Case Report

A Case Report of Primary Biliary Cholangitis Related to Hepatitis in a 7-Year-Old Girl from Iran

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ABSTRACT

Primary biliary cholangitis (PBC), formerly known as primary biliary cirrhosis, is a liver disease. This is a chronic autoimmune disease, which can worsen over time and recur periodically. If left untreated, biliary cirrhosis may lead to liver failure. Considering that PBC is a rare disease in all age groups, especially in children, the purpose of this report was to describe a girl with hepatitis A virus (HAV) who was then diagnosed with PBC. This child is the first case reported in Iran. The patient is a 7-year-old girl with a pale complexion and eyes with a yellowish cross who was referred to the doctor. Considering that this patient had hepatitis, a blood test was requested to check the level of cholesterol and liver enzymes. The absence of cholestatic liver enzymes was observed in tests. Then, an anti-mitochondrial (AMA) test was requested for the patient, the result of which was negative. Finally, with imaging and biopsy, the diagnosis of PBC was confirmed for the patient. After the definite diagnosis of the disease, the child was treated with ursodeoxycholic acid (UDCA). The child in question is suffering from two medical and immunological diseases, HAV and PBC. Since this child was first infected with HAV, it is possible that the cause of PBC was HAV.

Keywords: Primary biliary cholangitis, Hepatitis, Biliary cirrhosis

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INTRODUCTION

Ahrens and his colleagues proposed the term primary biliary cirrhosis (PBC) in 1950 (1). It is now called primary biliary cholangitis. PBC is a chronic progressive cholestatic autoimmune disease of unknown etiology that causes inflammation and damage to the bile ducts and, eventually, their failure. Biliary cirrhosis can cause damage to the liver and rarely liver cirrhosis (2,3). Simply put, in this disease, the body thinks that the bile ducts inside the liver are foreign bodies and tries to destroy the covering of these ducts. These ducts are designed to drain bile from the liver, so this damage interferes with the release of bile acids. Then, bile acids drip from the ducts and damage the liver cells around them, which causes inflammation and ulcers in the liver (4). It should be noted that both genetic susceptibility and environmental factors play a role in its pathogenesis. The self-immunity status of family members also affects it (5).

Also, autoimmune liver diseases such as PBC and hepatitis A virus (HAV) are associated with distinct autoantibodies. PBC rarely causes liver cirrhosis, but if it is combined with HAV, it has more destructive effects on the liver, which may lead to cancer or liver cirrhosis (6,7). Therefore, early and timely diagnosis of these two diseases is necessary to treat and prevent further progress of the disease. The ways to diagnose these two diseases are based on clinical, histopathological, and serological findings (6). Of course, a definitive diagnosis of PBC requires the presence of two of the following three features: elevated liver enzymes before six months, histological evidence of portal tract inflammation, and positive anti-mitochondrial (AMA) test(8). The purpose of this report was to present the history of a child with HAV who was simultaneously diagnosed with PBC.

CASE REPORT:

The patient is a 7-year-old girl living in Fars province of Iran. A full-grown girl with jaundiced skin color came to the doctor on foot. Also, the sclera of the child's eyes was yellow. At first, a full blood test was done for her. In these tests, the levels of liver enzymes such as aspartate aminotransferase (AST), total bilirubin (BT), alanine aminotransferase (ALT), and alkaline phosphatase (ALP) were evaluated. She had HAV hepatitis (HAV-IgM positive) at the beginning of her disease (Table 1).

Table 1. Patient's test results and acceptable range of each test

Acceptable range	Result	Test
AST	97	5-40 IU/L
ALT	86	5-40 IU/L
ALP	1260	80-306 IU/L

Table 1. Patient's test results and acceptable range of each test

Alb	5	3-5g/d
BT	3.7	0.1-1.2 mg/dL
BD	1	0.1-1.2 mg/dL
PT	13	11-13.5
INR	1	
AMA	Negative	

ALP = alkaline phosphatase; ALT = alanine aminotransferase; AST = aspartate aminotransferase; PT= prothrombin time; INR= international normalized ratio; AMA= Anti-mitochondrial antibody; Alb = Albumin; BD= BilirubinDirect; BT= Bilirubin Total

Other test data include:

ANA , ASMA , LKMA , AMA, and GGT were negative. Ceruloplasmin, TFT , tTG-IgA , and HBsAg were normal.

Abdominal ultrasonography: There were no more abnormal findings except hepatomegaly with increased echogenicity.

Due to the prolonged course of the clinical presentation and firm hepatomegaly, a liver biopsy was performed. The report of liver biopsy was destructive cholangiopathy with fibrosis, which was due to PBC or drug-induced. She had no history of any type of drug or herbal medicine consumption.

Therefore, the final diagnosis was PBC, which HAV probably triggered.

Figure 1 shows a liver biopsy sample of stage II PBC. In the histological examination of PBC, we see the characteristic pattern of a scar in the bile duct, leading to a reduction in the number of functional ducts, known as ductopenia. This PBC feature is demonstrated by applying Masson's trichrome stain.

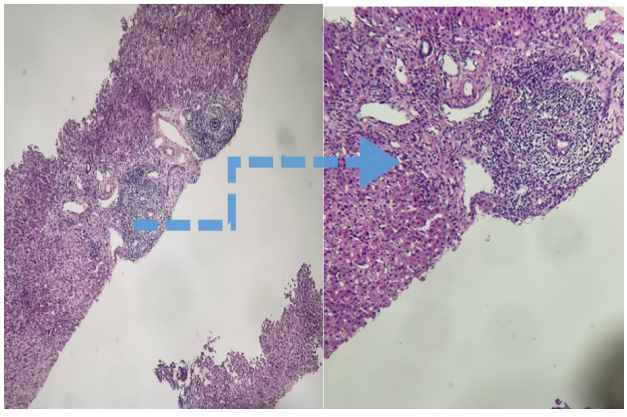

Figure 1. displays a portal tract where we can observe a duct that has undergone partial necrosis, with granulomatous inflammation surrounding it. There is a noteworthy arrow indicating a point where the duct has ruptured. These observations were made using Masson's trichrome stain.

Finally, with the final diagnosis of PBC, her treatment was started with ursodeoxycholic acid (UDCA) at 15 mg/kg/d. Now, the disease is under control.

DISCUSSION:

PBC is a rare disease in all age groups, especially in children. Most cases (90-95%) are middle-aged women (30-60 years old) (9). The female-to-male ratio is 1/22-1/9. That is, for every man, nine women suffer from PBC. This disease is asymptomatic in most people (50-60%) (10). The most common symptoms in adults are fatigue and itching.

In many cases, it is associated with signs and symptoms of acute and chronic liver disease or jaundice, organomegaly, ascites, encephalopathy, and coagulation (liver failure). Esophageal varices have also been reported in adults and even in children. Through the investigations, we found that so far, children cases with PBC have been reported in less than ten cases worldwide (most were girls) (11). Our patient is the first reported case from our country (Iran). It is also the first reported child in the world whose cause of PBC is HAV. Of course, children under ten years of age have been reported for other reasons. Aoki's study is one of these. He reports a 5-year-old boy with IL2Rα deficiency, whose parents were related. He hypothesized that children born with IL2Rα deficiency had anti-mitochondrial antibodies(12). Also, the smallest organ was reported by Malaq and others about a newborn girl with a congenital liver problem. The level of AMA in the plasma of this child was high. Also, the histological diagnosis proved the diseases in this child. This baby was suffering from PBC (13). The cause of the natural history of PBC in children is still unknown. However, in our case, HAV was diagnosed as the cause because this child had HAV before PBC. In this context, studies on French patients with PBC have shown that the severity of hepatitis is related to the severity of predicting the development of biliary fibrosis (14). So, HAV can be an aggravator or cause of PBC disease in this child. Of course, it should be noted that in addition to genetic susceptibility and environmental factors, which play a role in the pathogenesis of PBC, the autoimmune status of family members also affects it (5). In this context, Dahland reports two 15- and 16-year-old sisters in his study. Their mother had an autoimmune PBC overlap syndrome. A sister underwent a successful liver transplant, and another sister's liver biopsy showed stage 2 PBC. Her AMA was positive, but by using Ursodeoxycholic acid (UDCA), her disease was controlled, and the level of her liver enzymes became normal (15). If biliary cirrhosis is not treated and reaches advanced stages, a person's liver may be seriously damaged. In this case, liver transplantation is considered a treatment option (16). Of course, this disease has no definite cure and is controlled by medication. UDCA is the main drug for the treatment of biliary cirrhosis. This drug can prevent liver damage or delay it, especially if it is used in the early stages of the disease. Another drug that has recently been recommended for the treatment of this disease is beticholic acid, and it is usually recommended for those who cannot take UDCA (17). In the case of our patient, UDCA was prescribed after the final diagnosis of PBC. Now, her disease is being treated and controlled with this drug. Fortunately, mortality among these patients is very low. Thus, the oldest patient with PBC was 103 years old at the time of his death (18).

We conclude from this study that by discovering more children with PBC, more investigations can be done. As a result, the cause of early PBC in children can be understood, and by increasing the information obtained, it is possible to act for prevention, diagnosis, and treatment in time.

CONFLICT OF INTEREST:

The authors declare that there is no conflict of interest.

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