Liver Failure

Differential Diagnosis

A	Acetaminophen, hepatitis A, autoimmune, *Amanita phallodes*, adenovirus
B	Hepatitis B, Budd-Chiari
C	Hepatitis C, CMV, cryptogenic
D	Hepatitis D, drugs
E	Hepatitis E, EBV
F	Fatty infiltration, acute fatty liver of pregnancy, Reye's syndrome
G	Genetic – Wilson disease, hemochromatosis
H	Hypoperfusion, HELLP, HSV, heat stroke, hemophagocytic lymphohistiocytosis
I	Infiltration by tumor

Physical Exam

Hepatic encephalopathy is the hallmark of acute liver failure and has four grades:

- Grade I – mild confusion, slurred speech, disordered sleep; mild asterixis
- Grade II – lethargy, moderate confusion
- Grade III – stupor, incoherent speech, sleeping; asterixis is the most prominent
- Grade IV – coma, unresponsive to pain; cerebral edema in 75%; posturing present

Subclinical seizures are thought to occur in ~30% and are difficult to detect clinically

Laboratory Pearls

- Elevated INR is part of the definition of acute liver failure and must be present (INR >1.5)
- Aminotransferases should be markedly elevated (acutely)
- Decreasing aminotransferases may indicate recovery or worsening with loss of hepatocyte mass – don't be fooled!
- Bilirubin and INR are the most important to monitor, only give FFP if really needed

Despite elevated INR – 20% are **hypo**coaguable, 45% normal, 35% **hyper**coaguable! (via thromboelastography)

Management

- Have a low threshold to send patients to a liver transplant center. Only 40% of patients with acute liver failure will spontaneously recover.
- Use hepatic encephalopathy for triage: Grade I on the floor, Grade II – IV in the ICU

Some disease- specific treatments

N-acetylcysteine	Obvious role in acetaminophen toxicity; there may be some role in non-acetaminophen liver failure as well; low threshold to administer, risks are minimal
Hepatitis B	Consider lamivudine; give to transplant candidates to prevent post-transplant recurrence
Amanita phalloides	Early charcoal improves survival; consider silibinin (milk thistle extract) and penicillin G
Budd-Chiai	TIPS, surgical decompression, thrombolysis
HSV	Acyclovir for 7 days
Wilson disease	Will generally require transplant; plasma exchange with FFP to remover copper as a temporizing measure
Autoimmune hepatitis	Trial of steroid not unreasonable (prednisone 40-60 mg daily); be weary of infection
Acute fatty liver of pregnancy	Emergent delivery