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ORIGINAL ARTICLE

Evaluating the clinical course of hepatitis A in children: A year in review in a tertiary care setting

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ABSTRACT

Background and Objectives: This study aimed to evaluate the clinical course of pediatric hepatitis A virus (HAV) infections over one year in a tertiary care setting in Bangladesh focusing on clinical presentations and complications. **Methods**: A retrospective review of medical records was conducted in 32 children aged 1–18 years diagnosed with acute hepatitis A, confirmed by positive anti-HAV immunoglobulin M (IgM). Clinical presentations, liver function tests (LFTs), coagulation profiles, and complete blood counts (CBC) were analyzed. Patients with chronic liver disease or other forms of viral hepatitis were excluded. Descriptive statistics were used for analysis. **Results**: The majority of patients (62.5%) were aged 6–10 years. Common clinical features included jaundice (94%), hepatomegaly (84%), fever (78%), and vomiting/nausea (56%). Ascites (20%), encephalopathy (10%), and sepsis (10%) were the most frequent complications. LFT results showed significantly elevated alanine aminotransferase (SGPT) levels in 68.75% of patients, with values exceeding 1000 IU/dL. Aspartate aminotransferase (SGOT) levels were elevated in 9.38% of patients. Coagulation abnormalities, such as elevated prothrombin time (PT) and international normalized ratio (INR), were observed in a substantial proportion of patients, with hypoalbuminemia present in one-third of cases. Ultrasound findings indicated cholestasis in 12.5% of patients. **Conclusion**: Pediatric hepatitis A is generally mild but can lead to complications such as ascites, encephalopathy, and sepsis. Early diagnosis, awareness of atypical presentations, and regular monitoring are essential, especially in high-endemic areas like Bangladesh.

Key words: hepatitis A, ascites, cholestasis, hepatic encephalopathy

INTRODUCTION

Hepatitis A virus (HAV) is one of the leading causes of acute viral hepatitis worldwide, especially in regions with inadequate sanitation and limited access to clean water. HAV is predominantly transmitted *via* the fecal-oral route and is highly prevalent in low- and middle-income countries, including Bangladesh, where poor hygiene practices contribute to the persistence of the disease.[1,2] Although the infection is often self-limiting, it can present with a broad spectrum of clinical manifestations ranging from mild jaundice to severe hepatic complications, such as acute liver failure.[2,3]

In Bangladesh, where HAV is endemic, nearly 100% of children are exposed to the virus by the age of six.[1] Despite the high exposure rates, systematic data on the clinical course of pediatric hepatitis A in tertiary care settings remain limited. Understanding the variability in clinical presentations is crucial for improving early diagnosis, particularly in atypical cases, and optimizing the management of children with severe or complicated forms of the disease.[2,3] Previous studies have shown that factors such as younger age, coagulopathy, and organomegaly are associated with more severe disease presentations, suggesting the need for heightened clinical awareness in pediatric populations.[1]

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This study aims to evaluate the clinical course of children with hepatitis A over the last year at a tertiary care center in Bangladesh. By retrospectively reviewing medical records, we aimed to identify common and atypical presentations, investigate diagnostic patterns, and assess the role of demographic and clinical factors in shaping disease outcomes. This research will contribute to the growing body of knowledge on hepatitis A in high-endemic areas, offering insights into disease management in resource-limited settings.

METHODS

This retrospective study was conducted at the Pediatric Gastroenterology, Hepatology and Nutrition Department of Bangladesh Shishu Hospital & Institute, Dhaka, Bangladesh. Medical records of children diagnosed with HAV infection over a one-year period, from July 2023 to June 2024, were reviewed to evaluate their clinical presentations, laboratory findings, and disease course.

The study included children aged 1 to 18 years who were diagnosed with acute hepatitis A, confirmed by positive anti-HAV immunoglobulin M (IgM) antibodies, and admitted to the hospital during the study period. Patients with chronic liver disease, previously diagnosed with other forms of viral hepatitis (HBV, HCV), or those on hepatotoxic drugs were excluded.

Given the retrospective nature of the study, there are potential biases related to the small sample size and data availability. The selection criteria, including exclusions for other liver diseases, may impact the generalizability of findings. Additionally, incomplete records, such as missing platelet counts and ultrasound results for some patients, could influence the interpretation of complications and laboratory findings. These limitations should be considered when evaluating the study results.

The following data were extracted from medical records: demographics (such as: age, gender, and socioeconomic status), presenting features (including jaundice, fever, abdominal pain, vomiting, dark urine, and hepatomegaly, ascites), investigations, and clinical courses. Investigation records include liver function tests (serum bilirubin, alanine aminotransferase [ALT], aspartate aminotransferase [AST], alkaline phosphatase [ALP]), coagulation profiles (prothrombin time [PT], international normalized ratio [INR]), complete blood counts and other relevant biochemical parameters, and Ultrasound of whole abdomen. Reference ranges for these main tests were ALT (7–56 IU/L), AST (5–40 IU/L), serum total bilirubin (0.1–1.2 mg/dL), PT (10–13 seconds), INR (0.8–1.2), and serum albumin (3.5–5.0 g/dL). We also extracted information relating to the duration of symptoms, hospitalization, and any complications such as ascites, coagulopathy, encephalopathy, or acute liver failure.

Descriptive statistics were used to summarize the demographic, clinical, and laboratory data. Continuous variables such as age, serum bilirubin, and liver enzyme levels were presented and converted to categorical values as ranges. All categorical variables were expressed as frequencies and percentages. All descriptive analyses were performed using Google Sheets, and results were presented in tables and charts to highlight the frequency of presenting conditions and laboratory findings. Comparative studies of key clinical and laboratory findings by gender and age groups were performed using Mann-Whitney *U* tests and chi-square tests (or Fisher's exact test), where applicable, to assess differences between groups. Since no significant differences were found, results were limited to descriptive statistics. All comparative analyses were performed using PSPP (an open-source alternative to SPSS).

As a retrospective study, patient consent was not required; however, all data were anonymized to ensure patient confidentiality.

RESULTS

Demographic characteristics

A total of 32 children with hepatitis A infection were included in the study, comprising 22 males (68.75%) and 10 females (31.25%). The age of the patients ranged from 2 to 13 years, with a median of 8 years. The majority of children (62.5%) fell within the 6–10-year age group, while 18.75% were aged 1–5 years and 11–15 years, respectively. No cases were recorded in children older than 15 years.

Clinical features

Jaundice was the most common presenting feature, observed in 30 (94%) children. Other frequent symptoms included fever (78%), vomiting or nausea (56%), and hepatomegaly (84%). Less common symptoms were abdominal pain (36%) and abdominal distension (20%). Ascites was present in 6 (20%) patients, while sepsis and encephalopathy were each reported in 3 (10%) cases. No cases of splenomegaly or coagulopathy were observed (Table 1).

Liver function tests

Laboratory investigations revealed that most children had elevated liver enzymes. Alanine aminotransferase (SGPT) levels exceeded 1000 IU/dL in 22 (68.75%) patients, while aspartate aminotransferase (SGOT) levels were greater than 1000 IU/dL in 3 (9.38%) cases. Serum total bilirubin levels ranged from 0 to over 15 mg/dL,

Table 1: Clinical features of the studied patients (*n* = 32)

Feature	Frequency (*n*)	Percentage (%)
Jaundice	30	94
Abdominal Pain	11	36
Fever	25	78
Vomiting/nausea/anorexia	18	56
Hepatomegaly	27	84
Splenomegaly	0	0
Ascites	6	20
Sepsis	3	10
Encephalopathy	3	10
Coagulopathy	0	0

with 43.75% of patients having levels below 5 mg/dL, and 40.63% between 5.1 and 10 mg/dL. Only 9.38% had bilirubin levels exceeding 15 mg/dL. The majority of patients (65.63%) had alkaline phosphatase (ALP) levels in the 101–500 IU/L range (Table 2 and Table 3).

Coagulation profile and serum albumin

Hypoalbuminemia was noted in 11 patients, with 28.13% of children having albumin levels between 25.1 and 30 g/L, and 31.3% having levels above 30 g/L. INR was elevated in 4 (12.6%) patients, with the median at 1.0 (Table 4).

Complete blood count

Hemoglobin levels were predominantly in the normal range, with 31.25% of patients having levels between 10.1 and 12 g/dL and 18.75% exceeding 12 g/dL. Platelet counts were also in the normal range between 160 to 400 × 10^9/L in 37.5% of patients, and white blood cell (WBC) counts were within the normal range for 43.75% of cases (Table 5).

Ultrasonography findings

Ultrasound data were available for only 12 patients. Of these, 7 showed signs of free fluid or ascites, 2 had gallbladder wall thickening, and 2 patients had both ascites and gallbladder wall thickening.

DISCUSSION

In Bangladesh, a developing country with endemic hepatitis A, children remain the most affected population. In this study, 63% of the patients were between the ages of 6 and 10 years, consistent with the findings of Kumar *et al.*, who reported that 43% of patients belonged to the 5–10-year age group.[2] However, a study by Munmun *et al.* focusing on atypical presentations of hepatitis A in Bangladesh found all patients to be six years or younger, highlighting potential differences in presentation based on age.[1]

The most common clinical features observed in this cohort included jaundice, hepatomegaly, fever, and vomiting or anorexia, aligning closely with the study by Murlidharan *et al.* from Maharashtra, India.[3] These symptoms were similar to those reported in earlier studies in other parts of Southern India.[2–5] This consistency in clinical presentation reinforces the typical manifestation of hepatitis A across regions with high endemicity.

Elevated liver enzymes were a prominent feature in this study, with over 68% of patients showing more than a ten-fold increase in alanine aminotransferase (SGPT). Aspartate aminotransferase (SGOT) was also significantly raised in 28% of cases. These findings are consistent with Kamath *et al.*, who also noted a marked rise in transaminases among children in Chennai.[5] Although coagulopathy was absent on physical examination, two patients had notably high INR values, which were corrected during their hospital stay. Hypoalbuminemia was present in one-third of the patients, emphasizing the need for vigilant monitoring of liver function.

While thrombocytopenia was observed in only one patient, Kumar *et al.* reported a higher incidence of 5% in their cohort.[2] It should be noted that platelet count data were missing for about half of the patients in this study, which may have affected the analysis. Additionally, three patients exhibited elevated white blood cell counts, correlating with signs of sepsis.

Atypical presentations of hepatitis A in this study included ascites, encephalopathy, sepsis, and cholestasis. Ascites, seen in 20% of patients, was the most frequent atypical manifestation, consistent with the findings of Munmun *et al.*, Poddar *et al.*, and Kumar *et al.*[1,2,6] Ultrasound findings suggested cholestasis in four patients, and two patients had significantly elevated alkaline phosphatase levels (> 500 IU/L), supporting the diagnosis. Encephalopathy and sepsis were each

Table 2: Liver function of the studied patients (*n* = 32)

SGPT (IU/dL)	*n* (%)	SGOT (IU/dL)	*n* (%)
Normal (5–100)	1 (3.1)	Normal (5–100)	1 (3.1)
Mildly raised (101–500)	1 (3.1)	Mildly raised (101–500)	2 (6.3)
Moderately raised (501–1000)	6 (18.8)	Moderately raised (501–1000)	4 (12.5)
Markedly Raised (> 1000)	22 (68.7)	Markedly raised (> 1000)	3 (9.4)
Unknown	2 (6.3)	Unknown	22 (68.7)

SGPT: significantly elevated alanine aminotransferase; SGOT: aspartate aminotransferase

Table 3: Continuation of liver function in the studied patients (*n* = 32)

Serum total bilirubin (mg/dL)	*n* (%)	ALP (IU/L)	*n* (%)
0–5	14 (43.8)	40–100	1 (3.1)
5.1–10	13 (40.6)	101–500	21 (65.7)
10.1–15	0 (0.0)	> 500	2 (6.2)
> 15	3 (9.4)	Unknown	8 (25.0)
Unknown	2 (6.2)		

ALP: alkaline phosphatase

Table 4: Serum albumin and coagulation profile of the studied patients (*n* = 32)

Serum albumin (g/L)	*n* (%)	INR	*n* (%)
20–25	2 (6.3)	Normal (0.8–1.2)	19 (59.3)
25.1–30	9 (28.1)	Mildly elevated (1.3–1.5)	2 (6.3)
> 30	10 (31.3)	Moderately elevated (1.6–2.0)	2 (6.3)
Unknown	11 (34.3)	Severely elevated (> 2.0)	0 (0)
		Unknown	9 (28.1)

INR: international normalized ratio

Table 5: Complete blood count of the studied patients (*n* = 32)

Hemoglobin (g/dL)	*n* (%)	Platelet count (10^9/L)	*n* (%)	White blood cell (count/mm^3 of blood)	*n* (%)
7–10	1 (3.1)	100–150	1 (3.1)	⩽ 4000	0 (0.0)
10.1–12	10 (31.3)	160–400	12 (37.6)	4001–11,000	14 (43.8)
> 12	6 (18.8)	> 400	4 (12.5)	> 11,000	3 (9.4)
Unknown	15 (46.8)	Unknown	15 (46.8)	Unknown	15 (46.8)

observed in three patients, underscoring the importance of recognizing these less common but severe complications.

In contrast to some other studies, none of our patients exhibited neurological, nephrological, or cardiovascular manifestations, and there were no cases of acute liver failure or mortality. The majority of patients were discharged within 5 to 7 days, which is comparable to the outcomes reported by Murlidharan *et al.*[3]

As observed in previous studies, a high index of suspicion and regular follow-up is critical in the early identification and management of complications in pediatric hepatitis A.[2] This study contributes to the growing body of knowledge on the clinical spectrum of hepatitis A in children, particularly in high-endemic regions like Bangladesh.

CONCLUSION

This study highlights the range of clinical presentations in pediatric hepatitis A, which can vary from mild symptoms to severe complications like ascites, encephalopathy, and sepsis. These findings emphasize the importance of early diagnosis and regular monitoring of

liver function and coagulation profiles in high-endemic areas like Bangladesh, where hepatitis A prevention and control remain critical.

RECOMMENDATION

Improved public health measures, including vaccination and sanitation, could further reduce the disease burden. Additionally, a strong index of suspicion and awareness of atypical presentations among healthcare providers could lead to more timely interventions, potentially reducing the risk of complications.

DECLARATIONS

Author contributions

Rashid R designed the study; Baidya M, Rashid R and Mahmud S participated in the data acquisition, analysis, and interpretation of the data; Rashid R drafted the initial manuscript; Ahmed SS and Mahmud S revised the manuscript for important intellectual content; finally, all the authors reviewed the manuscript.

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Informed consent statement

All study participants, or their legal guardians, provided necessary informed consent before enrollment.

Conflict of interest

There are no conflicts of interest to report.

Data sharing statement

No additional data are available.

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