HEPATITIS C CURRICULUM

Referral for Liver Transplantation Evaluation

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• **Consultant**
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*Dr. Box was a Recipient of a Liver Transplant, October 2002*
Liver Transplantation

Diseased liver (removed)

- IVC
- Hepatic veins

Gallbladder (removed)

- Portal vein
- Hepatic artery

Transplanted donor liver

- Divided vessels:
  1. Inferior vena cava (IVC)
  2. Portal vein
  3. Hepatic artery
  4. Common hepatic duct
  5. Cystic duct

- Anastomoses:
  1. IVC
  2. Portal vein
  3. Hepatic artery
  4. Common hepatic duct

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Hepatitis web study
Referral for Liver Transplantation

- Background and goals
- Common indications
- Cirrhosis and liver transplantation
- Timing for referral
- Evaluation and patient selection
Background and Goals
Liver transplantation: Background

• ~19,000 patients listed for LT in the US
• ~6,000 LT performed annually in US
• 137 LT centers in US (37 States/DC)
Centers performing adult liver transplants in 2011, within Donation Service Areas (DSAs)
Goals of Liver Transplantation

- Provides maximum benefit to patients with liver failure who have no other medical or surgical alternative for survival
- Likely prolongs life at least 5 years
- Restores patient to normal or near normal functional status
Liver Transplant Survival

Overall Patient Survival after Liver Transplant

Survival (%)

1-Year: 90
3-Year: 80
5-Year: 75

MELD ≥15 break-point where LT has survival benefit
Common Indications for LT
Common Indications for Liver Transplantation

• Acute liver failure
• Chronic liver disease with cirrhosis
• Hepatocellular cancer
• Metabolic derangements
Cirrhosis and Liver Transplantation

• The most common indication for liver transplantation is end-stage chronic liver disease consequent to HCV and cirrhosis.

• Patients with end-stage chronic liver disease consequent to cirrhosis account for approximately 80-85% of all patients transplanted.
Cirrhosis and LT
Liver Transplants

• Hepatitis C is the leading cause of cirrhosis and hepatocellular cancer in the United States \(^{(2)}\)

• 30-50% with chronic HCV will progress to cirrhosis and/or liver cancer \(^{(1)}\)

• Hepatitis C accounts for 30% of adults on liver transplant waiting list and is leading indication for liver transplant \(^{(2)}\)

(2) OPTN/SRTR 2011 Annual Report 2012
Cirrhosis: Definitions

- End stage of any chronic liver disease
- Characterized histologically by regenerative nodules surrounded by fibrous tissue
- Clinically there are two types of cirrhosis:
  - Compensated
  - Decompensated
Natural History of Chronic Liver Disease

Chronic liver disease → Compensated cirrhosis → Decompensated cirrhosis → Death

Development of complications:
- Variceal hemorrhage
- Ascites
- Encephalopathy
- Jaundice
Complications of Cirrhosis Result from Portal Hypertension or Liver Insufficiency
Patients with Compensated Cirrhosis
Development of Complications

Patients with Cirrhosis
Decompensation Shortens Survival

Timing for Referral
UNOS Model for End-stage Liver Disease (MELD) Score As a Predictor of Mortality

- MELD score based on Creatinine, Bilirubin, and INR
- Range = 6 (lowest risk) to 40 (highest risk)
- Predicts survival
- Also used in organ allocation process
Predicted 3-Month Mortality by MELD Score

Mortality risk of disease > mortality risk of transplant @ MELD 15
CTP Class and Survival without Transplant

- Class A (5-6 points) 90% 5-year survival
- Class B (7-9 points) 80% 5-year survival
- Class C (≥10 points) 35% 1-year mortality
Timing for Referral for Liver Transplantation Evaluation

• EARLY REFERRAL IS BEST (donor shortage)

• Fulminant Liver Failure: immediate
  - Acute liver failure (encephalopathy with coagulopathy) in patient without known chronic liver disease

• Liver Cirrhosis:
  - Decompensation (ascites, encephalopathy, varices)
  - MELD > 10 or CPT > 7 (measures of severity)

• HCC (Milan criteria)

• Type 1 HRS

Progressive Disease without Effective Alternative Treatment
Evaluation and Patient Selection
General Clinical and Biochemical Indications for Liver Transplantation

• Patients with chronic hepatocellular diseases
  > Serum albumin <3.5 g/dL
  > Prothrombin time >3 seconds above control or INR >1.3
  > Encephalopathy
  > Ascites
  > Bilirubin >2 mg/dL
Patient Selection Criteria for Liver Transplantation

- Severe fatigue
- Unacceptable quality of life
- Recurrent variceal bleeding
- Intractable ascites
- Recurrent or severe hepatic encephalopathy
- Spontaneous bacterial peritonitis
- Hepatorenal syndrome
- Small hepatocellular carcinoma on hepatic imaging
Potential for Successful Liver Transplantation

- Can patient survive surgery/postoperative period?
- Can patient comply/adhere to complex medical regimen after transplantation?
- Comorbid conditions that can compromise patient/graft survival and make transplantation futile?

Special Circumstances for Acceptance

- **Alcoholic cirrhosis:**
  Only for patients having psychosocial factors predicting long-term sobriety
  - Previous social stability
  - Employment record
  - Psychiatric status
  - Length of sobriety
  - Participation in alcohol recovery awaiting transplantation

- **Patients over age 60:**
  - Particular attention to silent coronary or vascular disease
  - Typically approved if no other major organ disease & expected to live >5 years

- **Patients with hepatocellular carcinoma**
  Undergo special scrutiny and adjunctive therapy
  - Thorough evaluation for identifiable malignancy outside of the liver
  - Adjuvant therapy in the form of chemo-embolization or chemotherapy to control the spread of cancer cells or unrecognized micrometastases
Absolute Contraindications to Transplant

- Irreversible brain damage
- Multi-system failure not correctable by liver transplantation
- Malignancy outside the liver (not skin cancer)
- Infection outside the hepatobiliary system
- Active alcohol or substance abuse
- Advanced cardiopulmonary or other systemic disease
- Psychosocial concerns

Relative Contraindications to Transplant

- **Comorbid Conditions**
  - Advanced age
  - Advanced chronic renal failure
  - Cholangiocarcinoma
  - Hypoxemia from intrapulmonary shunts
  - Severe malnutrition
  - HIV positivity

- **Anatomic Considerations**
  - Portal vein thrombosis
  - Prior portosystemic shunt surgery
  - Prior biliary tract surgery

Liver Transplant Evaluation
What can patients do?

• Get involved in chemical dependency treatment program if indicated and DOCUMENT attendance
• Lose weight if needed (BMI<35 recommended)
• Quit smoking NOW
• Avoid narcotic use if possible
• Methadone should NOT be a barrier to transplantation
Selection Committee

- Review of history and physical
- Review of psychosocial interview
- Review of laboratory studies
- Determination of medical need & psychosocial clearance
- May be accepted, rejected, or provisional
Liver Transplantation Evaluation Summary

- Liver transplantation restores health to the terminally ill.
- As percentage of those waiting, the annual number of liver transplants is declining.
- Identification of the complications of cirrhosis is critical to timely referral to transplant center.
- Patients with advanced liver disease strongly advised to adopt healthy liver lifestyle.
- Sign up to be an organ and tissue donor- Donate Life
End

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