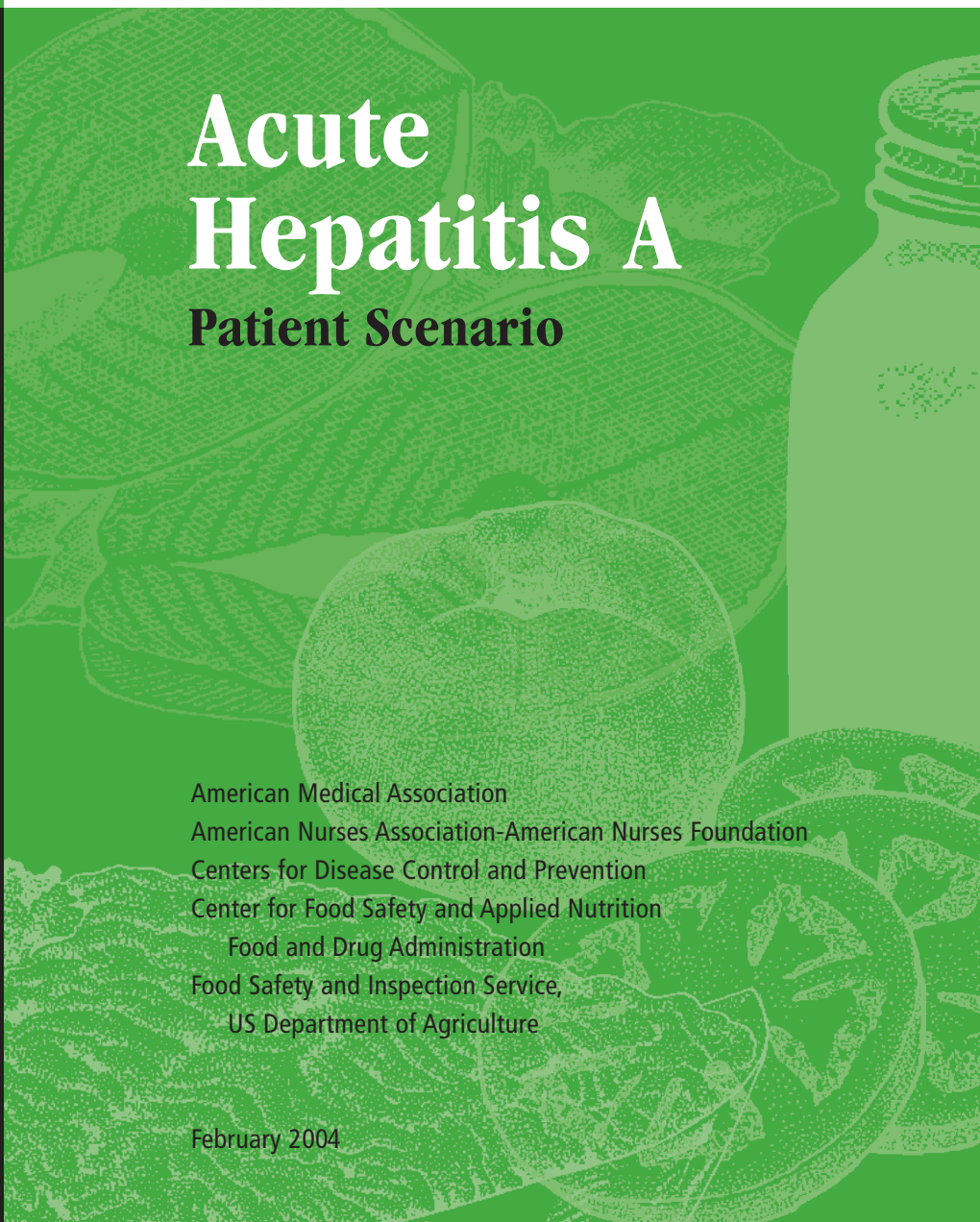
Diagnosis and Management of Foodborne Illnesses

A Primer for Physicians and Other Health Care Professionals



Acute Hepatitis A

Patient Scenario

American Medical Association
American Nurses Association-American Nurses Foundation
Centers for Disease Control and Prevention
Center for Food Safety and Applied Nutrition
Food and Drug Administration
Food Safety and Inspection Service,
US Department of Agriculture

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This learning scenario can be used to reinforce medical management information pertaining to foodborne illnesses, such as that provided from the previous sections of this primer. This case study provides questions that need to be considered when dealing with a potential case of foodborne illness. Answers are provided immediately following the questions to enhance the learning process.

Similar learning scenarios are also available for other foodborne pathogens.

Acute Hepatitis A, a Patient Scenario

While working in an emergency room, you are asked to see a 31-year-old Asian-American woman who has had fever, nausea and fatigue for the past 24 hours. She also reports dark urine and has had 3 light colored stools since yesterday. She has previously been healthy and has no previous history of jaundice. Her physical examination shows a low-grade fever of 100.6°F/38.1°C, faint scleral icterus, and hepatomegaly. Her blood pressure and neurologic exam are normal and there is no rash. Initial laboratory studies show an alanine aminotransferase (ALT) result of 877 IU/L, an aspartate aminotransferase (AST) level of 650 IU/L, an alkaline phosphatase level of 58 IU/L and a total bilirubin result of 3.4 mg/dL. White blood cell count is 4600 cells per microliter, with a normal differential; electrolytes are normal; the blood urea nitrogen level is 18 mg/dL; and serum creatinine level is 0.6 mg/dL. Pregnancy test is negative.

What should be included in the differential diagnosis of acute hepatitis?

Viral infections:

hepatitis A, B, C, D, and E

varicella

cytomegalovirus

herpes virus

Epstein-Barr virus

Bacterial infections:

typhoid fever

Q fever

Rocky Mountain spotted fever

Leptospirosis

secondary syphilis

sepsis

Parasitic infections:

Toxocariasis

liver flukes

Drugs:

acetaminophen

isoniazid

rifampin

oral contraceptives

anti-seizure medications

sulfonamides

Toxins:

alcohol, carbon tetrachloride

Autoimmune disease:

autoimmune hepatitis

systemic lupus erythematosus

What additional information would assist with the diagnosis?

Has she traveled outside the United States recently?

Does she use illicit drugs?

Is anyone else in the household ill?

How many sex partners has she had in the past 6 months?

Does she have regular contact with animals?

What medications is she taking?

Has she ever had a transfusion?

Does she drink alcohol?

Does she take care of children?

Has she ever received hepatitis B vaccination?

Has she ever received hepatitis A vaccination?

Did she receive immune globulin within the past 3 months?

What is her occupation?

She has no children, and her boyfriend is not ill. She has been in a monogamous relationship with her boyfriend for 2 years. She was born in the United States; her parents immigrated to the United States from Taiwan in the 1950s. She works as a food preparer for a catering business. She returned 4 weeks ago from a 1-week vacation in Mexico (Mexico City and nearby areas), where she stayed with her boyfriend in several hotels. She drank only bottled water but ate both cooked and uncooked food at numerous restaurants while in Mexico, and she visited a family friend and her three young children in a Mexico City suburb.

She did not receive hepatitis A vaccine or immune globulin before going on vacation. She is not sure if she has received hepatitis B vaccine. She has not gone camping or hiking and had no recent tick exposures. She has never used illicit drugs, drinks alcohol rarely, and has never received a transfusion. She is taking oral contraceptives but no other prescription medication, and took 500 milligrams of Tylenol once after onset of her current symptoms. She has a pet cat but no other animal exposures. She had chickenpox and mononucleosis during childhood.

How does this information assist with the diagnosis?

Lack of animal or tick exposures makes leptospirosis and Rocky Mountain spotted fever unlikely, and Q fever less likely. Yellow fever and typhoid fever are very unlikely with no history of travel to rural endemic areas. A diagnosis of either of those diseases is also inconsistent with the long incubation period, assuming exposure occurred in Mexico. Hepatitis A virus (HAV), hepatitis B virus (HBV), hepatitis C virus (HCV), and hepatitis E virus (HEV) infection are all possible diagnoses. A drug reaction to the oral contraceptive is a possible cause of hepatitis. The history of travel to an endemic area makes hepatitis A the most likely diagnosis.

What diagnostic tests are needed?

Specific diagnostic serologic studies are necessary to distinguish one form of viral hepatitis from another. Testing for total (IgG+ IgM) anti-HAV does not distinguish between a past history of hepatitis A virus infection and current infection and is not useful in diagnosing acute hepatitis A. Hepatitis A can be easily confirmed with an IgM anti-HAV test. This test is widely available and results are usually available within 24 hours. A hepatitis panel is ordered, and results from such a panel are shown below.

You obtain the following results from the serologic testing:

Total anti-HAV: positive

IgM anti-HAV: positive

Total anti-HBc: positive

IgM anti-hepatitis B core antigen: negative

HBsAg: negative

anti-HBs: positive

anti-HCV: negative

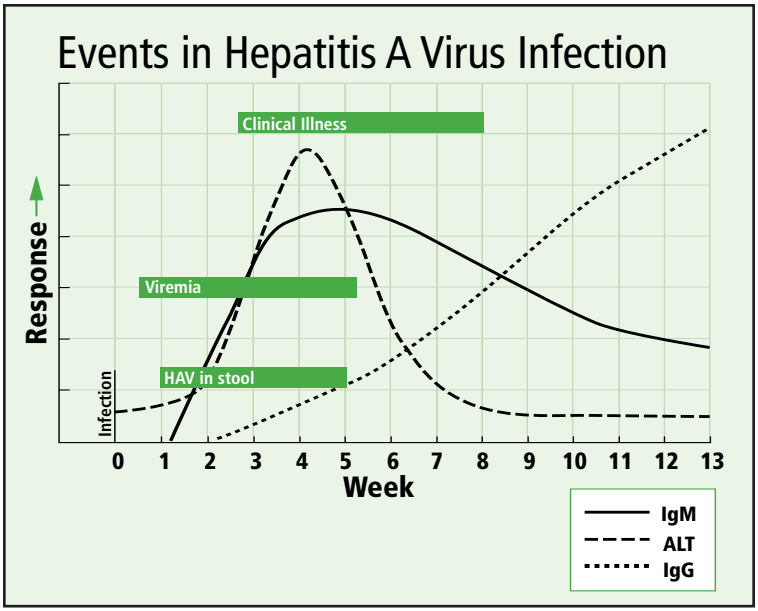
What is the diagnosis?

The diagnosis is hepatitis A. The hepatitis B serologic tests indicate past, resolved infection with no chronic infection. Acute hepatitis C is also possible; the appearance of anti-HCV may be delayed for as long as 9 months after exposure. However, with a confirmed diagnosis of hepatitis A, further testing for HCV RNA is not indicated at this point. Finally, note that hepatitis E is rarely reported in travelers, and results of serologic tests for hepatitis E virus (HEV) are difficult to interpret. Tests for HEV should only be performed if other more common causes of hepatitis have been excluded.

The incubation period for hepatitis A is 15-50 days, with an average of 28 days. The most common signs and symptoms associated with acute hepatitis A include jaundice, fever, malaise, anorexia, and abdominal discomfort. The illness can be severe and approximately 10% to 20% of reported cases require hospitalization. The likelihood of having symptoms with HAV infection is related to the person's age. In children <6 years of age, most (70%) infection is asymptomatic; if illness does occur it is not usually accompanied by jaundice. Older children and adults are more likely to have symptomatic disease, although jaundice may be absent in as many as one third of adults with HAV infection. In many developing countries in Asia, Africa, and Central and South America, infection is nearly universal during early childhood and is often asymptomatic.

What treatment is indicated?

There is no specific treatment for hepatitis A. Bed rest does not hasten recovery. Hepatitis A is never a chronic infection, although 10% to 15% of symptomatic persons have prolonged or relapsing disease lasting up to 6 months. While rarely fatal in younger persons, the case-fatality rate is nearly 2% among reported patients who are more than 50 years old. A typical course, including times of peak fecal excretion of HAV, liver function test abnormalities, and clinical symptoms is depicted as follows:



How is hepatitis A virus transmitted, and who is at risk for this disease?

HAV is an RNA virus that only infects primates. HAV has a fecal-oral route of transmission and is easily transmitted person to person. HAV is also transmitted through contaminated food or water. Because HAV is present in the blood during acute infection, bloodborne transmission is also possible, but rare. The highest levels of HAV are found in the stool, and peak levels occur in the 2 weeks before onset of illness.

Groups at increased risk for hepatitis A include travelers to developing countries, men who have sex with men, and injecting and noninjecting drug users. In the United States, 4% to 6% of reported cases occur among international travelers, many of whom presumably acquired HAV infection from contaminated food or water. Approximately 50% of persons with hepatitis A do not report any known risk factors, and some of these infections may be from unrecognized transmission via HAV-contaminated food.

How might this patient have prevented her hepatitis A infection?

Persons planning to travel to an endemic region should receive hepatitis A vaccine or immune globulin before departure. Hepatitis A vaccination can be given to anyone 2 years of age and older, and has the advantage of providing long-term protection (at least 20 years). Hepatitis A vaccine is an inactivated HAV preparation; the first dose of vaccine provides protective anti-HAV levels within 30 days for >90% of vaccine recipients. Licensed hepatitis A vaccines available in the United States are considered to be equivalent in effectiveness, and include Havrix® (manufactured by Glaxo SmithKline), VAQTA® (Merck & Co.), and Twinrix® (combined hepatitis A and hepatitis B vaccine, Glaxo SmithKline). Vaccination is administered in a two-dose schedule (0, 6 months) for Havrix® and VAQTA®, and a three-dose schedule (0, 1, 6 months) for Twinrix®. The second (or third) dose is provided to ensure protection in those who did not respond to the first dose of vaccine. Ninety-nine percent of vaccinees will be protected after two doses of vaccine.

For persons who present for hepatitis A immunoprophylaxis <30 days before departure to an endemic region and for children <2 years old, immune globulin (IG) is an effective means of preventing hepatitis A. IG is the appropriate immunoprophylaxis for children <2 years old. IG is a sterile preparation of concentrated antibodies (immunoglobulins) made from pooled human plasma. IG provides protection against hepatitis A for 3-5 months, depending on dosage, through passive transfer of antibody. Vaccine and IG may be given simultaneously.

Hepatitis A is the most common vaccine-preventable disease among travelers. The risk varies according to region visited and the length of stay, and is increased even among travelers who report observing measures to protect themselves against enteric infection or stay only in urban areas. In the United States, children account for approximately one-third of reported travel-related cases.

What else needs to be done?

Cases of hepatitis A should be reported to the local health department immediately. The patient's boyfriend and any other household or sexual contacts whose last exposure to the patient was <14 days ago should be given IG. Screening for immunity before administering IG is not recommended in this situation because it is more costly than IG and would delay its administration. IG is not indicated for family members or friends not living in the household.

Prompt reporting of hepatitis A cases allows time to decide on a course of action and provide timely immunoprophylaxis when appropriate. Because this patient works as a food preparer, the health department will need to visit the establishment to assess the likelihood that her duties and hygiene practices pose a significant risk of food contamination. IG is often recommended for co-workers of commercial food handlers with hepatitis A. In addition, if she worked at any time during the 2 weeks before onset of jaundice to 1 week after onset, persons who ate food prepared or handled by this patient may be candidates for IG prophylaxis. Determinations of the need for IG prophylaxis are made on a case-by-case basis by experienced health department personnel. Again, immediate reporting of hepatitis A cases allows time to decide on a course of action and provide timely treatment and intervention when appropriate.