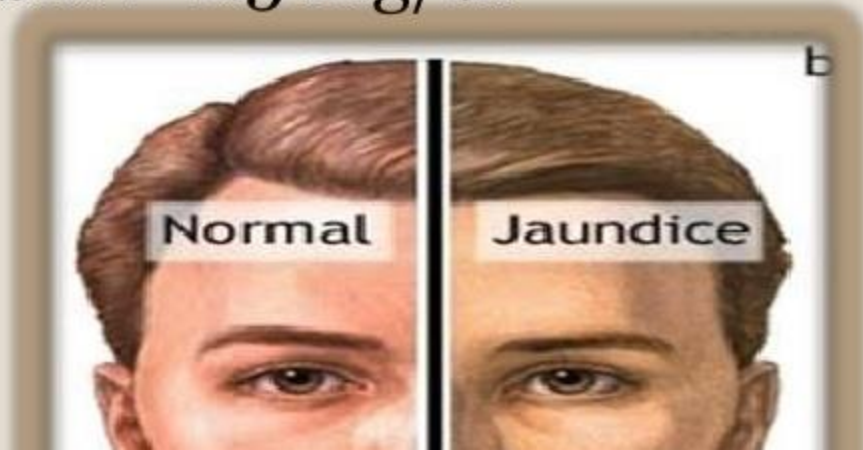


APPROACH TO JAUNDICE

What is jaundice?



- Yellowish discoloration of skin, sclerae and mucus membranes due to hyperbilirubinemia
- Total bilirubin > 1.5 mg/dl



Types of jaundice



Prehepatic /
Hemolytic
jaundice

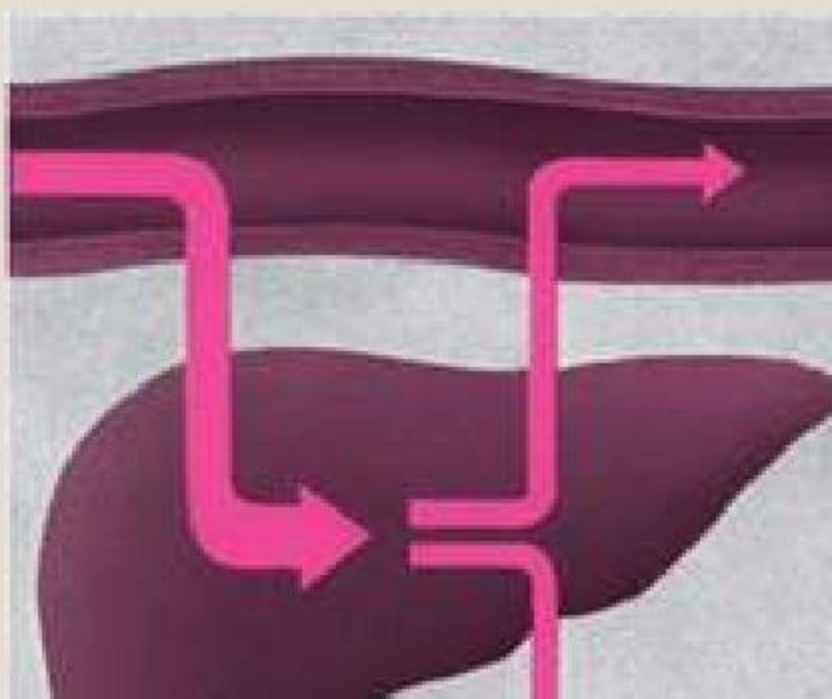
Hepatic jaundice



Hemolytic Jaundice



- Excess production of bilirubin due to excess breakdown of hemoglobin
- Indirect bilirubin (insoluble in water since unconjugated)
- E.g.
 - Hemolytic anemia



Hepatic Jaundice



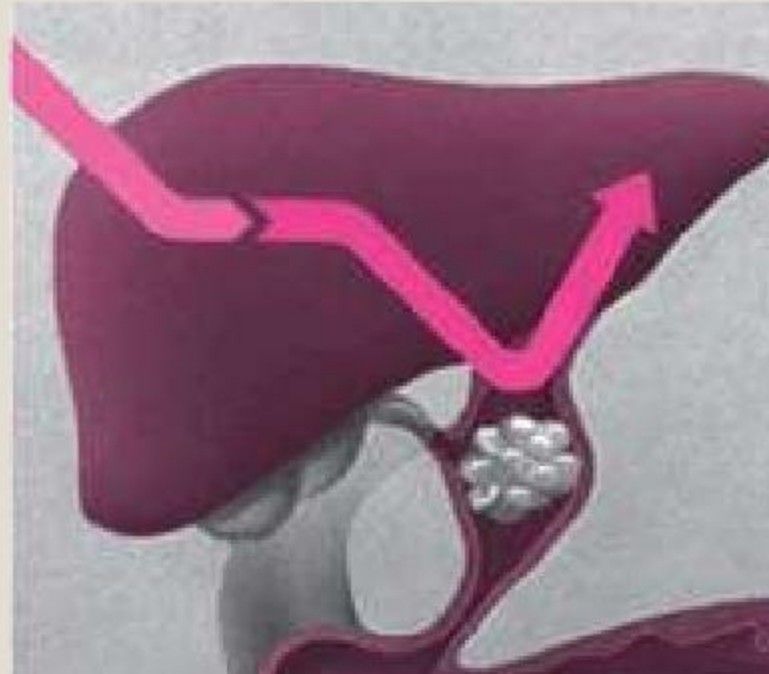
- Liver's ability to conjugate or excrete bilirubin is affected
- Increased level of conjugated and unconjugated bilirubin
- E.g.:
 - Hepatitis, cirrhosis, hepatocellular carcinoma, prolonged use of drugs metabolized by liver



Obstructive Jaundice



- Bilirubin formation rate is normal
- Conjugation is normal = direct bilirubin
- Obstruction of bile duct so exit is blocked
- Tumor of the head of the



History



- Pain
- Fever
- Alcohol
- Medications
- Pruritus
- Color of urine
- Type of stools

Physical examination



- BP/HR/Temp.
- Degree of jaundice
- Presence of anemia
- Abdominal tenderness
- Size and character of liver
- Any palpable mass e.g. gall bladder (Courvoisier's law)
- Signs of liver failure

Icterus Ascites



Lab investigations



- Complete blood count
- Liver function tests
- BT/CT
- PT/INR
- Serum albumin
- ?blood culture

Other investigations



- **Ultrasound:**
 - More sensitive than CT for gallbladder stones
 - Equally sensitive for dilated ducts
 - Portable, cheap, no radiation, no IV contrast
- **CT:**
 - Better imaging of the pancreas and abdomen
- **PTC- percutaneous transhepatic cholangiogram**
 - Gives a picture of the intra and extrahepatic biliary tree



- **MRCP:**

- Imaging of biliary tree comparable to ERCP
- Non invasive

- **ERCP:**

- Therapeutic intervention for stones
- Brushing and biopsy for malignancy
- Invasive, chances of developing pancreatitis post procedure

Liver function tests



LFT	Ser. Billirubin	0.2-0.8 mg/dl
	Indirect	0.1 – 0.3 mg/dl
	Direct	0.2 – 0.7 mg/dl
	SGOT (AST)	0-35 IU
	SGPT (ALT)	0-35 IU
	Alk. Phosph.	30-120 IU
	Ser. Protein	5.5 – 8.5 G/dl

Enzymes



- **Alkaline phosphatase**
 - Bone and liver
 - Specific for obstructive jaundice
 - Released from biliary canaliculi in case of bile duct obstruction
- **Aspartate aminotransferase (AST/SGOT)**
 - Reflects damage to hepatic cell
 - Less specific
 - May be elevated in MI
 - Used with ALT to differentiate between heart and liver disease

Patient A



- 42 year old female with history of general **weakness** of 4 months. She was found to have **moderate anemia, jaundice** and mild **splenomegaly**.
- Hemolytic Jaundice

Clinical Findings—Hemolytic Jaundice



- **Decreased hemoglobin**
 - Explains weakness
 - Has moderate anemia
- **Splenomegaly**
 - Increased activity of reticuloendothelial system
 - Site of RBC filtration
- **Liver Function Tests:**

Patient B



- 30 year old male with history of **fever** of 2 weeks, **nausea** and **highly colored urine**. He had **palpable, soft tender liver**.
- Hepatic Jaundice

Clinical Findings—Hepatic Jaundice



- **Highly colored urine**
 - Increased amount of bilirubin excretion
- **Tender hepatomegaly**
- **Liver function tests**
 - High serum bilirubin
 - **AST and ALT highly increased**
 - **Alkaline phosphatase increased moderately**

Seen in both
hepatocellular
jaundice and
cholestatic
jaundice

Patient C



- 35 yr old male with complaints of **pain abdomen, jaundice, itching** and passing **clay colored stools**.
- Previously he was diagnosed with gall bladder stones but has not taken treatment.
- **Gall bladder is not palpable.**
- Obstructive jaundice due to CBD stones.

Patient D



- 60 yr old male patient with **progressive jaundice, itching, loss of weight** .
- On palpation **gall bladder is palpable**.

- Obstructive jaundice due to malignancy
 - ✦ Periamпулярный carcinoma

Clinical findings in obstructive jaundice



- Deep jaundice
- Scratch marks on body
- High colored urine
- Clay colored stools
- Other features
 - ?pain
 - ?weight loss

Curvoisier's law



- “In a case of obstructive jaundice, if the gall bladder is palpable, it is unlikely to be due to stones.”
- Explanation :

Gall stones

Recurrent

Shr...

How to differentiate the types of jaundice?

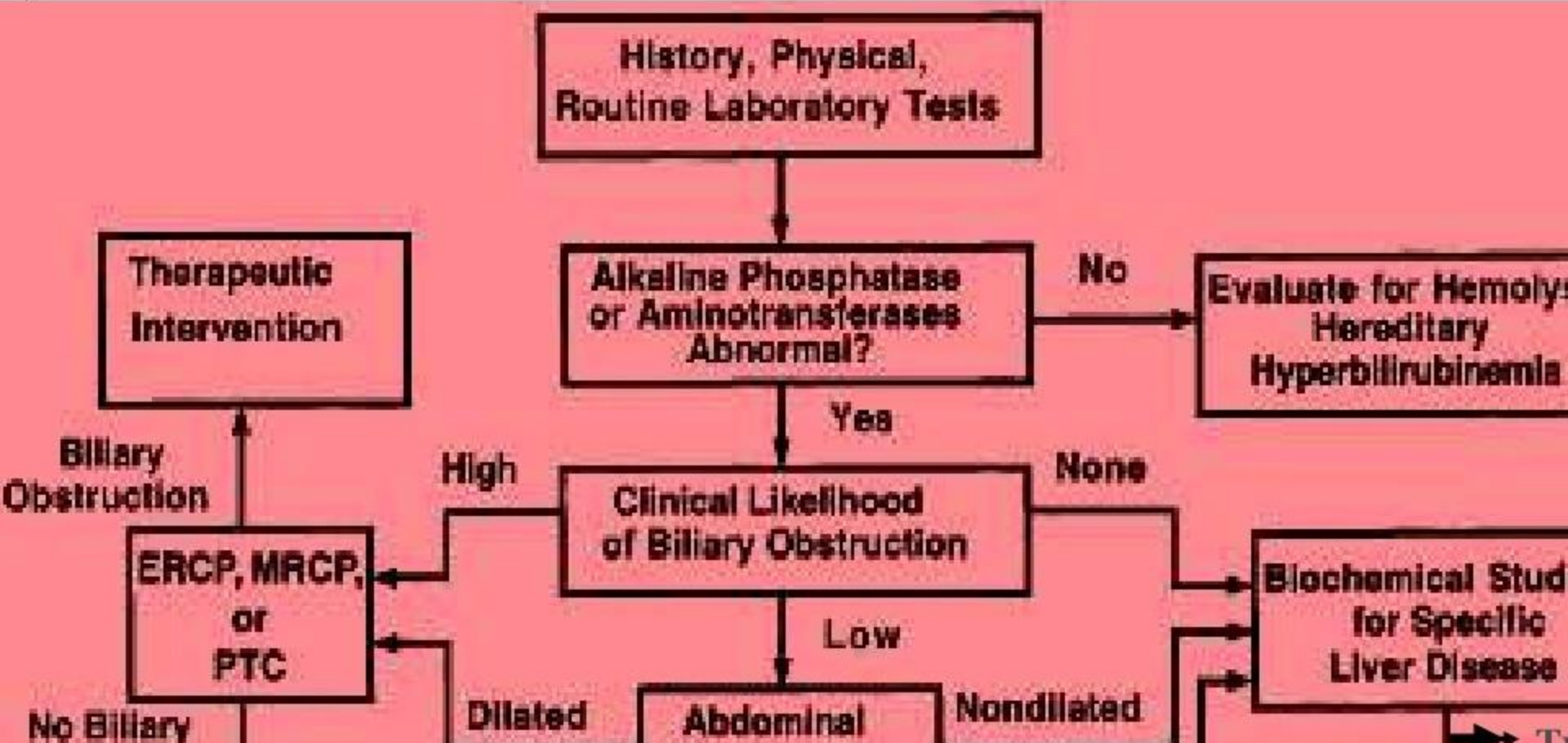


- **Hemolytic:**

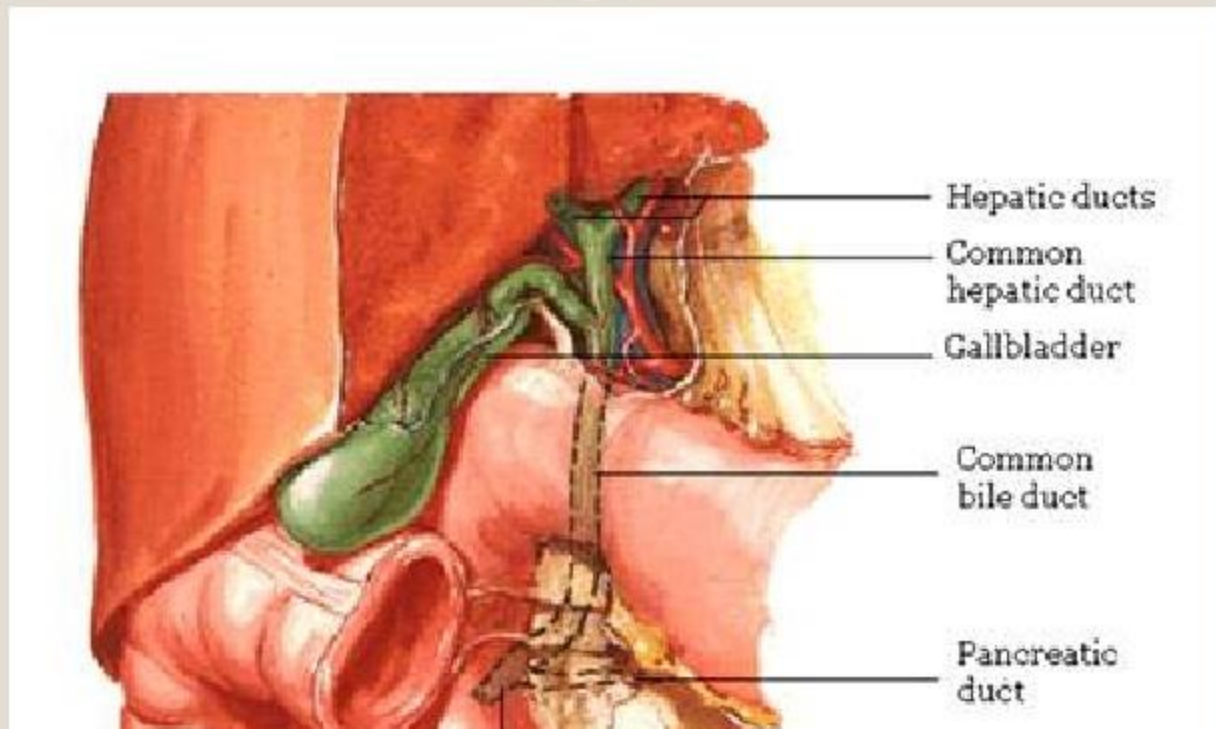
- Increased unconjugated (indirect) more than direct (conjugated) bilirubin
- Hemoglobin level low
- Anemia

- **Hepatic:**

- Increased amount of both indirect and direct
- Increase in AST and ALT more than increase in ALP



Obstructive jaundice



Obstructive jaundice - etiology



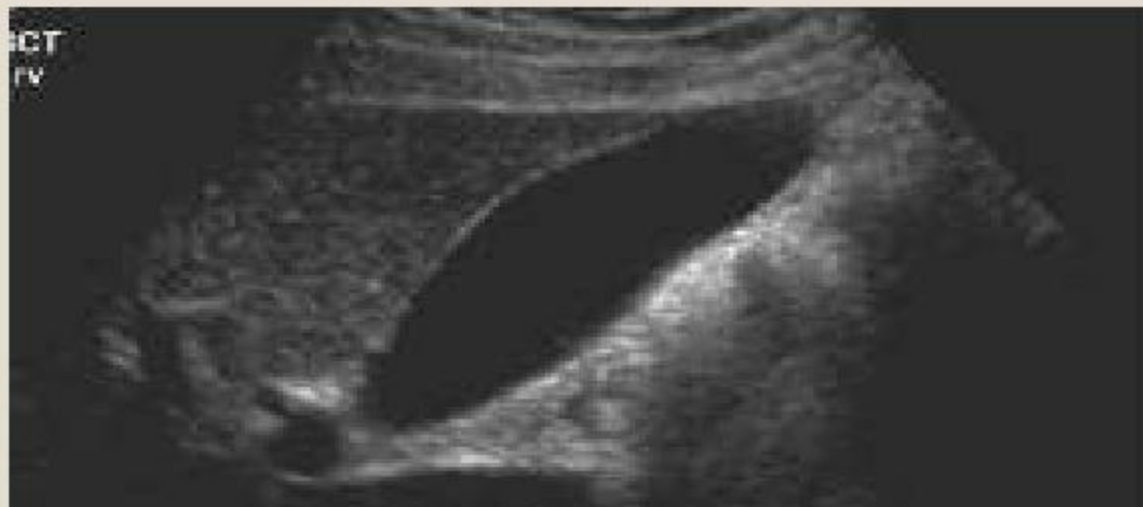
1. **CHOLEDOCHOLITHIASIS**
2. **NEOPLASMS- periampullary carcinomas**
3. **BILIARY ATRESIA**
4. **CHOLEDOCHAL CYST**
5. **LYMPHADENOPATHY-PORTA HEPATIS**

Diagnosis



- LFT
- USG abdomen
- CT abdomen
- PTC
- ERCP
- MRCP

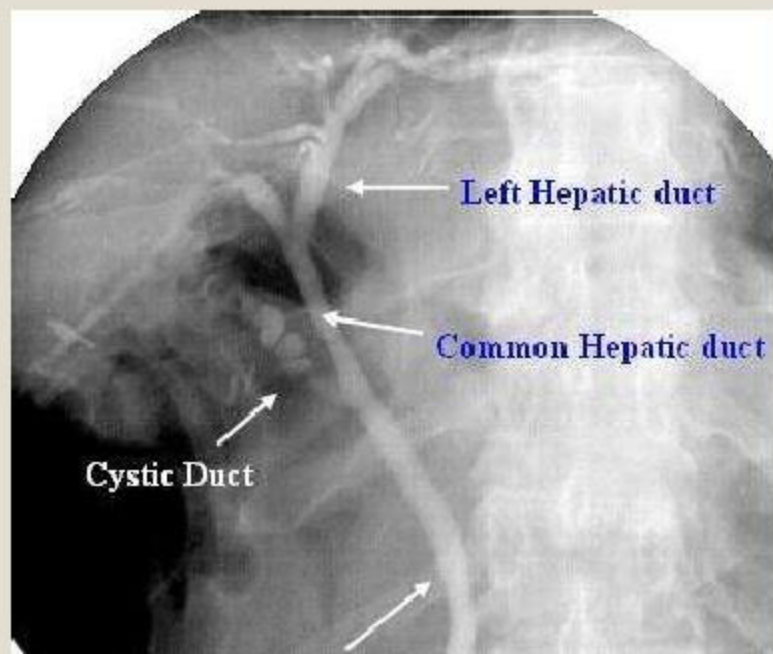
USG abdomen



CT abdomen



ERCP

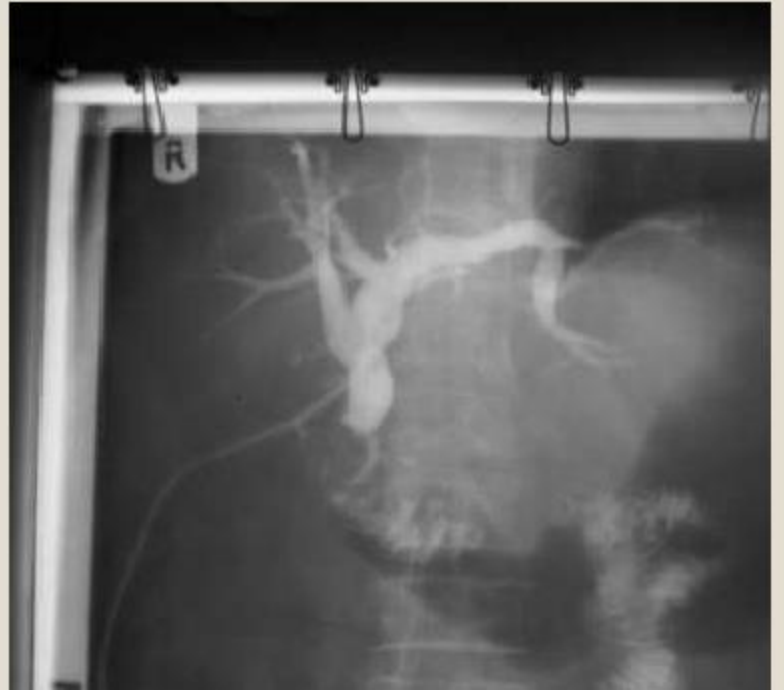


Treatment



- **Choledocholithiasis**
 - Open / laparoscopic CBD exploration with stone extraction and T tube placement.
 - Endoscopic papillotomy and extraction
- **Periampullary carcinoma**
 - Curative – whipple's procedure
 - Palliative –
 - endoscopic stenting of ampulla

1. Gall stones removed from CBD
2. T-tube cholangiogram



Whipple's operation



- **3 structures removed**
 - C-loop of duodenum
 - Head and neck of pancreas
 - Pylorus of stomach
- **3 anastomosis are made**
 - Gastro-jejunostomy
 - Choledocho-jejunostomy
 - Pancreatico-jejunostomy

Resected g.b. and opened C-loop showing periampullary growth



Thank you

