nitrogen, and (4) implantation in the recipient.

Download English Version:

<https://daneshyari.com/en/article/4254743>

Download Persian Version:

<https://daneshyari.com/article/4254743>

[Daneshyari.com](https://daneshyari.com)