

Causes of Jaundice^{1,2}

Narrative Section

HISTORICAL VIGNETTE - Jaundice is a condition that, while recognized by most clinicians, can be difficult to detect at the earliest stages. A serum bilirubin of 15 mg/dL has a 96% sensitivity of being detected in the *conjunctiva*. (**NOTE:** *scleral icterus* is a misnomer given that most bilirubin pigment is deposited in the eye's vascular conjunctiva, not the avascular sclera.) In contrast, only 70-80% of clinicians will detect jaundice at the earliest levels of 2.5-3.0 mg/dL. Once detected, though, the question remains: what is the source of the jaundice? One of three possibilities arises: hemolytic jaundice, obstructive jaundice, or hepato-cellular jaundice. The physical exam provides evidence to distinguish at the bedside between obstructive jaundice outside the liver or hepato-cellular jaundice of the liver parenchyma itself.

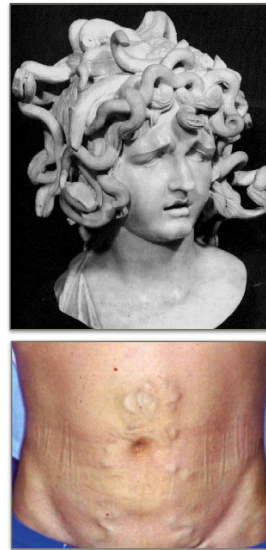


Figure 1

CONTEXT AND USEFULNESS - An astute clinician will notice jaundice in the eyes initially, but other sensitive areas to identify elevated serum bilirubin on physical exam include under the tongue and on the face before appearing on the rest of the body. Studies suggest clinicians can predict the source of jaundice *80% of the time before imaging* by simply using a physical exam and basic labs.² This evidence-based approach helps to focus on the most likely diagnosis and facilitate that work up in a timely manner.

¹ Chi J *et. al.* "The Five Minute Moment." *Am J Med.* 2016 Aug; 129 (8): 792-795.

² McGee, Steven. *Evidence-Based Physical Diagnosis, 4th ed.* Philadelphia, PA: Elsevier; 2018

Physical Manuever

Model Proper (And Improper) Technique - Make sure to expose the patient's abdomen and use all available light during the exam. The presence of four physical exam findings significantly increase the likelihood of hepato-cellular disease:

- (1) Dilated abdominal veins (LR = 17.5) — *caput medusae* (**Figure 1**)
- (2) Palmar Erythema (LR = 9.8)
- (3) Spider Angiomas (LR = 4.7)
- (4) Ascites (LR = 4.4)

Dilated abdominal veins are seen as collateral vessels balloon under the growing portal pressure, causing a network of para-umbilical veins to decompress the left portal vein. These collateral vessels (also called *caput medusae* for resembling the Greek mythological god with snakes replacing her hair) may cause a murmur when auscultated. **Palmar erythema** tends to blush the thenar and hypothenar eminences. **Spider angiomas** have a central arteriole 'body', radiating "legs", and surrounding erythema. When blanched, blood rushes back to the body and then the legs of the spider.

If the above four findings are absent in the presence of jaundice and the patient has a palpable gallbladder (LR = 0.04) then hepatocellular disease gives way to the rising probability of obstructive jaundice.

INTERPRETATION - If portal hypertension is present, the findings of dilated abdominal veins and ascites reflect that pathology, supporting the hepato-cellular source of jaundice. Likewise, the pathology of liver disease creates a metabolic environment where serum estradiol increases relative to testosterone, resulting in the physical findings of palmar erythema and spider angiomas. (While this also causes gynecomastia and decreased body hair, neither of these findings powerfully predicts causes of jaundice.)

CAVEAT AND COMMON ERRORS - While most para-umbilical vessels trace their origin to hepato-cellular disease, superior or inferior vena cava syndrome can dilate collateral vessels of the lateral abdominal wall.

The Five Minute Moment