



# Syndromic Approach—Fever and Jaundice

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**Abstract:** The formulation of a rapid differential diagnosis can be aided by categorizing common clinical syndromes. Our review article presents a case of a fever/jaundice presentation with a review of its most common causes. Cogent points for work up and treatment of each diagnosis will be presented as well.

**Keywords:** fever; jaundice

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## Introduction

Often times, one is confronted with a jaundiced patient that has fever. The differential diagnosis may be large, but keeping in mind the various causes of jaundice and those that may have fever will help you determine the cause of the problem.

## Case

A 64-year-old male was admitted with fever, feeling fatigued and with significant jaundice for the past week. He is a moderate drinker of alcohol (3–6 cans of beer per day), and he just returned from a photographic safari trip to the Democratic Republic of the Congo in Africa. He had not lost weight and did not complain of headache, respiratory, cardiac or GU symptoms or rash. He had one episode of diarrhea the day prior to admission.

## Differential Diagnosis

Working up jaundice with a fever will depend on many factors including history (drug or alcohol consumption, travel, previous surgery), physical exam and laboratory values. These all may

distinguish the etiology of jaundice and fever in a patient who could have biliary obstruction, hemolysis, hepatic inflammation or others [1].

Historically, this patient had a moderate history of EtOH use. Alcoholic hepatitis in this patient might arise if the AST is much higher than the ALT (which could be normal) and there are no signs of biliary obstruction [2]. An ultrasound is an easy method to rule out obstruction, liver inflammation or abscess.

His travel to Africa with some diarrhea might bring up the possibilities of malaria, dengue or enteric fevers including typhoid [3]. Amebic liver abscesses in a traveler would be remote.

The P.E. allows us to see changes in chronic liver disease (jaundice, hepatomegaly, splenomegaly, ascites, caput medusae, spider angiomas, palmar erythema and gynecomastia, to name a few) [4].

The lab values are important to review. [Table 1] Bilirubin may be conjugated (biliary obstruction, intrahepatic cholestasis, hepatic injury), or unconjugated (hemolytic anemia, impaired hepatic uptake commonly known as Gilbert's) [5].

Table 1: Patient laboratory values.

Diagnosis	History P.E	Labs	ALT/ASP Alk Phos	Ultrasound
EtOH	✓	✓ EtOH level	✓ AST>ALT	
Travel	✓	✓ eosinophils	✓	
Med/Tox	✓	✓		✓
Cirrhosis	✓	✓	✓	✓
Hepatitis	✓	✓	✓ viral tests	✓
Bile obstr	✓	✓	✓ alk phos	✓
Gilbert's			✓ unconj bili	
Leptospir	✓	✓	✓ PCR, serology	✓

If the alkaline phosphatase is high, this might indicate biliary obstruction, cholangitis or intrahepatic cholestasis.

If the transaminases are elevated, there is hepatic inflammation. Of the viral causes of hepatitis, A is the one most likely to cause a low-grade fever [6]. Hepatitis B and C can but usually do not cause fever. Hepatic inflammation can be seen with cholecystitis, cholangitis, abscess and viral, bacterial, fungal and parasitic infections of the liver. Toxins and alcohol can also inflame the liver (over-the-counter pain relievers such as non-steroidal medications, prescription drugs such as statins, antibiotics, Dilantin and anabolic steroids, herbal therapies including aloe vera, black cohosh, ephedra and vitamin A) as well as industrial chemicals such as cleaning solvents, herbicides and vinyl chloride. This was reviewed in the Mayo Clinic Proceedings [7].

An ultrasound can give an immediate diagnosis of extra-hepatic or hepatocellular jaundice over 90% of the time. In a 1985 article from Australia by Cooper et al., the sensitivity of an ultrasound was 91% and the specificity was 100% in 92 jaundiced patients [8].

## Physical Exam

On exam, he was obese (BMI 35), jaundiced and had some RUQ pain. There were no signs of chronic liver disease on exam. His heart and lungs were normal, but he had 2 + edema in his lower extremities and no rash.

His labs were remarkable for a WBC of 12,000 cells/mm<sup>3</sup> with a slight left shift (bands were 10%), hemoglobin and hematocrit were 14 and 34 g/dL and his platelets were 100 × 10<sup>3</sup>/L. His transaminases were each in the 200–300 U/L range, and his direct bilirubin was 5 mg/dL. His alkaline phosphatase score was 420 U/L.

Ultrasound of the abdomen showed a gall bladder with some stones and a dilated common bile duct of 8 mm. The HIDA scan revealed a blocked common bile duct.

## Diagnosis

This patient, based on his P.E., laboratory values and ultrasound, had a blockage of his common bile duct from cholelithiasis. He underwent an ERCP with complete resolution of his symptoms, and a laparoscopic cholecystectomy 2 weeks later [9].

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