Case 32

The patient was a 32-year-old male who presented to the emergency room with a 3-day history of fever (maximum temperature, 40°C), malaise, and back pain. Laboratory data revealed a white blood cell (WBC) count of 4,700/μl and abnormal liver function test results. Blood cultures were done and were subsequently reported as negative. He developed anorexia and jaundice in addition to fevers and malaise. He denied a history of intravenous drug use, sexual contact (for 2 months), and transfusions. Five weeks ago he was visiting friends in New York City, and they ate raw oysters. Recent telephone contact with one of the friends revealed that he had a similar illness.

On examination the patient was mildly icteric (jaundiced). There was no rash or lymphadenopathy. The abdominal examination revealed a tender liver, which was slightly enlarged. The spleen tip was nonpalpable. Laboratory tests showed aspartate aminotransferase (AST) of 2,501 U/liter, alkaline phosphatase of 298 U/liter, bilirubin of 2.2 mg/dl, and lactate dehydrogenase (LDH) of 1,102 U/liter. Blood was sent for diagnostic testing. Over the next month his symptoms resolved and the liver function test results returned to within normal limits.

1. A number of liver function tests were performed on this patient. What did they reveal? What was the differential diagnosis?

2. What was the etiology of his illness? How did he contract this infection?

3. What is the spectrum of disease associated with this organism?

4. How is this infection typically diagnosed?

5. How can infections with this agent be prevented?

32 Case Discussion

1. This patient had extremely elevated liver enzyme levels, indicating that he had hepatitis. His physical examination, in which jaundice and an enlarged liver were noted, further supports this diagnosis. Given his case history, it is likely that his hepatitis was of an infectious etiology. The differential diagnosis of infectious hepatitis includes infection with hepatitis A, B, C, D (delta), E, and G viruses, Epstein-Barr virus, cytomegalovirus, toxoplasmosis, leptospirosis, and secondary syphilis. Noninfectious (e.g., drug-induced, alcoholic) hepatitis, cirrhosis, hepatic tumor, and abscess may also result in elevated liver enzyme levels and should also be considered in his differential diagnosis.

2. This patient had hepatitis A virus (HAV) infection. HAV is a single-stranded RNA virus belonging to the picornavirus group. It can survive readily in a variety of environments, including seawater. It is spread by the fecal-oral route and is well known to be acquired by eating raw oysters harvested from fecally contaminated water. Filter-feeding shellfish such as oysters, clams, and mussels are believed to concentrate the virus. This patient's history of eating raw oysters 5 weeks prior to the development of hepatitis symptoms is consistent with the incubation period for this virus, which is 2 to 8 weeks. Hepatitis E virus is another RNA virus which is similar to HAV in mode of acquisition, pathogenesis, and disease course.

3. Acute HAV and hepatitis B virus (HBV) infections are clinically indistinguishable. HAV infection, as was seen in this case, is generally a benign, self-limited disease. Fulminant hepatitis has been reported with this virus, but is rare. Unlike HBV, HAV does not cause chronic infection and carrier states, nor is HAV associated with increased risk for hepatic carcinoma. The patient's clinical course, in which his symptoms resolved and his liver enzymes returned to normal within a month, is typical of HAV infection.

4. The diagnosis of HAV infection is frequently made on clinical grounds alone or as a diagnosis of exclusion; i.e., the patient has negative tests for HBV and hepatitis C virus. The laboratory diagnosis is serologic, in which the serum is examined for the presence of anti-HAV immunoglobulin M (IgM) antibodies. The detection of IgM antibodies is necessary because the presence of IgG antibodies to HAV indicates a previous infection at any time in the past. The virus is not cultivable by standard laboratory methods, nor is direct detection of the virus by immunologic or electron-microscopic techniques widely available.

5. Because HAV is usually obtained by ingestion of fecally contaminated food or water, good hygiene practices can usually prevent spread of this infection. HAV is frequently associated with ingestion of raw shellfish, so that eating only adequately cooked seafood will eliminate the risk, as the virus is inactivated by boiling for 1 min. In outbreak situations, immune globulin is efficacious in preventing or suppressing HAV infection.

An inactivated HAV vaccine has recently been licensed in many countries in the industrialized world, including the United States. Data indicate that the vaccine offers higher and longer-lasting protective antibody levels than immune globulin. The initial population to whom this vaccine is likely to be given is individuals who travel to areas of the developing world where HAV is highly endemic. This will include military personnel, frequent business and pleasure travelers, and aid workers. Optimal antibody levels are obtained only after three inoculations over a 1-year period. Most of these individuals will not have completed the series of three vaccinations by the time they travel. Many will probably have received only one injection. Whether these individuals should also receive immune globulin before traveling is controversial because of concerns about the immune globulin interfering with the immune response to the vaccine. In individuals receiving all three vaccinations, the use of immune globulin is not required. Other populations at risk for HAV may consider receiving this vaccine. These include health care workers, day care center and group home workers, and perhaps children attending day care. Immune globulin may be given as an alternative to vaccine to nonimmune individuals (e.g., aid workers, missionaries, soldiers, and some tourists) who are traveling to areas of high endemicity. Protection by immune globulin usually lasts for 6 months, and people who remain in these areas for longer than 6 months should receive additional doses of immune globulin at 6-month intervals.

References

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