ICU Management of Liver Transplant Patients

An essay

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Summary

Liver transplantation has had a profound impact on the care of patients with end-stage liver disease and is the most effective treatment for many patients with acute or chronic liver failure resulting from a variety of causes.

Liver transplantation surgery is the second most common transplant surgery accounting for 21 % of all organ transplants.

Indications of liver transplantation include irreversible advanced chronic liver disease, hepatic malignancies and inherited metabolic disorders. While contraindications are many, include irreversible brain damage, AIDS, extra hepatic malignancy and others.

Various religious, philosophical and cultural traditions impose insurmountable barriers towards the promotion of organ donation. The need for this life-saving operation continues to exceed the supply of cadaver liver grafts.

Ethical concerns, organ Shortage, donor Outcomes and lack of funding are problems related always to liver transplantation.

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Contents

LIST OF Abbreviations

ARDS	Adult respiratory distress syndrome
AIDS	Acquired immune deficiency syndrome
ALT	Alanine transaminase
AST	Aspartate transaminase
APC	Antigen-presenting cell
ATG	Antithymocyte globulin,
ALG	Antilymphocyte globulin
BUN	Blood urea nitrogen
BEE	Basal energy expenditure
CBC	Complete blood pictures
CMV	Cytomegfalovirus
CNS	Central nervous system

CPR	Cardiopulmonary resuscitation
CSF	Cerebro spinal fluid
CT	Computed tomography
CVP	Central venous pressure
CVVHD	Continuous venovenous hemodialysis
DDAVP	Diamino-8-D-arginine vasopressin
EB V	Epestein-barr virus
ECG	Electrocardiogram
EDVI	END diastolic volume index
EEG	Electro encephalo graph
ESLD	End stage liver disease
ETI	Endotracheal intubation
FFB	Fresh frozen plasma
GFR	glomerular filteration rate
GSD	Glycogen storage diseases
HBsAg	Hepatitis B surface antigen

HCC	Hepatocellular carcinoma
HCV	Hepatitis C Virus
HIV	Human immuno deficiency virus
HLA	Human leukocytic antigens
HSV	Herpes simplex virus
ICU	Intensive Care Unit
ITBVI	Intrathoracic blood volume index
IVC	Inferior vena cava
LFA-1	Leukocyte function-associated antigen-1
LVEDAI	left ventricular end diastolic area index
MA	maximum amplitude
Mtor	mammalian Target of rapamycin
MMF	Mycophenolate mofetil
MOF	Multiple organ failure
MRI	Magnetic resonance imaging

MV	Mechanical ventilation
NIV	Non-invasive ventilation
OLT	Orthotopic liver transplantation
PAC	pulmonary artery catheter
PAOP	pulmonary artery occlusion pressure
PAH	pulmonary artery hypertension
PEEP	positive end expiratory pressure
PTLD	post transplant lymphoproliferativc disease
RBCs	Red blood cells
RVEDV	RV end-diastolic volume
TBVI	Total Blood Volume Index
TEE	Trans Esophageal Echocardiography
TEG	Thrombelastography
TNF-α	Tumor Necrosis Factor Alfa

Introduction

Introduction

Liver transplantation has had a profound impact on the care of patients with end-stage liver disease and is the most effective treatment for many patients with acute or chronic liver failure resulting from a variety of causes. ***(Keeffe et al., 2001)***

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. 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 et al., 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.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)***

Perioperative complications typically are higher with these various techniques; however, long-term patient survival seems comparable with that of deceased whole liver transplantation. ***(Settmacher et al., 2004)***

Liver transplantation is a complex, time-consuming operation that requires vascular reconstruction of the hepatic artery, the portal vein, and the hepatic venous drainage to the inferior vena cava. Biliary reconstruction usually is accomplished using an end-to-end anastomosis of the proximal donor bile duct to the distal recipient duct. A number of complications can be anticipated after liver transplantation, including perioperative and surgical complications, immunologic and infectious disorders, and a variety of medical complications. ***(Keeffe et al., 2001)***

With improved survival rates, liver transplantation has become the accepted method of treatment for patients with end-stage liver disease. Increasing success has led to broader indications and increasing the number of potential recipients. As the number of grafts suitable for patients remains a limiting factor, modifications in surgical technique and donor allocation have been established. Combining new methods of immunosuppression with modifications in surgical technique, survival rates have reached 80% to 90% in many centers performing liver transplants. ***(Oren et al., 2000)***