Hepatitis A virus infection in children.

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Abstract

Background: most hepatitis A viral infections in children are asymptomatic or have mild non specific manifestations but some are complicated.

Objective: to evaluate all cases of hepatitis A viral infection in children who were admitted over one year period and enlighten out the abnormal presentations and predict complications.

Patients and methods: during the period from 1st of June 2005- 1st of June 2006, fifty cases of hepatitis A viral infection (who had hepatitis A virus IgM +ve) were studied and analyzed regarding the clinical presentations, coarse of the illness, complications and outcome.

Results: fifty patients enrolled in the study, with male to female ratio of 1.8:1 and 32 (64%) of them presented in the age of 1-5 years. Fulminant hepatic failure was found in 7 (14%) cases, 5 (10%) had prolonged cholestasis , 5 (10%) had exacerbation of pre- existing chronic liver disease, 2 (4%) had recurrent or relapsing hepatitis A viral infection, and 5 (10%) cases had extra hepatic manifestations , 3 (6%) were G6PD deficient patients who had sever hemolysis.

Conclusions: hepatitis A viral infection can present in different ways.

The level of consciousness, presence of ascites and severely abnormal biochemical and hematological values were of great help in predicting complicated cases of hepatitis A viral infection.

Key words: hepatitis A, abnormal presentations, children.

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Introduction

Hepatitis A is the commonest viral hepatitis in the developing world [(1)]. It commonly spreads from person to person by fecal – oral route [(2)]. It often can pass from caregivers to children or adults in settings where there is close contact [(3)]. Travelers to endemic areas are at high risk and may transmit hepatitis A virus (HAV) after infection [(4)]. Most hepatitis A viral infections in children younger than 5 years of age are asymptomatic or have mild, non specific manifestations but some of HAV infections might have complications such as fulminant hepatic failure (which is a clinical syndrome resulting from massive necrosis of hepatocytes or from severe functional impairment of hepatocytes. The currently accepted definition in children includes: biochemical evidence of acute liver injury (usually <8 wk duration); no evidence of chronic liver disease; and hepatic-based coagulopathy in the presence of clinical hepatic encephalopathy) (2) and it occurs in less than 1 in 10000 case [(5)], prolonged cholestasis, recurrent hepatitis, and extrahepatic manifestations or may present on top of already pre- existing chronic liver disease [(1)].

One patient had multiorgan dysfunction including liver failure, hepatic encephalopathy, renal failure, pleural effusion, pericardial effusion and hematological dysfunction as a sequale of hepatitis A infection in otherwise healthy male [(6)].

The aim of this study was to evaluate all cases admitted with HAV infection over one year period and to enlighten the abnormal presentations

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and predict complicated cases of HAV infection.

Patients and methods

This prospective study was done at Children Welfare Teaching Hospital, Medical City in Baghdad in the period from 1st of June 2005 till 1st of June 2006, including cases admitted with hepatitis. Sixty five patients with hepatitis like illness were admitted during the period of the study, only 50 cases with HAV IgM +ve were included in the study. Each case was studied regarding clinical presentations, course of the illness, complications and the outcome. Thorough physical examination and all the necessary investigations were done to the patients in the study.

Results

Fifty patients were studied that had HAV IgM +ve, 32 (64%) males and 18 (36%) female with male to female ratio of 1.8:1.

Thirty-two (64%) patients presented in the age group between 1-5 years (table 1).

All patients included in the study presented with jaundice (100%), 35 (70%) patients had hepatomegaly, 6 (12%) patients had leg edema and 3 of them had additional ascites. Disturbed consciousness was found in 8 (16%) cases, 4 (8%) had typical encephalopathy, 3 of them developed convulsion (Table 2).

Twenty –four (48%) patients had complications: seven (14%) patients presented with fulminant hepatic failure, two of them were died (4%), one after 24 hours of admission and the other after 3 days. five patients (10%) had prolonged cholestasis with mean days of illness of 45 days, one of them had sever hypoglycemia and developed convulsion during the course of the illness. Another five patients (10%) had pre- existing chronic liver disease (2 had Wilson disease and 3 had autoimmune hepatitis), one of the Wilsons patients was semiconscious and had positive family history of same disease. Two of the patients with autoimmune hepatitis presented with disturbed consciousness and generalized edema.

Relapsing hepatitis occurred in 2 patients (4%), both within 4 weeks of the initial infection. Extra hepatic manifestation was found in 5 cases, sever haemolysis was seen in 4(8%) patients, 3 of them were G6PD deficient patients and presented with very dark colour urine, hepatosplenomegaly and sever pallor. two of them required blood transfusion; one of those had impaired renal function. The fifth patient presented with history of convulsion (Table 3)

The mean biochemical and hematological values are important in predicting the outcome of the cases of HAV infection as the mean TSB, S.ALT, S.AST, S. Alkaline phosphatase, PT, and PTT were all higher in complicated cases (Table 4).

Table 1: distribution of patients according to age and sex

Age (years)	Male		Female		Total	
	N0.	%	No.	%	No.	%
< 1	0	0	0	0	0	0
>1-5	20	62.5	12	37.5	32	64
>5-10	10	66.7	5	33.3	15	30
>10-15	2	66.7	1	33.3	3	6
Total	32	64	18	36	50	100

Table 2: Signs and symptoms of the disease at presentation of the patients in order of frequency.

Signs and symptoms	No.	%
Jaundice	50	100
Fever	40	80
Dark colour urine	36	72
Tender hepatomegaly	35	70
Vomiting	30	60
Clay colour stool	20	40
Abdominal distension	12	24
Splenomegaly	9	18
Disturbed consciousness (encephalopathy)	8	16
Leg edema	6	12
Pallor	4	8
Convulsion	4	8
Ascites	3	6

Table 3: Distribution of complicated cases according to clinical presentation.

Types of complication	NO.	%
Fulminant hepatic failure	7	14
Prolonged cholestasis	5	10
HAV on top of pre-existing chronic liver disease	5	10
relapsing hepatitis	2	4
Extra hepatic manifestations: **haemolysis** **convulsion**	 4 1	 8 2
Total	24	48

Table 4: Mean biochemical and hematological values of the patients

Test Presentation	*TSB mean	**S.ALT mean	*** S.AST mean	'ALK.phosph mean	''PT mean	'''PTT mean
Non complicated (NO: 26)	7.8 ± 1	69 ± 4	71 ± 4	65 ± 5	15 ± 2	38 ± 4
Complicated (NO: 24)	16.6 ± 2	89 ± 5	108 ± 8	75 ± 6	42 ± 3	52 ± 5

*total serum bilirubin,
**Serum alanin amino transferase,
*** Serum aspartate amino transferase, 'Alkaline phosphatase, "Prothrombin time, '" Partial thromboplastin time

Discussion

Hepatitis A viral infection accounts for about 50% of the clinically apparent hepatitis, not associated with chronic liver disease, persistent viraemia or intestinal carrier state [2].

Our study included hospitalized patients which were usually ill and jaundiced with hepatitis like illness. We actually isolated every case until proved or disproved to be HAV IgM+ve. There was male predominance which is consistent with Anand AC study [7], while no sex predilection was apparent in Amin J et al study [8].

The most common age group was between 1-5 years (64%) of cases. In the developing nations, the age of acquisitions is usually before 2 years of age while in western societies it is frequent in person's age 5-17 years [9]. No case under one year was found in our series as it is usually uncommon in infants less than one year of age [10]. Splenomegaly plus hepatic enlargement were found in all cases of G6PD deficient patients and all of them had severed anemia and very high total serum bilirubin.

The complicated cases in this study were 48% which is a high percent, it is probably because all cases admitted to the hospital were seriously ill and the mild, ambulant cases usually not admitted. It was reported that fulminant hepatic failure may varies between 0.1% of symptomatic infected children to10 % (1, 9). In our study the most common complication was the fulminant hepatic failure (14%), all those patients were semiconscious, three had ascites and leg edema and two of them died within 3 days of admission. Apart from hepatic insufficiency, the course of HAV infection may be characterized by a relapse following initial improvement (relapsing hepatitis A) and prolonged cholestasis [11]. Although relapse occurs in 3-21% of patients with acute hepatitis A [1, 8, 12], we had 2 relapsing cases (4%) within 4 weeks of the previous infection. Persistent or prolonged cholestasis may follow the acute infection and it may persist for more than 3 months [13]. In this study 5(10%) patients had prolonged course which ranges from 30- 60 days (mean 45 days). One of those patients had protracted hypoglycemia and deep jaundice, he was managed with small doses of steroid and Ursodeoxycholic acid as recommended by one author [14], and he improved and was discharged well.

Although ascites and pleural effusion are possible benign and early complications of acute HAV infection that resolve spontaneously regardless of the illness outcome [2, 3], all 3 cases (6%) seen in this study with ascites proved to have chronic liver disease.

All types of chronic liver disease can present as acute hepatitis [14] but some can be uncovered during the superadded acute HAV infection. Data from literature indicate a high fatality rate during the HAV super infection in patients with chronic hepatitis B and C, particularly those with cirrhosis and in patients with alcoholic cirrhosis [15].

Five (10%) patients had previous chronic liver disease (Wilson's disease was evident in 2 cases (4%) and 3 (6%) had autoimmune hepatitis), the presentation of which was not a straight forward, the children had firm to hard liver texture with features of acute hepatitis like illness, 3 of all had ascites and 2 of them were semiconscious. Family history was the helping clue in the diagnosis of Wilson case.

Immunization with hepatitis A vaccine was recommended in all patients with chronic liver disease by many authors [3, 14,15], but not in India as there was a high prevalence of pre-existing antibodies in these patients [7].

Although extra hepatic manifestations are rare in HAV infection, we had 5 cases (10%), four patients (8%) presented with evidence of hemolytic anemia and three (6%) of those were G6PD deficient, all of them had hepatosplenomegaly, sever anemia and very high serum bilirubin. One of those was a boy 6 years old on the verge of renal failure but fortunately recovered with supportive therapy.

Hemolytic anemia as a complication of acute hepatitis had been reported in up to 23% of patients. However the incidence may rise to 70-87% in patients with G6PD deficiency, massive intravascular haemolysis with renal failure, hepatic encephalopathy and even death have been reported [16, 18].

One patient (2%) had convulsion at the start of the icteric phase but without neck stiffness, and his CSF findings were normal. Looking in the literature, there was only one case report for a five years old child presented with convulsion and neck rigidity, and because HAV RNA was demonstrated in the CSF, it was thought that convulsion might be related to this viral infection [19].

Hepatitis A virus associated mortality world wide is 0.2- 0.4 % (1),but in this study it was 4% which is due to fulminant hepatic failure as our hospital is a tertiary center and we receive terminal cases.

In our study, all the mean hematological and biochemical levels in complicated cases were greater than that in uncomplicated patients (Table 4) which is similar to Sainokami S et al findings [20]. Increased levels of serum transaminases and prolonged PT and PTT gave an idea of the unusual presentation and sometimes bad prognosis.

It was concluded that the Hepatitis A viral infection can present in different ways.

It occurs mostly in the age group (> 1-5 years).

Hepatitis A viral infection on the top of pre-existing chronic liver disease or in G6PD deficient cases could affect the presentation and the course of the disease. The level of consciousness, presence of ascites and severely abnormal biochemical and hematological values were of great help in predicting complicated cases of hepatitis A viral infection.

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