Liver Pathology 4:

- Biliary diseases
- Vascular diseases
- Parasites
- Tumors
- Liver transplantation
Large bile duct obstruction (LBDO)

- intrahepatic
- extrahepatic
Pathogenesis of Biliary Cirrhosis

- Acute LBDO
- Portal fibrosis
- Portal-portal linking early nodularity and regeneration
- Biliary cirrhosis
FIG. 2. Schematic representation of the effects of cholestasis.
Causes of Large Bile Duct Obstruction
Extrahepatic Biliary Atresia (EHBA)

- Reovirus 3
- Rotavirus
- Immune targeting?
Loop of small intestine

Kasai Hepatic Portoenterostomy

EHBA Rx

Liver Transplantation

Choledochal cyst
Primary Sclerosing Cholangitis (PSC)

ERCP: endoscopic retrograde cholangiopancreatography
Primary Sclerosing Cholangitis (PSC)

Idiopathic fibrosing, stricturing and inflammatory disorder affecting extrahepatic bile ducts ± intrahepatic bile ducts

**Associations**

Ulcerative colitis (75%) , fewer Crohn’s
Positive serum pANCA
Retroperitoneal fibrosis
Riedel’s struma of thyroid
Mediastinal fibrosis
Retroorbital tumor & fibrosis
Primary Biliary Cirrhosis (PBC)

Guys’ Hospital Report
London, 1851

Addison & Gull

Mrs. Elizabeth Peacock
PBC: Primary biliary cirrhosis----
Chronic nonsuppurative destructive cholangitis

- middle-aged women
- + AMA (anti-mitochondrial antibodies); M2 subtype
- ↑ Alkaline Phosphatase
- ↑ IgM
- AMA directed against inner mitochondrial membrane
  PDC-E2 (pyruvate dehydrogenase complex-E2)
- Assoc. with other autoimmune dis: e.g. RA, sicca, celiac, scleroderma

Molecular Mimicry?
Gram – bacteria

florid bile duct lesion

AMA

PDC-E2
4 Stages of PBC

Stage 1: florid bile duct lesion

Stage 2: bile ductular proliferation

Stage 3: scarring

Stage 4: cirrhosis
Vascular Disease & the Liver

• Veins
• Sinusoids
• Arteries

• Liver is often involved in heart disease or other outflow problems ("hepatic venous outflow obstruction")
Budd-Chiari Syndrome (Hepatic venous outflow obstruction)

- oral contraceptives
- coagulopathy (prot. S, C, factor V Leiden def., anti-cardiolipin Ab’s)
- tumor invasion of hep. V’s or IVC: renal cell CA + HCC
- small vein disease: VOD
Peliosis hepatis: blood lakes of the liver
-HIV, C17-alkylated steroids (OC’s, anabolic steroids; systemic inflammation.
Infarct: Arterial disease (PAN, ligation, chemoRx installation)
Portal vein: Zahn infarct
Pylephlebitis: -perforated ulcer, -ruptured appendix, etc.
Schistosomiasis: Pre-sinusoidal, intrahepatic portal hypertension (Symmers’ “clay pipestem fibrosis”)
Liver Tumors

**BENIGN**
- hemangioma
- liver cell adenoma
- focal nodular hyperplasia (FNH)

**MALIGNANT**
- metastasis is most common tumor in the liver
- hepatocellular carcinoma (HCC)
- bile duct carcinoma
pancreas

metastatic tumor
(most common tumor in the liver)

lung

breast
LIVER-CELL ADENOMA
- oral contraceptives
- hepatocyte nuclear factor 1α (HNF-1α) mutations
- benign hepatocytes, bld vessels, NO b.d.’s
FOCAL NODULAR HYPERPLASIA (FNH)
-malformation: central scar with artery, outgrowth of cirrhosis-like mass
HCC

• 75% of pts have cirrhosis
• 75% are serum AFP +
• Risks: Cirrhosis due to HBV, HCV, alcohol, hemochromatosis
• Invades veins: portal vein/hepatic vein/IVC→to lungs
Hepatocellular carcinoma (HCC)
FIBROLAMELLAR Ca: young, no risks
-better prognosis with resection/tx

No cirrhosis
Cholangiocarcinoma
(bile duct Ca)
Cholangiocarcinoma associated with:

• Liver flukes:
  - Clonorchis sinensis
  - Opisthorchis viverrini
• PSC
• Gallstone disease, hepatolithiasis
Liver Transplantation

- Cirrhosis
  - HBV, HCV
- PBC
- PSC
- Extrahepatic biliary atresia
- AFLD/NAFLD
- Metabolic disorders
Acute Rejection

HLA II
endothelium

BD
Portal tract

T
Liver Transplantation Pathology

1. Acute rejection: triad
2. Preservation injury (ischemia/reperfusion)
3. CMV hepatitis
4. Recurrent original disease
5. De novo autoimmune hepatitis
6. Chronic rejection

inflammation
bile duct damage
endotheliitis

6 mos.
Dame Sheila Sherlock

The Royal Free Hospital
London, U.K.

“Diseases of the Liver & Biliary System”
Peter J. Scheuer, M.D.

Royal Free Hospital
Prof. of Histopathology

“Liver Biopsy Interpretation”
-1st Edition: 1968
-7th Edition: 2005