SAWA UNIVERSITY

Jaundice

جامعة ساوة

كلية التقنيات الصحية والطبية

قسم تقنيات التخدير

المرحلة الثالثة

الطبيب الاختصاص

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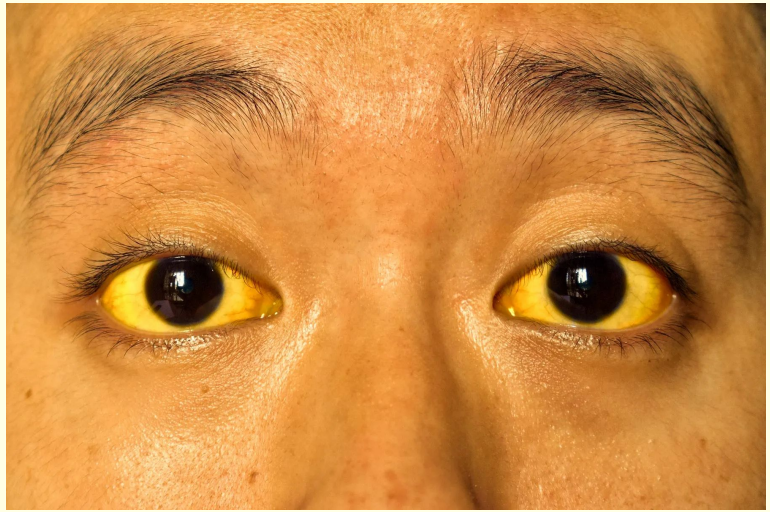
المحاضرة الأولى

Definition

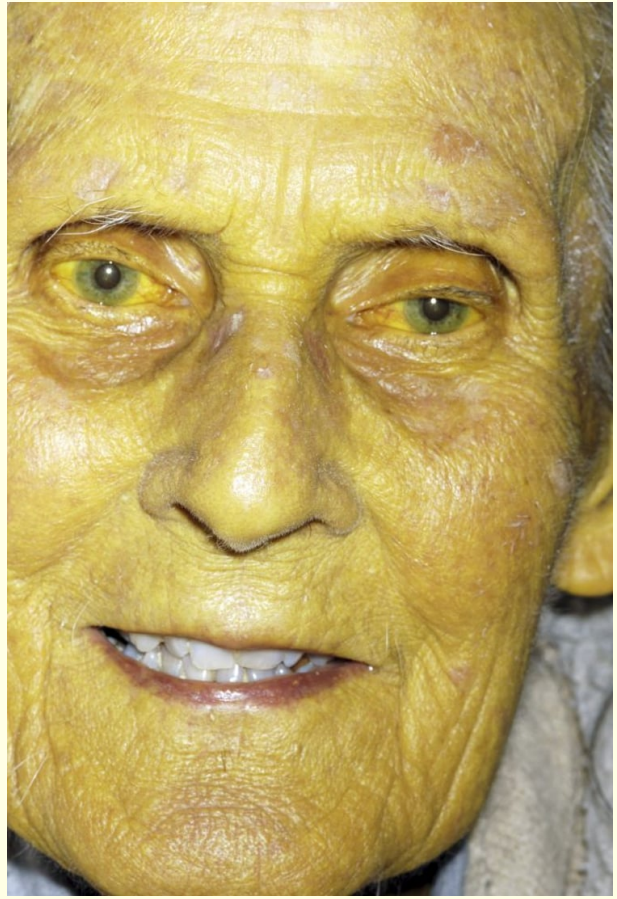
A **yellowish** discoloration of the **skin , sclera , and Mucous membrane** caused by an elevation in serum bilirubin .



- **Scleral icterus** - Jaundice of the eyes .

- Scleral icterus can typically be observed once total bilirubin > 2.5-3mg/dL.

- The point at which jaundice can be observed more generally depends upon the patient's skin tone and the ambient light.



Biochemistry of Bilirubin

Hemolysis

↓

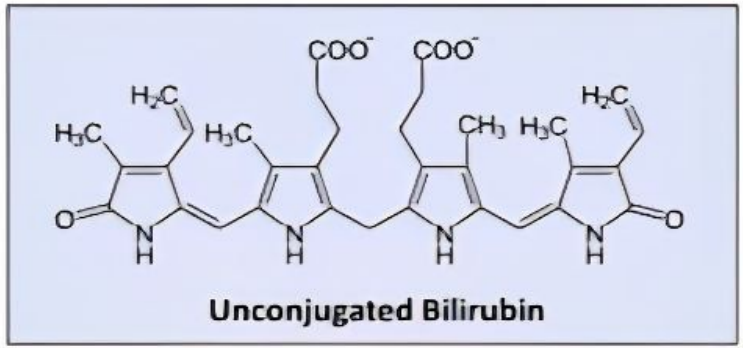
Hemoglobin

↓

Heme

↓

Biliverdin → **Unconjugated Bilirubin**
(a.k.a. "indirect bilirubin"*)



Unconjugated Bilirubin

Glucuronic acid

→ ***Conjugation*** *(occurs in liver)* →

Conjugated Bilirubin
(a.k.a. bilirubin diglucuronide, "direct bilirubin"*)

↓

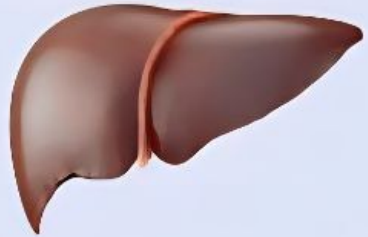
Excreted into bile via hepatic ducts and common bile duct

* Unconjugated and "indirect" bilirubin, and conjugated and "direct" bilirubin are not strictly synonyms, but are close enough to use interchangeably for routine clinical purposes.

Diagnostic Framework for Jaundice

Prehepatic
(i.e. hemolysis)

Intrahepatic
(i.e. intrinsic liver disease)



Posthepatic
(i.e. biliary obstruction)

Increased production of bilirubin

Decreased clearance of bilirubin

Causes Of Jaundice

BOX 1 – 30. Causes of hemolytic anemias according to the site of destruction		
Predominantly intravascular hemolysis		Predominantly extravascular hemolysis
Mismatched blood transfusion Microangiopathic hemolytic anemia March hemoglobinuria Paroxysmal nocturnal hemoglobinuria (PNH)	Septicemia Cold autoimmune hemolytic anemia Favism	Sickle cell and thalassemia Hereditary spherocytosis Hemolytic diseases of the newborn Warm autoimmune hemolytic anemia

BOX 1 – 31. Causes and clinical features of hepatocellular jaundice	
Causes of jaundice	Clinical features
Viral hepatitis Autoimmune hepatitis Hemochromatosis Wilson disease Alpha – 1 Antitrypsin deficiency Drugs and alcohol	Jaundice Dark colored urine Normal colored stools There may be stigmata of chronic liver diseases

Causes Of Jaundice

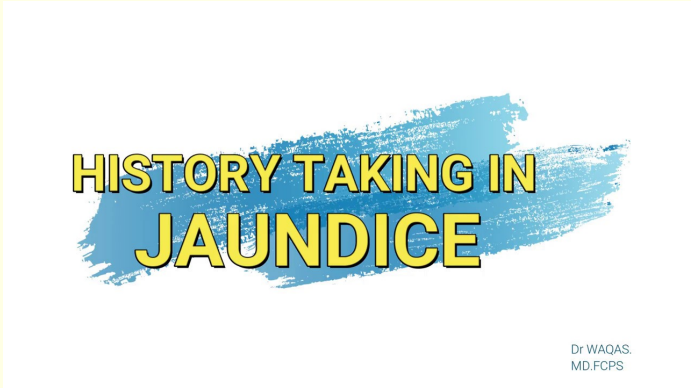
BOX 1 – 32. Causes and clinical features of cholestatic jaundice			
Causes of jaundice		Clinical features	
INTRAHEPATIC CHOLESTASIS		Due to cholestasis	
Primary biliary cirrhosis Primary sclerosing cholangitis Alcohol Drugs Viral hepatitis Hodgkin's lymphoma	Pregnancy Idiopathic recurrent cholestasis Autoimmune hepatitis Sever bacterial infections Post – operative Cystic fibrosis	Early features Jaundice Pale stools Dark urine Pruritus	Late features Xanthelasma and xanthoma Malabsorption that results in: • Weight loss • Steatorrhoea • Osteomalacia • Bleeding tendency
EXTRAHEPATIC CHOLESTASIS		Due to cholangitis (Charcot's triad)	
Carcinoma of ampulla, pancreas, and bile duct, and secondary metastatic depositions	Choledocholithiasis Parasitic infection Traumatic biliary strictures	Fever and rigors Right hypochondrial pain Jaundice	

History Taking

- **Chronology of the jaundice** (e.g. duration, episodic vs. constant)

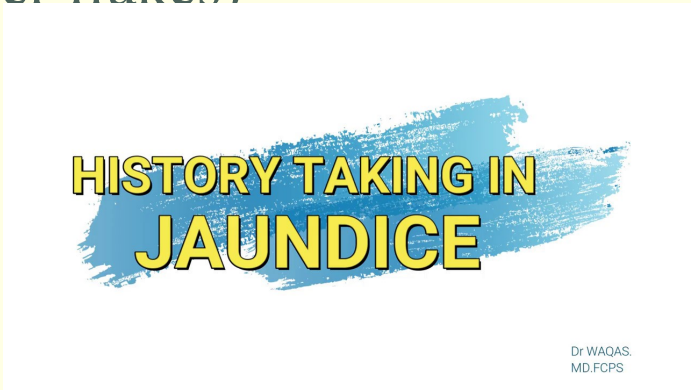
- Presence of **associated symptoms**: abdominal pain and/or distention, clay-colored stool (a.k.a. acholic stool), leg edema, pruritis, weight gain/loss, fever.

- **History of Medical diseases :-** For Examples " hematologic, liver, biliary, pancreatic, or cardiac disease; or HIV "



History Taking

- **Medication history** (including OTC, supplements, and herbals)
- **Alcohol and drug history** (esp. IV drugs)
- **Sexual history** (e.g. HBV, HIV risk factors)
- **Travel history** (c.g. malaria, HAV, ascaris, liver flukes)



Vital Sign :-

- Blood Pressure
-
- Pulse Rate
- Respiratory Rate
- SPO2
- Temperature ???

Focused physical exam

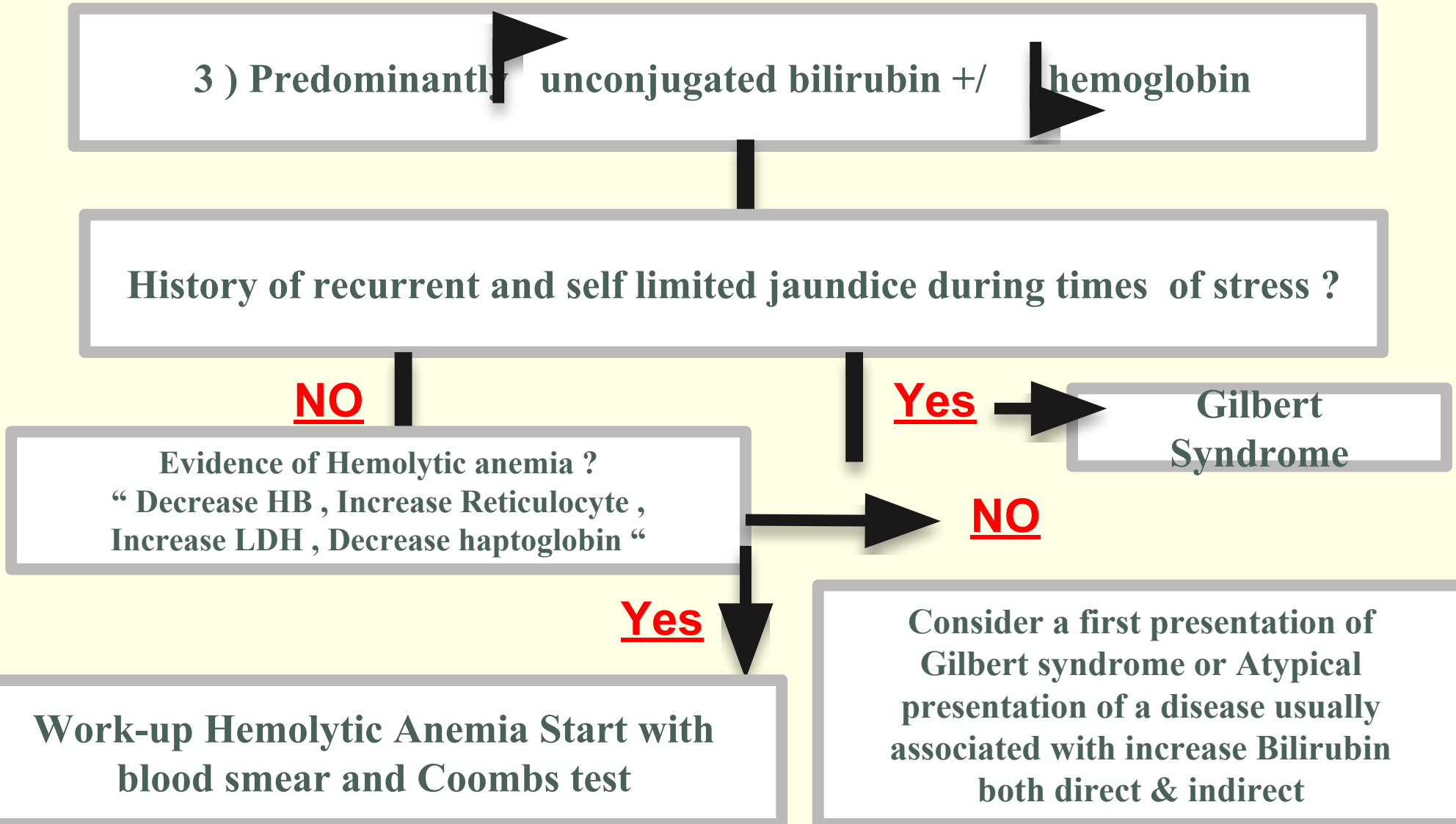
- Full abdominal exam (including assessment for splenomegaly)
- Cardiac exam (including JVP)
- Extremity exam for edema
- Skin exam (e.g. signs of liver disease)

Key Lab :- CBC , Metabolic Panel , LFTS , INR

Clinical Note :-

1) **If AST Increase and ALT** , Check Hepatitis , +/_ Acetaminophen Level .

2) **If Unconjugated Bilirubin is predominant** , also consider reticulocyte count , LDH , Haptoglobin , Coombs test , Blood smear .


3) Predominantly unconjugated bilirubin +/ hemoglobin
History of recurrent and self limited jaundice during times of stress ?
NO
Yes
Gilbert Syndrome
Evidence of Hemolytic anemia ?
“ Decrease HB , Increase Reticulocyte , Increase LDH , Decrease haptoglobin “
NO
Yes
Work-up Hemolytic Anemia Start with blood smear and Coombs test
Consider a first presentation of Gilbert syndrome or Atypical presentation of a disease usually associated with increase Bilirubin both direct & indirect

4 ↑ Conjugated & un conjugated +, ↑ AST & ALT

Suggestive of Acute / sub acute Hepatocellular " Hepatitis "

- Viral hepatitis serologies (e.g. HBV, HCV)
- Acetaminophen level
- Pregnancy Test
- Abdominal imaging (RUQ ultrasound usually sufficient)
- Consider work-up for rarer causes of Hepatitis , particularly if the patient without a recent history of heavy alcohol use

5) Conjugated & un conjugated+ INR , Albumin , Platelets

Suggestive of “Liver Cirrhosis “

- Viral hepatitis serologies (e.g. HBV, HCV)
- Iron panel
- Abdominal imaging
- (RUQ ultrasound usually sufficient)
- Consider work-up for rarer causes of cirrhosis , particularly if the patient have a recent history of heavy alcohol use

6) Conjugated + ALP

Suggestive of “Biliary Obstruction “

- Abdominal imaging (ultrasound or Abdominal CT dependent on various factor)

Key Takeaway Points

• Jaundice is a yellowish discoloration of the skin, eyes, and mucous membranes caused by an elevation of serum bilirubin.

• There are 2 primary forms of bilirubin: unconjugated "indirect" and conjugated "direct“

• The primary etiologies of an isolated increase in unconjugated bilirubin are hemolysis from any cause and Gilbert syndrome - a common enzyme defect without significant clinical consequences.

Key Takeaway Points

- The primary etiologies of increased conjugated bilirubin can be classified as intrahepatic (e.g. cirrhosis, hepatitis) and post hepatic (e.g. biliary obstruction).

- New onset jaundice in an adult without other symptoms and signs should prompt investigation for a pancreatic or biliary malignancy.