

An Examination of the Clinical Manifestations in Paediatric Patients Having Hepatitis a Admitted to a Tertiary Care Hospital

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Abstract:

Introduction: The hepatitis A virus (HAV) is a frequent contagious illness that spreads mostly through faecal-oral route. It is prevalent in rapidly urbanising areas. Despite a high vaccination supply, this disease is persisting because of poor sanitation. From asymptomatic infection to fulminant hepatitis, it may exhibit a variety of clinical symptoms.

Method: For a period of two years, this cross-sectional study was carried out at a tertiary care hospital's paediatrics department. 200 children aged 1 to 12 years who displayed AVH symptoms and indications were included in the study. An ELISA was used to measure the presence of HAV IgM in venous blood after taking note of the patient's demographic and clinical details.

Result: With acute hepatitis A, a total of 250 children under the age of 15 visited the Department of Paediatrics, Patna Medical College and Hospital, Patna. In our study, patients ranged in age from 1 to 12 years, with an average age of 6 years. The majority of cases affected children 0 to 5 years old. The majority of the patients were male. The majority of them had a history of eating outside meals. They were all unvaccinated against the hepatitis A virus.

Conclusion: There were more cases of acute HAV. Acute viral hepatitis impacted people more severely if they were male, 6 to 10 years old, from a lower or moderate socioeconomic position, and used underground drinking water. HAV and HEV did not present clinically or biochemically significantly differently from one another.

Keyword: Hepatitis A, Viral Hepatitis, Enzyme-Linked Immunosorbent Assays, Liver Function and Viral Hepatitis.

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Introduction

The most frequent etiological factor for sporadic acute viral hepatitis, particularly in children, has been identified as acute hepatitis A (HAV). [1] However, this virus can infect people of any age. It is a typical viral infection that spreads mostly through the faecal-oral pathway and is still widespread in many underdeveloped nations due to poor sanitation and hygiene. The range of symptoms associated with acute hepatitis A infection is broad. A variety of clinical symptoms, including atypical presentations such relapsing hepatitis, cholestatic hepatitis, and extra hepatic signs in children, may be present, or it may be silent. The incidence of instances of atypical hepatitis A in young children has also been rising over the past several years.

The most frequent cause of paediatric liver illness in India is hepatitis A virus infection, with severity ranging from simple acute viral hepatitis (AVH) to acute or acute-on-chronic liver failure. Around 70-85%, 40-60%, and 10-40%, respectively, of all

instances of AVH, acute liver failure, and acute-on-chronic liver failure in the Indian subcontinent can be attributable to HAV infection [2-4]. This emphasises the importance of HAV infection, especially given that it is one of the very few liver disorders that may be prevented by a vaccination.

Given the scarcity of national epidemiological data on HAV epidemiology, universal HAV vaccination of children in India is still debatable [5]. As a result, we designed this hospital-based study to evaluate the prevalence of paediatric liver illness due to hepatitis A in a high volume tertiary care referral centre. This study's design could be used as a model for other population-based studies on the disease's epidemiology and vaccination practises in the future.

Both outbreaks and spontaneous infections with the hepatitis A viruses are common. Both residential and institutional environments have been shown to facilitate the transmission of illness. Consumption

of tainted food, water, milk, or dairy products spread by bad hygiene and overcrowding are the common implicated variables. Infections with HAV are self-limiting and offer lifetime immunity [6]. Along with fever, nonspecific gastrointestinal symptoms are how children with AVH typically present. Following the apparent yellowness of the eyes and urine (due to excessive bilirubin), abdominal pain, vomiting, nausea, and appetite loss occur on a sporadically occurring basis. Fulminant hepatic failure, aplastic anaemia, and protracted cholestatic syndrome are uncommon signs [7,8].

Materials and Methods:

For a period of two years a hospital based cross sectional study was conducted in Department of Paediatrics, Patna Medical College and Hospital, Patna. After obtaining the parents' written agreement, children aged 1 to 12 who displayed acute hepatitis symptoms and signs were consecutively sampled and added to the study. The study did not include children who had a history of liver disease at the time. A child was considered to have acute hepatitis if they presented with an illness that lasted less than 21 days, any sign or symptom (such as fever, yellowing of the eyes or urine, appetite loss, nausea, or vomiting), and an elevated alanine aminotransferase (ALT) level.

Data was gathered from each instance using a standardised proforma. Age, gender, parental education, neighbourhood, socioeconomic position, number of kids per home, water source, and length of illness were all noted as demographic variables. The World Bank classification based on monthly

household income was used to determine socioeconomic status [9]. Clinical manifestations (fever, nausea, vomiting, yellowing of the eyes and urine, abdominal pain, and loss of appetite) were noticed. All children had their 5 mL of venous blood drawn aseptically in order to test their anti-HAV and anti-HEV IgM antibodies. The collected blood samples were centrifuged at 1000 rpm for five minutes to separate the serum from the blood. IgM for HAV were assessed using a commercially available enzyme-linked immunosorbent assay (ELISA) test (DiaPro Diagnostic Bioprobes, MI, Italy), in accordance with the manufacturer's instructions. Prothrombin time (PT), international normalised ratio (INR), ALT, aspartate aminotransferase (AST), alkaline phosphatase (ALP), and total bilirubin were additional laboratory tests performed as part of a panel for acute hepatitis.

Assuming a prevalence of HAV of 60% [10], a confidence level of 95%, and an error margin of 7%, a minimal sample size of 200 children was computed. For data analysis, IBM Corporation, Armonk, New York, USA, provided SPSS software for Windows, version 24. For categorical and numerical variables, respectively, descriptive statistics are used in the form of mean SD and frequency (%). The chi-square test and the independent sample t-test were used to obtain categorical and numerical data of the HAV. P-values below 0.05 were regarded as statistically significant.

Results

Table 1. Demographic Profile

Age Groups	Male	Female	# Of Children with HAV1
1-5 years	56	38	47%
6-10 years	37	22	29.5%
11-15 years	20	27	23.5%

With acute hepatitis A, a total of 250 individuals under the age of 15 visited the Department of Paediatrics, Patna Medical College and Hospital, Patna. In our study, patients ranged in age from 1 to 12 years, with an average age of 6 years. The majority of cases affected were 1 to 5 years old.

The majority of the patients were male. The majority of them had a history of eating outside meals. They were all unvaccinated against the hepatitis A virus. Table 1 displays demographic information based on different age groups.

Table 2: Biochemical parameter in children presenting with acute viral hepatitis (n=200)

Parameter	HAV(n=200)	P value
INR	3±0.5	0.5
Bilirubin	10±3.5	1.00
ALP(IU/L)	2030±851.5	0.02
ALT (IU/L)	800.0±351.9	0.62
AST (IU/L)	1630.5±906.5	0.96

ALT: Alanine aminotransferase, AST: Aspartate phosphorataase, IR: International normalised ratio

The average serum bilirubin concentration was 10±3.5 mg/dL. The average concentrations of ALT, AST, and ALP were 800.0±351.9, 1630.5±906.5,

and 2030 ± 851.5 IU/L, respectively. In terms of international normalised ratios (INR), the average was 3 ± 0.5 (Table 2).

Discussion

Infection with HAV was discovered in 3/4 of the research subjects. The outcomes are consistent with those reported by Das et al., who found that HAV was present in 73.2% of cases [9]. The outcomes are comparable to those mentioned by Behera and Patnaik [10] as well. They discovered that acute viral hepatitis in children is most frequently caused by HAV infection (63.15%), followed by HBV (10.52%) and HEV (5.26%). The prevalence of HAV was 95.08% and that of HEV was 13.11%, according to Semwal et al. [11]. Due to the availability of its immunisation, the prevalence of HAV has decreased in emerging nations, although it is still widespread in those where HAV vaccination is not a regular practise [12].

Our study cohort was predominately made up of boys. 360 patients with acute hepatitis were included in a study from Karachi, and it was discovered that males (86%) predominated there as well [13]. Studies from India have also shown that acute hepatitis affects males more than it does females [10,14]. In addition, Rana and Lone found that male patients had a higher prevalence of HAV (60.8%) than female patients (39.13%) [15]. Males are more likely to have viral infections than females, indicating that occupational or behavioural exposures may help people become ill or engage in health-seeking behaviours [16].

The majority of the cases in our study belonged to the 6–10 year age range. According to Sharma et al.'s study [16], acute hepatitis affected a similar age group more severely. 52% of the affected children in a research from Bangladesh were between the ages of 5 and 10 [18]. This age group is at a significant risk of contracting infections due to the consumption of food and water from open hotels and fast-food restaurants in dense slum neighbourhoods with poor hygienic standards [19].

Our research revealed that a sizable portion of mothers were either illiterate or had only received a primary education, and that the most frequent supply of drinking water in the home was obtained through subterranean drilling. According to Pereira et al.'s findings, acute hepatitis infection and education level are related in their own right [20]. Hepatitis E was reported to be on the rise in Islamabad, Pakistan, by Ashraf et al. Open sewage drains next to water drilling pumps, which were below ground level, were the main cause [21]. According to the authors of another study from Lahore, Pakistan, local bore water and water obtained from filtration plants were the most often used sources of drinking water among children who had acute hepatitis [22].

Fever was the most frequent presenting symptom in this study, followed by appetite loss and yellow-colored urine. However, the only complaint that was shown to be considerably more common in HAV-positive individuals when compared to HEV-positive patients was yellow staining of the urine. Icterus (100%) was the most frequent presenting symptom in a research by Das et al. [9], followed by fever (96.42%) and black urine (83.92%). Icterus was also identified by Girish et al. as the most prevalent symptom (100%) [23].

Conclusion

HAV-caused acute viral hepatitis was more common. The most typical age range was 6 to 10 years. Hepatitis A vaccination should be a regular part of immunisation programmes. The general public should receive health education about preventive measures such as the use of clean restrooms, safe drinking water, good hand hygiene, and adequate waste disposal. It is crucial to be aware of the clinical signs and symptoms of acute viral hepatitis in order to diagnose the condition quickly and seek treatment to reduce morbidity and mortality from the disease.

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