

Cardiac Disorder in an Iranian Child With Hepatitis A Virus

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Abstract

Introduction: Hepatitis A is one of the most common types of viral hepatitis among children worldwide. Many infected individuals, especially younger children, are asymptomatic. It is usually transmitted by food or water contaminated with infected feces. Extra-hepatic manifestations of acute hepatitis A virus (HAV) are very rare.

Case Presentation: We present a 14-year-old girl who was referred to our hospital due to jaundice, abdominal pain, weakness, and lethargy. After laboratory testing, HAV was confirmed in the patient. However, she had significant bradycardia with hypotension, which is very rare in HAV infection.

Conclusions: Hepatitis A causes an acute infection. The patients usually recover after a few weeks or months. Fulminant hepatitis can be observed in HAV infection but chronic infection does not exist. Extrahepatic complications and cardiac disorders are often reported in association with hepatitis C and B viruses, but they are very rare in HAV infections.

Keywords: Hepatitis A, Adolescent, Bradycardia, Hypotension

1. Introduction

Hepatitis A is a viral infection of the liver that is uncommon in the developed countries but widespread in developing or underdeveloped parts of the world such as Africa, Asia, and the Middle East (1, 2). A fecal-oral route is the major mode for transmission of the virus. Transmission occurs when people consume food or water that is contaminated by the stools of someone with hepatitis A virus (2, 3). Initial signs and symptoms of HAV include abdominal pain, nausea and vomiting, joint and muscle pain, mild fever, and sometimes a flu-like syndrome. Extra-hepatic manifestations and cardiac disorders in association with acute hepatitis A virus (HAV) infection are very rare (3, 4). Acute HAV infection with hypotension and tachycardia has been reported (4). Here we report the case of a 14-year-old girl who was referred to our hospital due to HAV with significant bradycardia and hypotension, which is a rare presentation of HAV infection.

2. Case Presentation

On December 3, 2014, a 14-year-old girl was referred to our hospital (Ali-Ebne-Abitaleb in Zahedan, south-eastern Iran) with abdominal pain, weakness, lethargy, and jaundice. Her medical history was unremarkable. Blood pressure was 70/40 mmHg and an electrocardiogram showed sinus bradycardia (heart rate: 50 beats per minute). No fever was detected on the first day of admission or during the next few days. The sclerae were icteric and tenderness was observed in the right upper quadrant of the

abdomen. Chest radiograph findings were insignificant. Blood urea nitrogen and creatinine levels were within normal limits. The blood glucose level was 79 mg/dL. Cardiac and pulmonary examinations were normal and no other abnormal signs were observed. The results of biochemical function tests and serology confirmed acute hepatitis A (Tables 1 and 2). Sonography showed normal sized liver and spleen. With supportive therapy and without steroids, clinical improvement was observed after 1 week, and the patient was followed for 1 month, during which we observed continuous improvement.

Table 1. Laboratory Results of the Patient

| Parameters | Results |
|--------------|-------------------|
| WBC | 9700 (Neut = 42%) |
| HB | 10 mg/dL |
| PLT | 235,000 |
| PTT | 57 s |
| ESR | 10 mL/h |
| UA | Normal |
| Widal test | Neg |
| PT | 43 s |
| Anti HAV IgM | Positive |
| HBs Ag | Neg |
| HBs Ab | Neg |
| HCV Ab | Neg |

Table 2. Blood Pressure, Heart Rate, and Serum Aspartate Amino Transferase (AST), Alanine Amino Transferase (ALT); Bilirubin and Alkaline Phosphate Level of the Patient on Day 1 and 4 of Admission

| Values | Days | |
|---------------------------------|------|-------|
| | 1st | 4th |
| AST, u/l | 79 | 3430 |
| ALT, u/l | 80 | 2192 |
| Total bilirubin, mg/dL | 7.2 | 22.98 |
| Conjugate bilirubin, mg/dL | 2.3 | 21.84 |
| Alkaline phosphate, u/l | 612 | 2192 |
| Systolic blood pressure, mm Hg | 70 | 75 |
| Diastolic blood pressure, mm Hg | 40 | 50 |
| Heart rate, beats/min | 50 | 55 |

3. Discussion

HAV is an enterovirus in the picornaviride family. Viral replication occurs exclusively in human liver cells (5, 6). The virus is commonly spread by the fecal-oral route, when people consume infected food or water that has been contaminated by the stools of patients with hepatitis A. Eating foods such as chicken and shellfish that are contaminated by raw sewage can lead to hepatitis A virus infection. Rarely, hepatitis A can spread by sharing a needle with an infected person who injects drugs, or during anal sex (6, 7). Close personal contact in institutions such as schools and army barracks can transmit the infection to other people.

The incubation period of HAV lasts between 2 to 6 weeks, and can be dose-related. The presence of clinical manifestations and the severity of symptoms after HAV infection depend on patient age. In developing countries, the age of infection is usually before 2 years of age. In developed countries, infection is usually reported in children older than 10 - 15 years (1-3).

Hepatitis A is widespread in parts of the world that are poor, have limited access to sanitation, and do not have clean water, such as regions in Africa, India, Pakistan, and Afghanistan. Hepatitis A infection is most common in young children, and is often asymptomatic in this age group (1, 2, 6, 7). There is no treatment for HAV, and vaccination is recommended for high-risk groups such as people who are infected with HCV, men who have sex with men, in injectable drug users, and people who are going to travel to infected areas of the world (8).

In most individuals, the infection resolves without any long-term problems. Unlike other types of viral hepatitis such as HBV and HCV, hepatitis A has no chronic form and does not cause long-term liver damage. When the infection clears, a life-long immunity against the virus is acquired. However, approximately 10% - 15% of people experience a relapse of symptoms a few months after the acute infection, and this can happen more than once (7-

9). Serious complications tend to occur in elderly people and in people with pre-existing liver disease when liver function is lost. Death is rare, and it is usually only observed in elderly patients and in people with underlying liver disease. When acute liver failure occurs, a liver transplant is the only option.

Extra-hepatic manifestations of acute hepatitis A virus (HAV) are very rare, but acute viral hepatitis with cardiac disorders and extra-hepatic manifestations have been reported in patients infected with HBV and HCV (4). Ferdinando et al. described 46 patients with acute viral hepatitis. They were searching for cardiac disorders among patients with viral hepatitis. Cardiac complications such as electrocardiographic (ECG) disorders, conduction blocks, acute pericarditis, and arrhythmias were observed in 43% of the patients. The most common viral agents that involved the extrahepatic organs were HBV and HCV, followed by cytomegalovirus (CMV), and Epstein-Barr virus (EBV) (4).

No cardiac complication has ever been reported in patients with HAV. Our patient was referred to the pediatric ward with bradycardia and hypotension. The pathogenesis of the hypotension and bradycardia in hepatitis A is unknown. Bradycardia and tachycardia are often observed in acute viral hepatitis but so far, hypotension and bradycardia have not been reported together in HAV. Experimental evidence suggests that autoimmune mechanisms due to viral infection can lead to inflammation and then necrosis in myocardial tissue. Sometimes, cardiac involvement can occur during viremia. However, the use of steroids as immunosuppressive agents for this complication is controversial (10). Our patient did not receive steroids and she was in good condition 1 week later.

In conclusion, the incidence of cardiac manifestations during acute viral hepatitis B, C, and other viral infections such as EBV and CMV can be high, but it is very rare in acute HAV and using glucocorticoids for treatment is controversial.

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Authors' Contribution:Both the authors had an equal role in the writing the paper.

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