High MELD score in predicting short-term mortality after living donor liver transplantation

Thesis
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List of Abbreviations

Abb……Full term

AGW ..... Actual graft weight

BMI ..... Body mass index

BSA ..... Body surface area

CT ..... Computed tomography

EGW ..... Estimated Graft weight

FLR ..... Future liver remnant

FRL ..... Future remnant liver

GRWR ..... Graft-to-recipient weight ratio

IVC ..... Inferior vena cava

LDLT ..... Living donor liver transplantation

MRI ..... Magnetic resonance imaging

MHV ..... Middle hepatic vein

MELD ..... Model for end-stage liver disease

PVE ..... Portal vein embolization

PVF ..... Portal venous flow

PVP ..... Portal venous pressure

PCS ..... Portocaval shunt

PHLF ..... Post-hepatectomy liver failure

PT ..... Prothrombin time

RLV ..... Remnant liver volume

SFSG ..... Small-for-size graft

SFSS ……..... Small-for-size syndrome

US ..... Ultrasound

INTRODUCTION

The number of patients awaiting liver transplantation (LT) has increased progressively in the past decade ***(Gibbons et al., 2000).***

However, the shortage of cadaveric donors and the incremental death rate in the potential recipients has forced the transplant community to search for more effective strategies for expanding the graft pool ***(Soloff, 1995).*** Thus, suboptimal donors or grafts, split-liver transplantation (SLT) and living-related liver graft donation have contributed to enlarge the donor pool ***(Loinaz and González, 2000).***

Recently, the point of view that waiting time for LT should be discontinued in favour of more equitable organ allocation strategies based on medical characteristics and disease prognosis has become attractive ***(Gibbons et al.,2000).***

In 2000, a Model for End-Stage Liver Disease (MELD) was developed at the Mayo Clinic as a continuous scale to predict poor survival in patients undergoing transjugular intrahepatic portosystemic shunt (TIPS) ***(Malinchoc et al., 2000).***

In 2001, the MELD score was extended as a potential disease severity score for patients with end-stage liver disease awaiting LT

(Kamath et al., 2001). Although the MELD score was effective in the prediction of patient mortality awaiting liver transplantation, its predictive value for post-transplantation mortality remained fairly difficult to achieve, suggesting the need for further analyses ***(Onaca et al., 2003).***

In this retrospective study, the MELD score was compared in patient with (15-20) MELD score and ≥ 20 MELD score.in order to evaluate its potential predictive value for short-term mortality after liver transplantation in both patients and grafts.

AIM OF THE WORK

In the present study we investigated the predictive value of the MELD score for short-term patient survival in comparison to patient with (15-20) MELD score, and ≥ 20 MELD score.

LIVER TRANSPLANTATION IN LITERATURE

LIVER TRANSPLANTATION IN LITERATURE

History & evolution

The history of liver transplantation began with experimental transplants performed in dogs in the late 1950s. The first deceased donor liver transplant (DDLT), also known as orthotopic liver transplant (OLT), was attempted in humans was in 1963 by Thomas Starzl. The recipient was a 3-year-old boy with biliary atresia who unfortunately died of haemorrhage (Table 1). The first successful liver transplant was in 1967, again by Starzl at the University of Colorado Health Sciences Center, Denver. Yet, for the next 10 years, liver transplants remained essentially experimental, with survival rates well below 50%. Still, advances in the surgical procedure and in anesthetic management continued to be made during that time ***(United Network for Organ Sharing (UNOS) data. UNOS Web site 2009).***

The major breakthrough for the field came in the early 1980s, with the introduction and clinical use of the immunosuppressive agent cyclosporine. Patient survival dramatically improved, and liver transplantation was soon being recognized as a viable therapeutic option. Results continued to improve through the 1980s, due to ongoing improvements in immunosuppression, critical care management, surgical technique, and preservation solutions. The late 1980s and 1990s a dramatic

increase in the number of liver transplants, and an even greater increase in the number of patients waiting for a transplant. This in turn increased waiting times as well as mortality rates for those waiting their turn for transplant ***(Melancon and Fishbein, 2013)***.

Year	Description
1955	First article in the literature of auxiliary liver transplantation
1958-1960	Formal research programs of total hepatectomy and liver replacement in dogs
1963	Azathioprine prednisone cocktail introduced and recognition of organ induced tolerance
1963	First human liver transplantation (university of Colorado)
1965	First clear evidence of hepatic tolerogenicity
1966	First liver xenotransplantation on July 15, 1966 (chimpanzee donor)
1966	Clinical introduction of anti lymphocyte globulin (ALG)
1966-1970	Proof that human leukocyte antigen matching would not be a major factor in liver transplantation
1967	First successful human liver replacements under Azathioprine, prednisone and ALG
1967-1968	Acceptance of brain death concept
1976	Improved liver preservation permits long distance procurement
1979	Cyclosporine introduced for organ transplantation including two liver recipients
1980	Cyclosporine steroid cocktail introduced clinically
1981	80% 1 year survival reported using cyclosporine prednisone
1983	Introduction of pump driven venovenous bypass without anticoagulation
1983-1984	US consensus development conference conclusion that liver transplantation is a service is followed by rapid proliferation of transplant centers worldwide
1987	University of Wisconsin solution improves liver and other organ preservation
1989	Clinical introduction of FK506 based immunosuppression
1990	First successful use of live liver donors (left side fragments)
1994	Live donor transplantation of right side liver fragments

Table (1): History of liver transplantation ***(Busuttil and Klintmalm, 2005)*.**