Evaluation of addition of EEG to MELD score on the short term outcome after Living Donor Liver Transplantation (LDLT)

Essay

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Ahmad Samir

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AIH : autoimmune hepatitis

ALD : alcoholic liver disease

BMD : bone mineral density

CKD : chronic kidney disease

CMV : cytomegalovirus

CNI : calcineurin inhibitor

CT : computed tomography

CTP : Child-Turcotte-Pugh

CUC : chronic ulcerative colitis

DM : diabetes mellitus

EBV : Epstein-Barr virus

ESRD : end-stage renal disease

FDA : Food and Drug Administration

GRADE : Grading of Recommendations ,Assessment, Development and Evaluation

HAART : highly active antiretroviral therapy

HbA1c : hemoglobin A1c

HBIG : hepatitis B immune globulin

HBV : hepatitis B virus

HCC : hepatocellular carcinoma

HE : hepatic encephalopathy

HESA : hepatic encephalopathy scoring algorithm

HCV : hepatitis C virus

HIV : human immunodeficiency virus

HLA : human leukocyte antigen

LDLT : living donor liver transplantation

LT : liver transplantation

MELD : model for end-stage liver disease

MHE : minimal hepatic encephalopathy

MRI : magnetic resonance image

mTOR : mammalian target of rapamycin

NAFLD : nonalcoholic fatty liver disease

NASH : nonalcoholic steatohepatitis

NODM : new-onset diabetes mellitus

OHE : overt hepatic encephalopathy

PBC : primary biliary cirrhosis

PHES : The psychometric hepatic encephalopathy score

PSC : primary sclerosing cholangitis

PTLD : posttransplant lymphoproliferative disorder

TB : tuberculosis

TIPS : transjugular intrahepatic portosystemic shunt

UNOS : United Network for Organ Sharing

Introduction

Introduction

Liver transplantation has emerged over the past several decades as a viable treatment option for patients with acute liver failure and end stage liver disease.

Before transplantation, patients with advanced liver disease usually died within months to years. These patients now have the opportunity for extended survival with excellent quality of life after liver transplantation. **(Belle et al.,1997).**

Furthermore,the costs of liver transplants have steadily declined in recent years. **(Best et al.,2001).**

Most liver transplants are performed using a whole liver from a deceased donor. During transplantation, the donor liver is placed in the orthotopic position, hence the term *orthotopic liver transplantation*. However, because of the unique anatomical organization of the liver, donor organs can be divided and the separate parts transplanted into two recipients (split liver transplantation). **(Keeffe ,2001).**

Using this technique, a portion of the left lobe of an adult donor organ can be transplanted into a child and the remaining portion used to transplant the liver into an adult. **(Gridelli et al.,2003).**

Under ideal circumstances, a deceased donor organ also can be split and transplanted into two adult recipients. **(Renz et al.,2004).**

The same surgical techniques can be used to facilitate transplantation using living donors, where only a portion of the donor liver is removed for transplantation. Living donor transplantation for children, using a portion of the left lobe, is a well-established procedure. **(Malago et al.,2002).**

Living donor transplantation for adults, in which the donor right lobe typically is transplanted, also is performed at many transplant centers, although donor safety remains an ongoing concern. **(Trotter et al.,2002).**

Initial progress and growth were limited by technical difficulties and an inherent learning curve in the management of patients in the post-transplantation period. Improvements in transplantation outcomes have yielded a greater treatment demand and a new challenge, organ shortage **(Berzigotti et al.,2011).**

Although liver transplantation has proven to be a great success in a relatively short period of development, it should not be considered as either the initial or primary treatment modality for most liver diseases. Other than in a few specific disorders, transplantation is a therapy for disease complications rather than of the primary illness **(Montagnese et al.,2011).**

Thus, the selection of a transplant candidate is a risk – benefit analysis, in which the inherent risks of surgery, recurrent disease, and long – term immunosuppression must be weighed against the potential benefits of transplantation. These benefits differ for each patient but include improvements in survival, prevention of long– term complications, and better health**(De Rui et al.,2013).**

The most commonly used prognostic model for estimating disease severity and survival is the Model for End stage Liver Disease (MELD).The MELD score uses a patients laboratory values for serum bilirubin, serum creatinine, and international normalized ratio for prothrombin time (INR) in a log transformed equation to estimate likelihood of three-month survival. Higher MELD scores have been associated with decrease survival rates. Implementation of MELD for organ allocation has decreased Pretransplant mortality without having a negative impact on post transplant mortality **(Gupta et al.,2010).**

Hepatic encephalopathy (HE) is not part of the MELD score, which is widely used to assess the severity of hepatic failure and to estimate the need/timing for hepatic transplantation. (**Malinchoc et al.,2000).**

This is mostly related to difficulties and interoperator variability in the clinical diagnosis of HE, and its grading **(Kircheis et al.,2007).**

There is evidence that HE is a good prognostic marker of survival in patients with cirrhosis **(Bustamante et al.,1999;Stewart et al.,2007).**

HE has also been shown to carry prognostic information which is additive to that of MELD, and it has been suggested that patients with HE may not receive a transplant in a timely fashion if MELD is used as a stand-alone **(Yoo et al.,2003).**

In recent years, tools have become available to quantify HE across its spectrum of severity in a non-operator dependent, documentable fashion, thus providing 'MELD-like' summary HE indices. These tools include the automated assessment of the electroencephalographic (EEG) slowing which characterizes HE **(Amodio et al.,1999).**

The prognostic efficiency of MELD can probably be improved, especially in patients with non-fulminant hepatic failure**(Gotthardt et al.,2009;Cholongitas et al.,2007).**

The newly devised MELD-EEG index which seems a very reasonable proposal as:

(i) it makes it possible to include HE, which had already been shown to carry additional/ separate prognostic information compared to the MELD**(Yoo et al.,2003)**;

(ii) it does so in a non-operator dependent, quantitative and documentable manner; (iii) it improves the prognostic efficiency of MELD**(Montagnese et al.,2011)**.

Aim of Study

Aim of the study

The aim of this study is to determine the relationship between MELD score and the electroencephalogram (EEG), and the benefit of MELD -EEG on the short term outcome after Living Donor Liver Transplantation (LDLT).