Autoimmune Hepatitis in Children: A Case Report

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ABSTRACT

Background: Autoimmune hepatitis (AIH) is considered rare, and it is even rarer in the pediatric population. AIH in the pediatric population is categorized into type 1 and 2, which are differentiated by their autoantibody profiles.
Case report: 5 years old Saudi boy presented with history of jaundice, fever and dark urine for 5 days with previous similar history at the age of 3 years. Examination revealed that he was conscious, looks pale and jaundiced but not in respiratory distress and well hydrated. Abdominal examination showed hepatosplenomegaly. Anti-nuclear antibodies (ANA), antismooth muscle antibodies and anti-neutrophilantibodies were positive whereas anti platelet antibodies and anti-mitochondrial antibodies were negative. Hepatitis serology was negative. Magnetic resonant cholangiopancreatogram (MRCP) showed diffuse periportal edema, likely related to liver cirrhosis. Liver biopsy was suggesting end stage biliary cirrhosis. Diagnosis was end stage cirrhosis with biliary features secondary to autoimmune process. The patient was treated with prednisolone, ursodeoxycholic acid, Vitamin K, omeprazol and iron. He was discharged and listed on the liver transplant clinic.
Conclusion: This case report highlights and alerts physicians that AIH should always be considered in paediatric patients presenting with chronic liver disease.
Keywords: Autoimmune hepatitis, childhood, IgG, Saudi Arabia

INTRODUCTION

Autoimmune hepatitis (AIH) is a progressive chronic inflammatory process manifested by the presence of interphase hepatitis, plasma cell infiltrations and rosette formations on histology, the presence of circulating non-organ-specific autoantibodies and hypergammaglobulinemia of unknown etiology.[1]

AIH is generally uncommon and is even less common among the pediatric population. The profiles of AIH in the pediatric population are similar to those in adults, the only difference being that the disease tends to be more severe in the former[2,3].Approximately 30% of patients, usually younger patients, will have an acute presentation mimicking acute viral hepatitis.[4]

It is particularly aggressive in children and progresses rapidly unless immunosuppressive treatment is promptly started. [5]

Case Report

A 5 years old Saudi boy presented with fever, yellowish discoloration of skin and sclera for 5 days. This child was well till the age of 3 years when he developed jaundice and fever for 2 weeks. At that time his family had sought medical advice at peripheral hospital, investigated there but no clear diagnosis has been reached, and they advised the family to go to a higher center. After that symptoms improved gradually but, he continued to be mildly jaundiced over the last year. This time he presented to emergency department (ED) with jaundice, on and off fever of 39°C associated sometimes with chills and dark color urine. These symptoms were progressive for 5 days. There was no abdominal pain, distention, vomiting or diarrhea and no change in stool color. Also, there was no associated skin rash, bruises or pruritis. The patient did not report any joint or bone pain. No history of contact with jaundiced patient, or raw milk ingestion. The

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patient had no blood transfusion, and he was not on any medication.

Regarding his neonatal history, he was product of full term, uneventful pregnancy, normal delivery with no neonatal intensive care unit (NICU) admission. His developmental history was appropriate for his age. Family history revealed no consanguinity and he has 4 siblings, all were healthy with no similar condition in the family. No history of deaths or abortions. Social history showed that they were living in aldarb with low socioeconomic status with no history of animal contact and no recent travel. Vaccination is up to date taken. Nutritional history revealed that he was dependent on family diet.

On examination, he was conscious, looked pale and jaundiced but not in respiratory distress and well hydrated. Vital signs showed that heart rate was 115 beats/minute, temperature was 37°C, blood pressure was 110/60 mm/Hg, respiratory rate was 26/minute and O_2 saturation was 95% at room air. Weight was on the 5th percentile, height was on 25th percentile and head circumference was on 25th percentile.

Abdomen was soft and not distended. The liver was 3cm below the costal margin with a liver span of 12 cm. The Spleen was palpable about 2 cm below the costal margin. Chest and cardiovascular examination were unremarkable. CNS was normal. Eye exam, musculoskeletal and skin were normal with no lymphadenopathy.

Laboratory work was carried out. Table 1 shows the complete blood picture of the patient. Table 2 shows his coagulation profile. Results of renal and liver functional tests are summarized in table 3

Erythrocyte sedimentation rate (ESR) was 28mm/hour. Blood culture was negative. Urine analysis and culture were negative. Peripheral blood smear showed microcytic anemia with no abnormal cell. Platelet manual count was adequate. Hemoglobin electrophoresis was normal. Coombs test was negative. Bone marrow examination revealed that there was increased erythroid and megakaryocytic series with no abnormal cells.

Hepatitis serology was negative. Ebstein-Bar virus (EBV), Cytomegalo virus (CMV), brucella and leishmania were negative.

Abdominal ultrasound showed moderate diffuse increased liver parenchymal echogenicity with mild hepatomegaly, mild to moderate splenomegaly with no focal lesions within the viscera identified and no gall stone or biliary dilatation.

Autoimmune panel revealed that anti-nuclear antibodies (ANA) was positive. Antismooth muscle antibodies (SMA) andanti-neutrophilantibodies were positive, whereas anti platelet antibodies and anti-mitochondrial antibodies were negative. Liver Kidney Microsomal antibodies (LKM) were high. Immunoglobulin g (IgG) was 20.4mg/dl, IgM was 3.09 mg/dl and IgA was 3.40 mg/dl. Ceruloplasmin level was within normal amount. Magnetic resonant cholangiopancreatogram (MRCP) showed diffuse periportaledema, likely related to liver cirrhosis with periportal fibrosis showing multiple low T2 signal intensity nodules throughout the liver with unremarkable biliary duct system.

Liver biopsy was suggesting end stage biliary cirrhosis. The cirrhotic nodules are surrounded by fibrosis with focal areas of inflammation. Upper gastrointestinal Endoscopy showed Grade 4 Esophageal varices.

Our diagnosis was end stage cirrhosis with biliary features secondary to autoimmune process. So, the patient was treated with prednisolone, ursodeoxycholic acid, Vitamin K, Omeprazole and iron. He was discharged and he will be followed in the liver transplant clinic.

Informed consent from the patient family and approval of ethical committee were obtained before starting the research

DISCUSSION

We presented a case of a 5 year old Saudi boy with autoimmune hepatitis confirmed by the autoimmune panel and liver biopsy. Most children are usually diagnosed before the age of 18 years, with peak incidence before puberty. Three-quarters of affected children are females.[6] So, the disease affected boys less frequently as in our case.

In Asia, AIH is considered a very rare disease among pediatric population. Therefore, most pediatricians may not see an AIH case in their lifetime practice. Online searching revealed two cases from Singapore [6] and one case report

from Malaysia.[7]However, it has been documented that the actual number is more than expected, as some cases may have remained undiagnosed or unreported.[6]Untreated AIH carries an unfavorable prognosis and many cases progress to cirrhosis with high mortality, therefore the diagnosis should be made as soon as possible. With treatment however, the survival rate improves.[8]

In the present case, initially we thought about the common conditions causing pancytopenia and we went through it, like infections, malignancies, and connective tissue diseases. The only hint from the scenario was that our patient was jaundiced for long time although it was not very high but significant finding.

In the present case, hepatic illness lasted for almost two years and ANA, SMA were positive and in addition, LKM was high. Also, the other possible etiologic factors such as Ebstein-Bar virus (EBV), Cytomegalo virus (CMV), brucella and leishmania were excluded. These criteria are perquisite for the diagnosis of AIH.[8]

Liver biopsy is essential for the diagnosis and evaluation of the disease status as well as in determining the need for therapy.[9]In the present case, liver biopsy was suggesting end stage biliary cirrhosis. As the diagnosis usually requires imaging of the biliary tree, MRCP was performed for the patient and showed diffuse periportal edema, likely related to liver cirrhosis with periportal fibrosis showing multiple low T2 signal intensity nodules throughout the liver with unremarkable biliary duct system. These findings are quite similar to those reported in the two cases reported from Singapore.[6]

We have added ursodeoxycholic acid in the treatment of the case in addition to steroid therapy in the form of prednisolone as steroid therapy address only the parenchyma inflammation.[6]

It has been documented that50%of children affected by AIH have cirrhosis at presentation and actually this is fact in our case. Therefore, it is essentially for pediatricians to consider AIH inpatients presenting with chronic liver disease.

In conclusion, Although AIH considered rare among children, it should be kept in mind in the differential diagnosis of both acute and chronic liver diseases of children after excluding the relatively more commonly seen viral and metabolic diseases. AIH progresses to cirrhosis when left untreated, but early diagnosis and treatment prolong survival.

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Table 1: Complete blood picture of the patient

	Wbc	Hb	PLT	MCV	MCH	MCHC	RDW	HCT
Value	3.1 10^3/uL	7.9 g/dl	85 10^3/uL	70 fL	22 Pg	31 g/dl	19 %	24 %
			MPV 12.3					
Normal range	(4-13)	(11.5-15.5)	(150-450)	(75-88)	(24-30)	(32-36)	(11.5-15)	(34-40)

Neutrophils	Lymphocytes	Monocytes	Esinophils	Basophils
29.6%	61.5%	7 %	0.7%	1.44%
Normal range 23-45%	35-65%	0-5%	0-3%	0-1

Table 2: Coagulation profile of the patient

PT		INR	Aptt	
Pt.	13.3 sec	1.031	Pt.	39 sec
Control	12.9sec		Control	34.1 sec

Formula:
(INR= (PT patient/PT normal) ^{ISI})
PT patient = patient's measure PT (seconds)
PT normal = laboratory's geometric mean value for normal patients (seconds)
ISI = International Sensitivity Index

Table 3: Renal and liver profiles of the patient:

Urea	Creatinine	Total bilirubin	Direct bilirubin	GGT	Albumin	AST	ALT	ALP
13 mg / dl	0.4 mg / dl	2.1 mg / dl	1.4 mg / dl	224 mg / dl	2.9 g / dl	314 IU / L	135 IU / L	293 IU / L
(7-18)	(0.4-1)	(0.3-1.5)	(0-0.3)	(9-22)	(3.4-5)	(15-37)	(7-65)	(50-136)