

تفریغ ڪلینکال



المحاصرة: Liver disease

الصيدلاني /ة: ياسمين خليل



لجان التُّفَعَّات

Liver disease

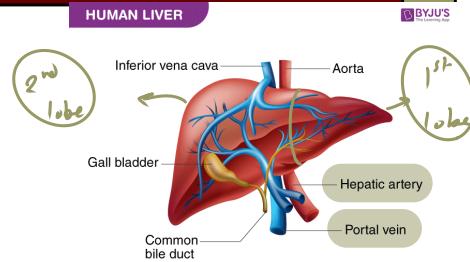
اللiver disease امراض الكبد

و ادفافه و امراض الكبد

Liver

أكتر الأعضاء تنويعاً يعني

عندناه فلائنة كثيرة جداً في نظرنا



- The liver is the largest, most versatile organ in the body
- It consists of two main lobes that, together, weigh from 1400-1600 g in the normal adult
ثاني أكبر عضو عندنا تزداد بعد الولادة (لأنها مسؤولة عن حجم المعدة)
- It has an abundant blood supply receiving about 15 ml/minute from two major vessels: the hepatic artery and the portal vein
@ مسؤول عن حفظ ٥ لتر أكبر كونه مسؤولة عن حفظ ٢٠٪ من الأكسجين
تم محظى بالجهاز الدوراني دارسيانا، يعني تزداد ٢٠٪ لزاناته
- The hepatic artery a branch of the aorta, contributes 20% of the blood supply and provides most of the oxygen requirement
أي اسماك دخل الجسم يعيش في liver يابيل ماء نهاراً نهاراً دموان دموان عضو يسمى liver
- The portal vein, which drains the gastrointestinal tract, transports the most recently absorbed material from the intestine to the liver

الاسم اسماك علنا في الارض

ديسم العرض على دفع مللي دفع متوازي بالثلث

Liver function

1st function is production of bile and stores it in gallbladder and excretion of it when the person eats, facts

وَمَسْوَلَةُ إِمَامِهِ

only 5% of bile acid goes on feces

5% of birds goes in flocks

ثاني دفعه الكبد هي إنتاج :

Bilirubin

هي صادرة يخليها الكبد بعد إتاحتها مع bile acid

وتسفر صفراء gallbladder وتنثر مع بile acid إلى الأمعاء ومحول مع اللون إلى ماء bile acid

ناتج من نكس (PBCs) blood cells (aged) liver ينبع عن مطردة الكبد من مكثف عن حذف الماء في ترافق مع عدم قدرة الكبد على التبرير أو تبرير الماء

- The principal pigment in bile is derived from the breakdown of hemoglobin when aged red blood cells are phagocytized by the reticuloendothelial system, primarily in the spleen, liver, and bone marrow

انتزلوا اتحدة سلطة
دعاهم دارجوا هون

- When hemoglobin is destroyed, the protein portion- globin-is reused by the body, The iron enters the body's iron stores and is also reused. The porphyrin is broken down as a waste product and excreted

من فتح bilirubin في صفراء مائية

ناتج من ماء prophyrin
أو باسم ديرتبط مع الألبumin وتنقل إلى liver

- Bilirubin is transported to the liver in the bloodstream bound to albumin where it is conjugated with diglucuronide on its two carboxylic acids and excreted to the intestine

عادل رياض ٤٨

(to be water soluble and can pass the lipid membrane) Conjugated bilirubin + bile acid يخليها gallbladder

- The normal flora in the colon oxidize it further where it is reabsorbed, excreted to the stool (urobilin, reddish brown) or excreted in kidney (urobilinogen, colourless)

by urine (urobilinogen) colorless
or stool (urobilin) reddish brown

bilirubin
↓
oxidation
bile acid
↓
hydrolysis
+
dehydration

Aged RBCs

liver, bone marrow
spleen

phagocytosis + lysis
by reticuloendothelial
of these organs

Hemoglobin

بروتئین
Globin

Heme

ناتج من عملات كبيرة هي

↙ me ngn

Bilirubin (lipid soluble)

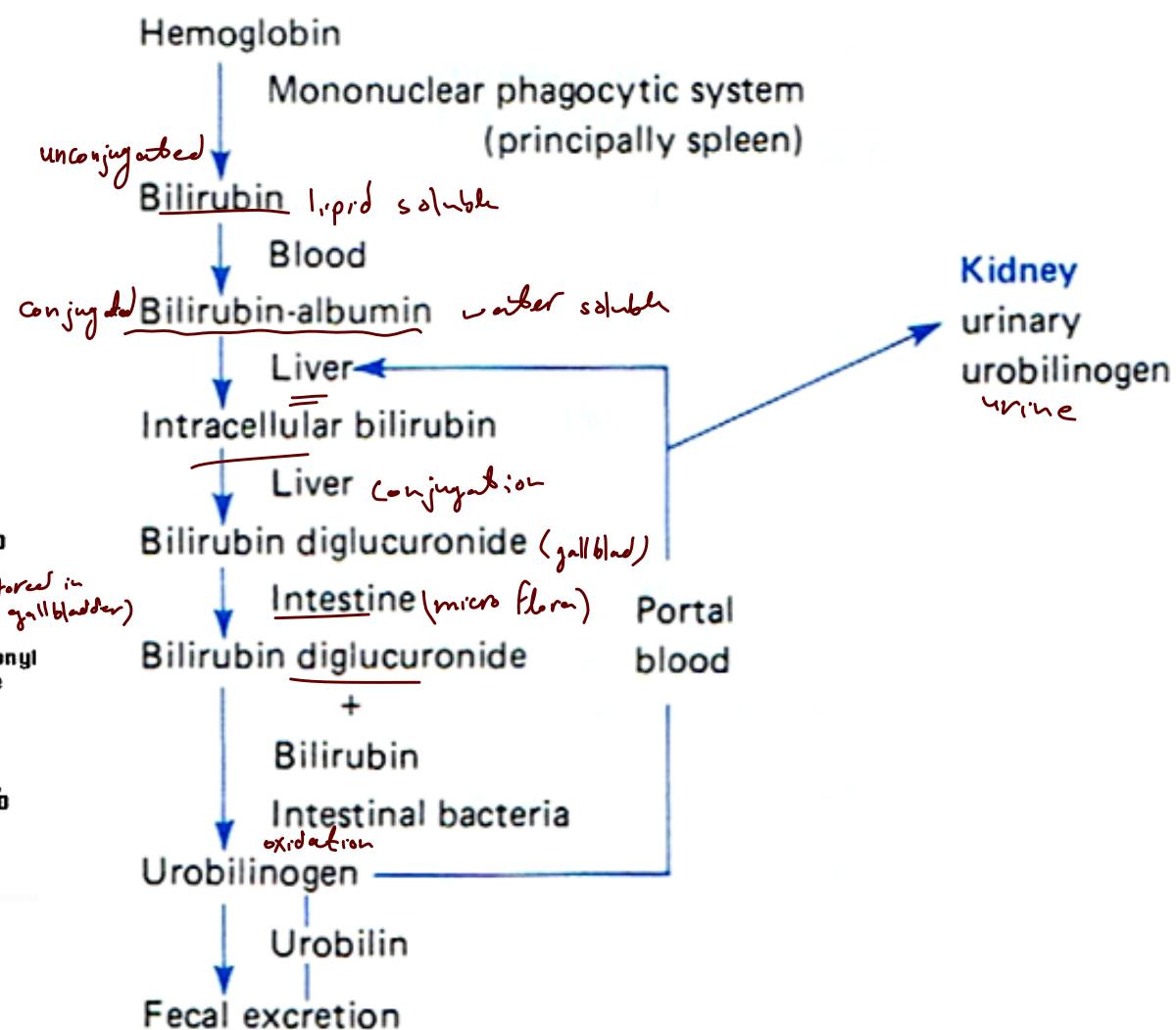
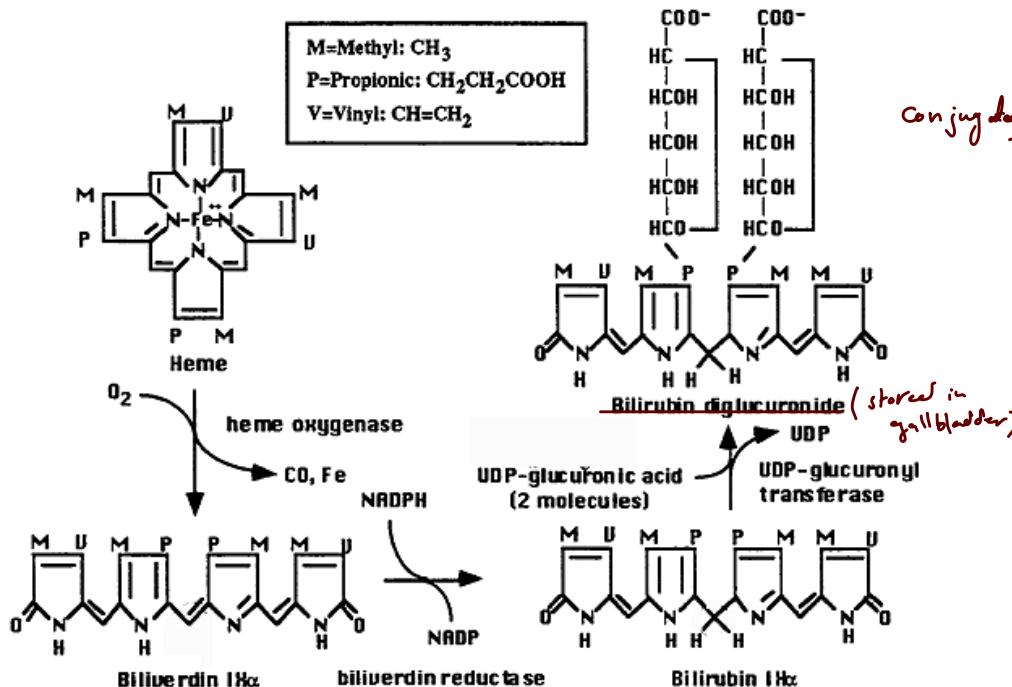
Fe ²⁺ → recycled

amino acid
pool

amino acids
(building blocks
of globin protein)

اللهم أعزّ الإسلام والمسلمين

Bilirubin



Bilirubin

أي خلل في إزالةbilirubin من الدم فالعيناً وجلد لون أحمر (متراكم في الدم)

- When the bilirubin concentration in the blood rises, the pigment begins to be deposited in the sclera of the eyes and in the skin. This yellowish pigmentation in the skin or sclera is known as **jaundice**, or **icterus**
- The cause can be:

هل انت مهار في المراحل قبل مراحلbilirubin liver ؟ bilirubin + Albumin ؟ liver ؟

هورمازن
Liver

Prehepatic: results when an excessive amount of bilirubin is presented to the liver for metabolism, such as in hemolytic anemia. This type of jaundice is characterized by unconjugated hyperbilirubinemia

النحل هنا يمثل روبين المترافق
albumin و المترافق (2) unconjugated

- The serum bilirubin levels rarely exceed 5 mg/dL because the normal liver is capable of handling most of the overload. bilirubin will not appear in the urine in this type of jaundice.

حتى مع تكثير RBCs بـ 20% لا يوجد طبيعى

لiver 1 تناول 5mg/dL و ماركـ 10mg/dL متلاعـ تـ 5mg/dL 8% مـ 5mg/dL نـ 5mg/dL

albunin مـ 5mg/dL

urine 20

bilirubin 5mg/dL

albumin 5mg/dL

لـ 5mg/dL stool reddish brown

Bilirubin

متabolic) الكبد نفسه (micro فلماً في الكبد، مما في إنتاج إنزيمات (... metabolism

- **Hepatic:** Impaired cellular uptake, defective conjugation, or abnormal secretion of bilirubin by the liver cell are the main causes of this kind of jaundice
 - ↑ un conjugated bilirubin
 - ↓ conjugated bilirubin
 - ↓ albumin
- **Posthepatic:** results from the impaired excretion of bilirubin caused by mechanical obstruction of the flow of bile into the intestine. This may be due to gallstones or a tumor
 - ↑ conjugated bilirubin
 - ↓ stool color
 - ↓ bile
- When bile ceases to flow into the intestine, there is a rise in the serum level of conjugated bilirubin and the stool loses its source of normal pigmentation and becomes clay-colored →
 - ↑ conjugated bilirubin
 - ↓ stool color
 - ↓ bile
- Conjugated bilirubin appears in the urine, and urine urobilinogen levels decrease

25- بظهور ابول صفراء Prehepatic crisis \rightarrow albumin

* Conjugated compound = polar

Major Synthetic Activity

① البروتينات، الستيروالات في الدم

- The liver plays an important role in **plasma protein production**, synthesizing ① **albumin** and the majority of the α and β -globulins. All the blood-clotting factors (except VIII) are synthesized in the liver ⑧
- ② The deamination of **glutamate** in the liver is the primary source of **ammonia**, which is then converted to **urea** *urea cycle*
- ③ Glycogenesis and gluconeogenesis, lipogenesis, metabolism of cholesterol into bile acids, Very-low-density lipoproteins (transport TG into the tissues), High-density lipoproteins, phospholipids are all made in the liver
- The formation of **ketone bodies** ⑦^{glucose} *فُرخات الهرماد، فُرخات* ^{ADE/K}
- The liver is the storage site for all fat-soluble vitamins (A, D, E, and K) and several water-soluble vitamins, such as **B12** and is responsible for the conversion of carotene into **vitamin A** ⑨⁸
الجزر (مسوِّد) من دهون البروتينات يُحول إلى جزء (الجزر)

⑩ Hydroxylation of vit. D₃ on 2 steps ^{Liver} _{Kidneys}

Synthesis of liver enzymes

Cause liver is the main site of metabolism

- Many enzymes are synthesized by liver cells, but not all of them have been found useful in the diagnosis of hepatobiliary disorders, this includes:

ما يقدر استخدم على اليرزيمات التي ينتجهما الكبد في مجرى الكبد حتى لو تمثّل داخله
في عصارة الأمعاء مثلاً، أصله 80% كونه في مجرى الكبد، ويتضمن مجرى الكبد ويتضمن منها بودرة أوكسالات آفر

موجود في
الكبد ويعود إلى الكبد
Aspartate aminotransferase (AST) and alanine aminotransferase (ALT) which escape into the plasma from damaged liver cells

Alkaline phosphatase (ALP) and 5'-nucleotidase (5NT): induced or released when the canalicular membrane is damaged and **biliary obstruction** occurs

- γ -glutamyltransferase (GGT): increased in both **hepatocellular and obstructive disorders**

Alcohol metabolism

① Alcohol toxicity : دلائل

② Obstruction disorders

Detoxification and Drug Metabolism

Detoxificant organ

كتن، اكتئوره - إن الكبد
check polarity
not toxicity

- The liver protects the body from **potentially injurious substances** absorbed from the intestinal tract and toxic by-products of metabolism.

ناتج الأيض
بعد امتصاص آخر
، بغيرها

ناتج الأيض

- The most important mechanism in this detoxification activity is the **microsomal drug-metabolizing system** of the liver. It is responsible for many detoxification mechanisms, including oxidation, reduction, **phase I metabolism** hydrolysis, hydroxylation, carboxylation, and demethylation that convert many insoluble compounds into other forms that are less toxic or more water-soluble and, so excreted by the kidney.

Phase II : ~~enzymes~~ functional group addition

- Conjugation with moieties, such as glycine, glucuronic acid, sulfuric acid, glutamine, acetate, cysteine, and glutathione, occurs mainly in the cytosol or smooth ER. This mechanism is the mode of bilirubin and bile acid excretion.