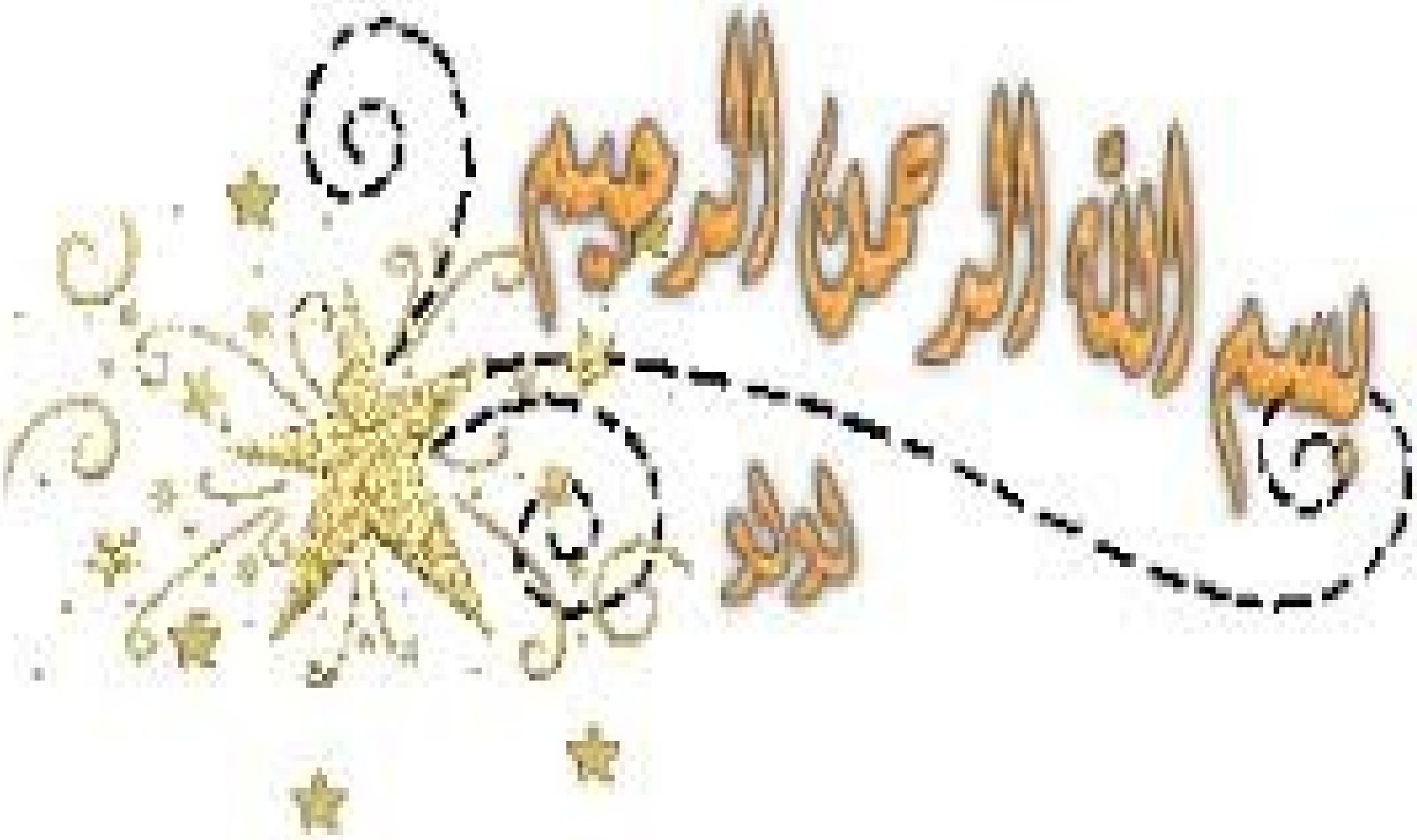

بسم الله الرحمن الرحيم

JAUNDICE

Learning objectives

- Causes of transaminases and bilirubin elevation -1

2-Causes of cholestatic jaundice

3-Clinical features and complications

Jaundice is usually detectable clinically when the plasma bilirubin exceeds 50 M mol/L (~3mg/dl).

The causes of jaundice overlap with the causes of abnormal liver function tests.

Common causes of elevated serum transaminases:-

1. Minor elevation (<100 u/L).

- Chronic hepatitis C.
- Chronic hepatitis B.
- Haemochromatosis.
- Fatty liver disease.

2. Moderate elevation (100-300 u/L).

- As above plus.
- Alcoholic hepatitis.
- Non-alcoholic steato hepatitis
- Autoimmune hepatitis.
- Wilson's disease.

3. Major elevation (> 300 u/L).

- Drugs (e.g.: paracetamol)
- Acute viral hepatitis.
- Autoimmune liver disease.
- Ischemic liver.
- Toxins (e.g: Amanita phalloides poisoning)
- Flare of chronic hepatitis B.

In patient with jaundice it is useful to consider whether the cause might be pre-hepatic, hepatic or post hepatic.

1. Pre-hepatic jaundice:

This is caused by haemolysis or by congenital hyperbilirubinaemia, and is characterized by isolated raised bilirubin level.

Jaundice due to haemolysis is usually mild because a healthy liver can excrete a bilirubin load six times greater than normal.

The most common form of non-haemolytic hyper bilirubinaemia is Gilberts Syndrome.

2. Hepatocellular jaundice: result from an inability of the liver to transport bilirubin across the hepatocyte into the bile. Occurring as aconsequence of parenchymal liver disease.

Bilirubin transport across the hepatocytes may be impaired at any point between uptake of unconjugated bilirubin into the cells and transport of conjugated bilirubin into the canaliculi. In addition, swelling of cells and Oedema resulting from the disease itself may cause obstruction of the biliary canaliculi.

In hepatocellular jaundice the concentration of both unconjugated and conjugated bilirubin in the blood increase.

There is increase in transaminases (AST, ALT), but increases in other LFTS, including cholestalic enzymes (GGT, ALP) may occur.

Hepatocellular jaundice can be due to acute or chronic liver injury.

a. Acute causes of liver injury:

Viral hepatitis (A, B, E), drugs, Alcoholic liver disease, Autoimmune hepatitis.

b. Chronic causes of liver injury:

Chronic viral hepatitis (B + C), Alcoholic liver disease, non-alcoholic fatty liver (NAFLI). Haemochromatosis, Wilson's disease, α-antitrypsin deficiency, cryptogenic, primary biliary cirrhosis (PBS), primary sclerosing cholangitis (PSC).

Acute jaundice in the presence of AST > 1000 u/L is highly suggestive of an infectious cause (e.g: hepatitis A, B), drugs (e.g: paracetamol) or hepatic ischemia.

Imaging is essential to:

1. Identify features suggestive of cirrhosis (e.g: irregular liver outline, splenomegaly).
2. Identify the patency of hepatic arteries and veins, and of the portal vein,, and to obtain evidence of portal hypertension. Liver biopsy has an important role in defining the aetiology of hepatocellular jaundice and the extent of established liver injury.
3. Obstructive (cholestatic) jaundice:

   Cholestatic jaundice may be caused by:

   a. Failure of hepatocytes to initiate bile flow.

   b. Obstruction of bile flow in the bile ducts or portal tracts.

   c. Obstruction of bile flow in the extra-hepatic bile ducts between the porta hepatic and papilla of vater.

In the absence of treatment, cholestatic jaundice tends to become progressively more severe because conjugated bilirubin is unable to enter the bile canaliculi and passes back into the blood, and also because there is a failure of clearance of unconjugated bilirubin arriving at liver cells.

The causes of cholestatic jaundice:

1. Intrahepatic:

- Primary biliary cirrhosis.
- Primary sclerosing cholangitis.
- Alcohol.
- Drugs.
- Cystic fibrosis.
- Sever bacterial infection.
- Hepatic infiltrations (Lymphoma, granuloma, amyloid, metastases).
- Pregnancy.
- Inherited cholestatic liver disease.

  e.g: benign recurrent intrahepatic cholestasis.
- Chronic right heart failure.

2. Extrahepatic:

- Carcinoma (Ampullary, pancreatic, bile duct "cholangiocarcinoma", liver metastasis).
- Choledocholithiasis.
- Parasitic infection.
- Traumatic biliary strictures.
- Chronic pancreatitis.
- Cholestasis may result from defects at more than one of these levels.

Clinical features and complications of cholestatic jaundice:

1- Early features:

- Jaundice.
- Dark urine.
- Pale stools.
- Pruritus.

2- Late features:

- Malabsorption (vit. A, D, E, and K), weight loss, steatorrhoea, osteomalacia and bleeding tendency.
- Xanthelasma and xanthoma.

3- Cholangitis: fever, rigor, pain (if gall stones are present).

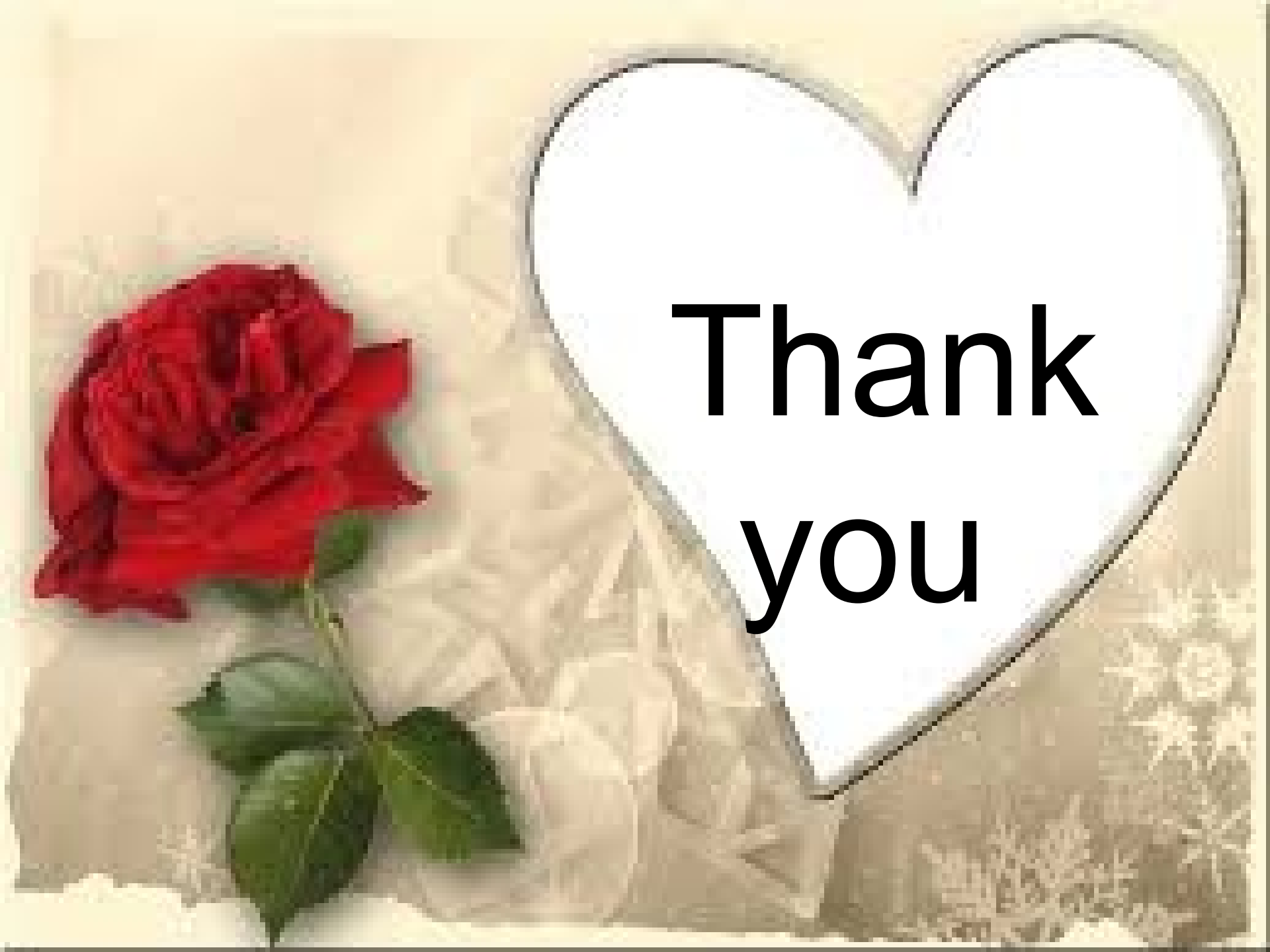
4- Pale stool and dark urine.

5- Pruritus.

6- Palpable gallbladder may suggest malignant biliary obstruction "pancreatic cancer", this is known as Courvoisier's law.

Charcot's triad "due to cholangitis" include jaundice, right upper guardant pain and fever.

Cholestatic jaundice is characterized by a relatively greater elevation of ALP and GGT than the amino-transferases. Ultrasound evaluation is indicated in all cases to determine whether there is evidence of mechanical obstruction and dilatation of the biliary tree.


Thank
you