

Liver transplantation and pregnancy

Three broad categories of liver disease

1. Pregnancy induced
 - a. Cholestasis of pregnancy
 - b. Preeclampsia
 - c. Acute fatty liver
2. Chronic disease
 - a. Viral hepatitis (B, C)
 - b. Primary biliary cirrhosis
 - c. Autoimmune hepatitis
 - d. Hepatolenticular degeneration (Wilson's)
 - e. Porphyria (AIP)
3. New liver disease
 - a. Viral hepatitis (A, B, E, CMV, EBV)
 - b. Gallbladder disease and acute pancreatitis
 - c. Thrombosis (Budd-Chiari)
 - d. Drug-induced

Normal change in pregnancy

1. Decreased albumin from hemodilution
2. Increased TG and TC
3. elevated alkaline phosphatase from placenta
4. Slightly elevate ALT in second trimester although still normal
5. total and free bilirubin were lower in all three trimesters
6. total bile acids were not significantly different

Scoring systems for liver disease

Child-Turcotte-Pugh

Initially developed in 19964 by Child and Turcotte to risk stratify patients undergoing shunt surgery fro portal decompression. Was later modified by Pugh in 1972 to include prothrombin time.

Score

Grade A = 5-6 Grade B = 7-9 Grade C = 10-15

Clinical and Biochemical Measurements	Points Scored for Increasing Abnormality			
	1	2	3	
Hepatic encephalopathy (grade)*	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3	None	1 and 2	3 and 4
Ascites	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3	Absent	Mild	Moderate
Total bilirubin (mg/dl)	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3	< 2.0	2.0 - 3.0	> 3.0
Serum albumin (g/dl)	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3	> 3.5	2.8 - 3.5	< 2.8
Prothrombin time (sec. prolonged) or Prothrombin time INR**	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3	< 4 or < 1.7	4 - 6 or 1.7 - 2.3	> 6 or > 2.3

Model for End-stage Liver Disease (MELD)

The MELD score was initially developed from Cox proportion hazard regression modeling to identify patients whose survival post-TIPSS would be less than 3 months but became adapted to predict who would die within 3 months of being placed on the UNOS (United Network for Organ Sharing) list and thus prioritizes allocation of organs for liver transplantation.

$$\text{MELD} = 3.8[\ln \text{ serum bilirubin (mg/dL)}] + 11.2[\ln \text{ INR}] + 9.6[\ln \text{ serum creatinine (mg/dL)}] + 6.4$$

2003 Case report from Italy describes acute hepatic failure on chronic HBV infection in the 34th week of gestation. The fetus was delivered via C-section 2 days prior to liver transplant.

2003 (Queensland, Australia) – National Transplant Pregnancy Registry reported on 136 pregnancy outcomes

72% live birth

MGA 36.9 weeks 2739 grams

36% births before 37 weeks gestation

Preeclampsia in 26% patients on cyclosporine; 9% patients on tacrolimus (FK506)

2003 (Nebraska) 26 year-old at 18 weeks gestation developed Budd-Chiari. She carried PT G202120A mutation. She was treated with portocaval shunt until 31 weeks when she delivered by C-section (reason not stated). She developed progressive liver failure and underwent liver transplant but died 10 months later.

2000 (Obstet Gynecol) 32 year-old at 36 weeks with HELLP who developed liver failure and required transplant by 5 days postpartum. Pathology confirmed acute fatty liver of pregnancy

Article for discussion: Nagy S, Bush MC, Berkowitz R, Fishbein TM, Gomez-Lobo V. Pregnancy Outcome in Liver Transplant Recipients. *Obstet Gynecol* 2003; 102: 121-8.