Jaundice



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General

Due To Elevated Conjugated Or Unconjugated Bilirubin

Congo and un-congo belly-ribbons

Jaundice occurs as a result of elevated serum bilirubin, which may be in the conjugated or unconjugated form. Recall that unconjugated bilirubin is primarily produced as a result of breakdown of the heme portion of hemoglobin. Unconjugated bilirubin then goes to the liver where it is processed into conjugated bilirubin, making it water-soluble, and excreted in the biliary tract with bile.

Unconjugated

Hemolysis

Chopped up red blood cells

Hemolysis is one of the most common causes of jaundice due to increased concentration of unconjugated bilirubin. This is because of the increased concentration of free hemoglobin as a result of red cell lysis, which is then processed by the reticuloendothelial system into unconjugated bilirubin.

Crigler-Najjar Or Gilbert's Syndrome

Creature-in-jar and Grill-bear

Crigler-Najjar and Gilbert's syndrome are both conditions in which the liver's ability to conjugate bilirubin is impaired due to enzyme deficiency. While Crigler-Najjar is more severe due to a more complete enzyme deficiency and patients may frequently be jaundiced, Gilbert's syndrome is relatively mild and patients may only present with jaundice when their body is already stressed due to some other illness.

Physiologic Jaundice Of Newborn

Newborn

Physiologic jaundice of the newborn is a benign condition characterized by jaundiced skin or eyes shortly after birth. This is a result of the baby's liver not yet being matured enough to process the bilirubin in the bloodstream and is especially common in babies born before 38 weeks gestation. It typically regresses without intervention and produces no long-term sequelae.

Conjugated

Biliary Obstruction From Stone Or Mass

Duck-bill-blocked by stone with tumor

Biliary obstruction, which may be caused by a stone as in choledocholithiasis or a tumor such as pancreatic adenocarcinoma, is a common cause of jaundice as a result of increased conjugated bilirubin. Since bile is unable to be excreted into the gastrointestinal tract, it essentially backs up which allows conjugated bilirubin to be reabsorbed into the blood stream. Importantly, stones within the gallbladder or cystic duct will not cause jaundice, as bile flow from the liver to the duodenum is still patent.

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Cholangitis

Cola-angel

Cholangitis, including ascending cholangitis due to infection as well as autoimmune diseases such as primary biliary cholangitis, and sclerosing cholangitis, can cause jaundice due to increased conjugated bilirubin as a result of inflammation leading to strictures and blockage within the biliary system.

Dubin-Johnson And Rotor Syndrome

Doobie-Long Johns and rotor

Dubin-Johnson syndrome and Rotor syndrome are genetic conditions characterized by impaired ability to transfer conjugated bilirubin from hepatocytes into bile. The distinction between the two lies in which specific gene mutation causes this defect, which goes beyond the scope of what you will need to know for your test.

Mixed

Cirrhosis

C-roses-on-liver

Cirrhosis can cause jaundice as a result of increased conjugated and unconjugated bilirubin. Both are elevated due to a combination of impaired hepatocyte function and inflammation and necrosis of hepatocytes which causes release of conjugated bilirubin.

Hepatitis

Liver on fire

Hepatitis due to viral infection, drug toxicity, or autoimmune disease may result in jaundice with a significant increase in both conjugated and unconjugated bilirubin. This is because viral hepatitis as well as cirrhosis diretly affects hepatocytes, causing them to die and lyse. This causes the release of any already-conjugated bilirubin into the bloodstream and impairs the liver's ability to conjugate more bilirubin, as there are now fewer healthy hepatocytes. Elevated AST and ALT in the setting of a mixed hyperbilirubinemia can specifically tip you off that hepatitis may be the cause of a patient's jaundice.

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