

# Cholestasis and Steatohepatitis

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# CASE 1

A 60 year old woman with diabetes mellitus was noted to have slightly elevated transaminases on routine physical exam. AST/ALT 39/54. Alkaline phosphatase was 161. Hepatic ultrasound showed no abnormalities. Preliminary workup was negative for hepatitis A,B and C serologies. Liver biopsy was performed.

Diagnosis: Primary Biliary Cirrhosis

# CASE 2

The patient is a 36 year old massively obese man who developed dark urine and yellow sclera 10 days before presenting to the hospital. He reports fatigue but no other symptoms. He has not traveled outside the US for over a year and has no friends or family who are sick. He does not drink or take prescription, over the counter or herbal medications. Medical history is significant for resection of a mucinous cystadenoma of the appendix with widespread abdominal disease approximately 5 years ago. AST/ALT 465/290. Total Bilirubin 9.6. Hepatitis A,B,C, EBV negative. Ultrasound shows gallstones and CT demonstrated mildly dilated intrahepatic bile ducts.

Diagnosis: Early Large Duct  
Obstruction

# CASE 3

- The patient is a 57 year old woman with a longstanding history of scleroderma. She reported a six week history of vague right upper quadrant pain when she presented for medical attention because her skin and sclera had turned yellow. On admission to the hospital, her bilirubin was 8.1 with ALT 763/AST 477 and an alkaline phosphatase of 531. A CT scan showed mild-moderate intrahepatic ductal dilatation, a normal common bile duct and gallstones. ERCP was performed. The ERCP revealed common bile duct stones for which sphincterotomy was performed and the stones removed. Also noted at ERCP was a distinct beaded appearance to the bile ducts. Liver biopsy was performed

Diagnosis: Sclerosing cholangitis  
secondary to intrahepatic  
gallstones

# Pearls

- The histologic findings in early large duct obstruction are nonspecific.
- The histologic triad of large duct obstruction is portal tract edema, inflammation and ductular proliferation.
- Bile infarcts or bile lakes are diagnostic of chronic cholestasis.

# CASE 4

- A 39 year old Vietnamese man presented to the emergency room with severe upper abdominal pain and fever. History is significant for alcohol use (20-30 “drinks” a week) Workup was unremarkable except for a focal dilatation of bile ducts in the left lobe of the liver with a possible 5 cm mass. Needle core biopsy showed fibrous tissue. Transhepatic cholangiogram performed at the time of a biliary drainage procedure showed dilated left intrahepatic ducts with multiple filling defects consistent with intrahepatic cholelithiasis.

Diagnosis: Recurrent pyogenic  
cholangitis

# CASE 5

The patient is an 83 year old woman in good health. She developed diarrhea and anorexia with increasing fatigue over a three week period and sought medical attention.

The patient has no significant medical history. She drinks approximately 3-4 alcoholic beverages per week and takes multivitamins and several herbal medications for her joints. On admission, her total bilirubin was 15.9, AST 1675/AST 1880. Alkaline phosphatase was 511. Workup revealed negative serologies for Hepatitis A, B, and C, negative antimitochondrial and antinuclear antibodies. A liver biopsy was performed to determine the etiology of the acute hepatitis.

Diagnosis: Cholestatic hepatitis  
likely secondary to herbal  
medication

# CASE 6

- 74 year old man who presented to the emergency room because he noticed that his skin had turned yellow. Physical exam was unremarkable with the exception of obvious jaundice. Laboratory studies on admission revealed an AST 193, ALT 177, Total Bilirubin 8.2 with normal CBC, BUN and creatinine. Medical history was significant for atherosclerotic heart disease, type 2 diabetes and benign prostatic hypertrophy. The patient had been hospitalized and treated for a C difficile colitis with unknown antibiotics for several weeks prior to the development of jaundice. Laboratory data at the time of his discharge for C. dif colitis showed a bilirubin of 0.5. He was continued on antibiotics as outpatient therapy. After admission to the hospital, the patient's bilirubin continued to rise rapidly, with an eventual peak at 25.4, and a malignant obstruction was suspected. Imaging showed no specific findings. Additional laboratory studies revealed negative serology for hepatitis A,B,C, negative ANA, Antismooth Muscle Antibody and Antimitochondrial Antibody. Serum ferritin was markedly elevated and iron saturation was noted to be 52%. Liver biopsy was performed to determine the cause of the cholestasis and to investigate the iron studies.

Diagnosis: Drug induced  
Cholestasis likely secondary to  
antibiotic

# Pearls

- Cholestatic hepatitis is a common pattern in drug induced liver injury.
- Canalicular cholestasis with centrilobular necrosis is likely due to drug induced injury.
- Determining drug induced liver injury requires clinical pathologic correlation.

# Case 7

A 37 year old woman was referred to a hepatologist because of elevated transaminases. Prior workup had included liver ultrasound which showed possible fatty infiltration vs. fibrosis. The patient had a history of hypertension. She was status post breast reconstruction after a T1N0M0 breast cancer. Medications included tamoxifen. The patient did not drink alcohol. Physical exam revealed a Body Mass Index (BMI) of 21.9. Liver biopsy was performed to determine the etiology of the transaminase elevation and to assess fibrosis.

Diagnosis: Steatohepatitis  
associated with Tamoxifen

# CASE 8

45 year old morbidly obese woman was brought to the emergency room by her family because she seemed ill and complained of weakness and vague abdominal pain. She was found to be hyponatremic and on admission had elevated liver enzymes (AST/ALT 318/206, bilirubin 3.7 and alkaline phosphatase 292) MRCP showed normal bile ducts. Her medical history was notable for a remote gastric bypass, alcohol and drug abuse and bipolar disorder for which she took multiple medications. Liver biopsy was performed.

Diagnosis: Alcoholic Foamy  
Degeneration

# Pearls

- NASH is the most common liver disease in the US, however, some drugs or toxic agents can cause steatohepatitis.
- Steatohepatitis is a constellation of histologic findings.
- Alcoholic liver disease may present as hepatitis, steatosis, foamy degeneration or cirrhosis.
- Clues to an alcoholic etiology include abundant Mallory hyaline, terminal hepatic vein injury, perisinusoidal fibrosis. None are specific however.

# Case 9

The patient is a 50 year old obese woman who developed abdominal swelling, edema of the extremities and rapidly increasing weight over a two month period. Her workup included a CT scan which showed a nodular liver contour consistent with cirrhosis. Laboratory studies revealed an ALT/AST of 27/59, bilirubin of 3, alkaline phosphatase of 110 and platelets of 64,000. Hepatitis serology for HBV and HCV was negative. The clinical differential diagnosis included autoimmune hepatitis, hemochromatosis and primary biliary cirrhosis.

Diagnosis: Cirrhosis consistent with  
“Burnt-out” NASH

# Case 10

14 year old Hispanic boy referred to the Children's Hospital obesity clinic by his primary care physician for help with a weight loss program. Workup revealed elevated transaminases. The patient was also determined to be insulin resistant. Liver biopsy was performed to determine etiology and assess the degree of fibrosis. The patient and family consented to become part of the NASH clinical research network if eligible.

Diagnosis: Steatohepatitis,  
Type 2 (Pediatric) Pattern with  
severe fibrosis

# Pearls

- Fatty liver disease constitutes a spectrum of changes ranging from fat accumulation in the hepatocytes to steatosis with liver cell injury to fibrosis and cirrhosis.
- NASH may lead to significant liver injury, fibrosis and cirrhosis in adults and children.

THANK YOU!!