Acute Liver Failure: Current Management and Future Prospects

An Essay
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بسم الله الرحمن الرحيم

قَالُوا سُبْحَانَكَ لاَ عِلْمَ لَنَا
إِلاَّ مَا عَلَّمْتَنَا إِنَّكَ أَنتَ
الْعَلِيمُ الْحَكِيمُ

صدق
الله العظيم
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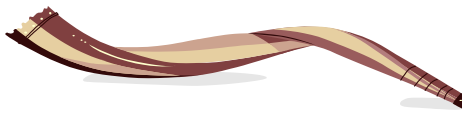

Mohamed Saad El-Deen

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List of Abbreviation

Abb.	Meaning
HE	Hepatic encephalopathy
ICP	Intracranial pressure
ALF	Acute liver failure
ICU	Intensive care unit
LDLs	Low density lipoproteins
HDLs	High density lipoproteins
FHF	Fulminant hepatic failure
HBV	Hepatitis B virus
MELD	Model for end stage liver disease
TIPS	Transgugular intrahepatic portosystemic shunt
PELD	Pediatric end stage liver disease
UNOS	United network for organ shoring
CTP	Child-Turcotte-Pugh
FLC	Fibrolamellar carcinoma
EHE	Epithelioid haemangioendiloma
PFIC	Progressive familial intra hepatic cholestasis
GGT	Gamma glutamyl transferase
CF	Cystic fibrosis
AIH	Autoimmune hepatitis
AD-PKD	Autosomal dominant polycyotic kidney disease
HCC	Hepatocellular carcinoma
MAP	Mean arterial pressure

Abb.	Meaning
LOLA	L-ornithine L-aspartate
OLT	Orthostatic liver transplantation
TEE	Transosophageal echocardiography
PT	Prothrombin time
PPT	Partial thromboplastin time
PEEP	Positive end expiratory pressure
HPS	Hepato-pulmonary syndrome
TIVA	Total-intravenous anesthesia
IVC	Inferior venacava

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Introduction

Although the development of hepatic encephalopathy (HE) and the associated increase in intracranialpreassure (ICP) in patients with acute liver injury is the key event that defines their prognosis, acute liver failure (ALF) is associated with dysfunction of multiple organ system. The management of patients with acute liver injury must begin as soon as patients presents and early referral to liver unit is imperitive ***(Bernuau, 2004).***

Liver transplant for end stage liver disease results in excellent outcomes. Patient and graft outcome is closely monitored on a national level, and 1-year survival is between 80% and 95%. Liver transplantation relies on a multidisciplinary approach, with close involvement of anesthesiologists and intensivists. However, intraoperative care of these patients remains in consistant and highly in situation dependant ***(Mandell, 1999).***

The discipline of liver transplantation has been developed over the past decades, and liver transplantation is now considered the gold standard for the treatment of patients with end-stage liver diseases and early liver tumors in cirrhotic livers. This procedure is now performed routinely in many

transplant centers, and it has provided an enormous technical innovation to the field of hepatobiliary surgery ***(Mehrabi et al., 2008)***.

The patient selected for transplant should suffer from irreversible, progressive disease for which there is no acceptable, alternative therapy. Recipients are broadly defined as having an intolerable quality of life because of liver disease or having an anticipated length of life of less than 1 year because of liver failure ***(Sherlock & Dooley, 2002).***

Anesthesia for liver transplantation is a complex procedure. It can be into the following phases:

- Preinduction.
- Induction, preparation for surgery, and maintenance.
- Preanhepatic phase.
- Anhepatic phase.
- Venous reperfusion of the graft.
- Neohepatic phase.
- Emergence/transport to ICU

(Sandberg & Raines, 2008)

Aim of the Work

To have an update review for current management and future prospects of acute liver failure, intraoperative management of liver transplant patients and anesthesia for patients with liver transplant.

Anatomy of the Liver

The liver is the largest organ in the body it weighs 1200–1500 gram and comprises one-fiftieth of the total adult body weight. The liver has two surfaces a diaphragmatic surface in the anterior and superior directions and a visceral surface in the postero-inferior direction ***(Sherlock & Dooley, 2002).***

Relations of the liver:

The liver fills the right hypochondrium and epigastric region, extending into the left hypochondrium, just below the diaphragm. It is related by its domed upper surface to the diaphragm, which separates it from pleura, lungs, pericardium and heart. Its postero-inferior (visceral) surface is related to the abdominal oesophagus, the stomach, duodenum, hepatic flexure of the colon and the right kidney and suprarenal, and the gall-bladder. (Fig. 1) & (Fig. 2) (***Ellis, 2006)***.

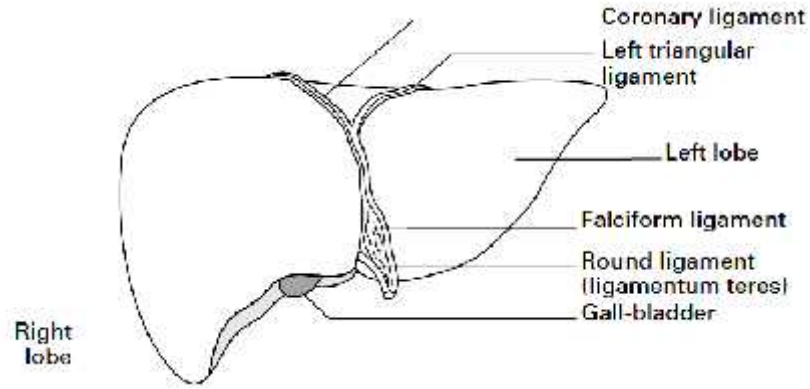

Fig. (1): Anterior of the liver ***(Quoted from Ellis, 2006)***.

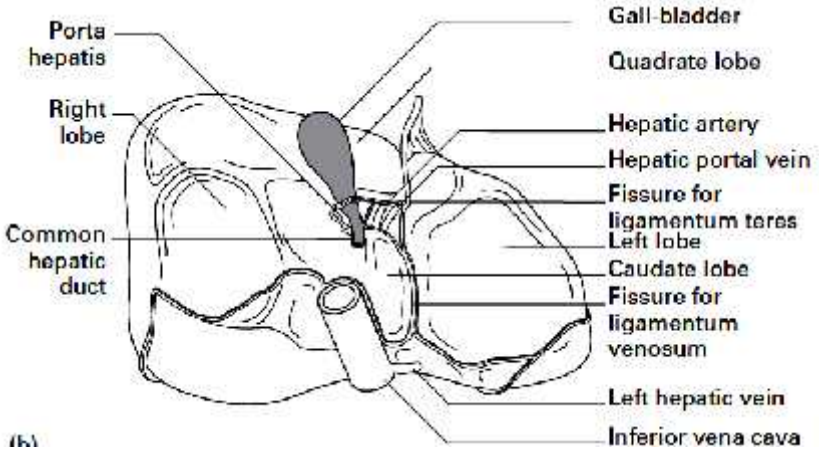

Fig. (2): Visceral surface of the liver ***(Quoted from Ellis, 2006)***

Ligaments related to the liver:

(1) The falciform ligament, which attach the liver to the anterior abdominal wall and anterior portion of the diaphragm.

(2) Ligamentum teres hepatis (The round ligament), which lies in the free edge of the falciform ligament, extending from the umbilicus to the notch between the two lobes. It is the obliterated remnant of the left umbilical vein.

(3) The ligamentum venosum, which is the fibrous remnant of the fetal ductus venosus. Additional folds of peritoneum connect the liver to the stomach (hepatogastric ligament), the duodenum (hepatoduodenal ligament), and the diaphragm (right and left triangular ligaments, anterior and posterior coronary ligaments).