

## Research Article



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## CLINICAL SPECTRUM OF HEPATITIS-A IN INDIAN CHILDREN

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### ABSTRACT

**Background:** Hepatitis A virus, or HAV, is a prevalent infectious illness that is endemic in many fast-developing endemic countries, such as India. It spreads by the fecal-oral route. Because of inadequate sanitization procedures, the illness persists despite a high immunization rate. Clinical symptoms of hepatitis A might range from fulminant hepatitis to asymptomatic illness.

**Aim:** The purpose of this study was to evaluate the clinical characteristics of hepatitis A-infected Indian children.

**Methods:** In this study, children aged 6 months to 12 years who had received an IgM hepatitis A diagnosis within the previous year were evaluated for hepatitis A infection. In all the included subjects, clinical profiles, and complications were assessed and recorded.

**Results:** 54 participants with hepatitis A, whose mean age was  $6.3 \pm 3.7$  years, were evaluated for the research. Fever and lethargy were the most frequent clinical presentations, occurring in 93% and 37% of individuals, respectively. Of the participants, 44% had altered sensorium and irritability. Upon physical examination, 100% of the participants had jaundice, and 96% had hepatomegaly. All participants showed a 4-fold rise in AST and ALT. In 44.4% (n=24) and 27% (n=16) of the individuals, there was an increase in deranged PT and elevated serum ammonia. Of the 14 subjects, 25.9% perished.

**Conclusion,** even though hepatitis A is a self-limiting illness, co-infection, underlying liver disorders, and the use of certain medications can all lead to serious consequences. As a result, all Hepatitis A infection patients need to be closely monitored until they recover.

**Keywords:** hepatitis A, hepatomegaly, liver disease, prothrombin time, Pediatric hepatitis

### INTRODUCTION

Although it affects people of all ages, HAV (acute hepatitis A) is the most frequent cause of sporadic acute viral hepatitis in India. However, it primarily affects children. However, there is no age range that is resistant to the viral illness because it can infect people of any age. Due to inadequate sanitization and cleanliness, this widespread viral illness, which is mostly transferred by the fecal-oral route, is still prevalent in many regions of underdeveloped countries, including India.<sup>1</sup>

Hepatitis A can manifest clinically as a variety of symptoms, from asymptomatic illness to severe liver failure. Atypical symptoms include extrahepatic manifestations, cholestatic hepatitis, and recurrent hepatitis in children are among the clinical signs that might accompany asymptomatic illness. Other manifestations can be severe disease including liver failure and fulminant diseases.<sup>2,3</sup>

The number of hepatitis A infections in children with unusual presentations has sharply increased in recent years. There is a dearth of information in the literature currently available about the hepatitis A profile of children from the Indian

setting. 4. Therefore, the goal of the current study was to evaluate the hepatitis A virus's clinical characteristics, laboratory results, and other prognostic variables in pediatric participants from India.

## MATERIALS AND METHODS

The goal of the current cross-sectional clinical investigation was to evaluate the hepatitis A virus's clinical characteristics, laboratory results, and other prognostic variables in the participants from India. The research participants were from the Institute's medicine department. Prior to their involvement in the study, all individuals gave their written and verbal informed consent.

54 participants, ages 6 months to 15 years, who exhibited a variety of symptoms and indicators of acute viral hepatitis, such as itching, abdominal pain, vomiting, nausea, jaundice, and loss of appetite, were evaluated for a confirmed clinical diagnosis of hepatitis A, and those who tested positive for HAV IgM were admitted for observation and additional treatment. The study excluded participants who were treated at the Institute in an outpatient department (OPD) and those who had a high fever, were unable to eat properly due to prolonged vomiting, and had poor general health. Laboratory blood tests include liver function tests, prothrombin time, complete blood count, and serum ammonia in people with altered sensorium.

Participants were managed conservatively with the use of symptomatic treatment and modified sensorium. People were given antibiotics when needed. The gathered data was statistically analyzed using the chi-square test, linear regression equation, Pearson correlation coefficient, and SPSS software version 24.0. The specificity, sensitivity, negative likelihood ratio, positive likelihood ratio, negative predictive value, and positive predictive value of the double marker test were also assessed in relation to PAPP-A and blood hCG levels.

## RESULTS

Evaluation of the hepatitis A virus's clinical features, laboratory findings, and other prognostic factors in pediatric participants from India was the aim of the current cross-sectional clinical study. The study assessed 54 subjects with hepatitis A with a mean age of  $6.3 \pm 3.7$  years. All the subjects were aged  $<15$  years and presented to the Department of Pediatrics of the Institute within the defined study period. The majority of the study subjects were aged 0-5 years. There was a higher number of males compared to females in the study. The majority of the subjects had a history of consumption of food from outside. No subject was immunized against the Hepatitis A vaccine.

Two subjects gave a history of nimesulide consumption and 4 presented dengue as a co-infection. There were 12 males and 10 females aged 0-5 years, 14 males and 4 males in 6-10 years, and 8 males and 6 females in 11-15 years respectively (Table 1).

Jaundice was the most prevalent complaint among research participants for Hepatitis A signs and symptoms, occurring in 100% of cases. Fever and dark urine were the next most common complaints, occurring in 92.6% and 81.4% of cases, respectively. Gastrointestinal symptoms, including vomiting, diarrhoea, stomach pain, and fatigue, came next in 55.5%, 22.2%, 59.3%, and 37% of cases, respectively. Among the individuals, irritability and altered sensorium were noted in 44.4% ( $n=24$ ). The research participants had a lot of symptoms in common. Hepatomegaly was a common physical finding, occurring in 96% of the subjects. 3.7% ( $n=2$ ) of the individuals had ascites, while 29.6% ( $n=16$ ) had fulminant hepatic failure. All participants were conservatively handled in ICU (intensive care unit). 7.4% ( $n=4$ ) of the cases had dengue co-infection, whereas 25.9% ( $n=14$ ) of the subjects died, 3.7% ( $n=2$ ) subjects had chronic liver disease, and 3.7% ( $n=2$ ) subjects had a history of nimesulide intake. No readmissions were reported in the subjects.

The study's findings demonstrated that in addition to the verified HAV IgM test, participants with altered sensorium also had their serum ammonia levels, prothrombin time, liver function test, and complete blood count evaluated. Different parameters have varying laboratory research values. 66.6% ( $n=32$ ) of the individuals with TLC  $>10,000/\mu\text{L}$  had leucocytosis. For every patient with a serum bilirubin level more than 1 mg/dL, both direct and total serum bilirubin levels increased. Aspartate transaminase (AST) and alanine transaminase (ALT) were detected in 92.5% of the participants.

Serum albumin levels were low in 7.4% of participants ( $n = 4$ ), while prothrombin time was abnormally long ( $>15$  seconds) in 44.4% of subjects ( $n = 24$ ). Serum ammonia levels in individuals with impaired sensorium were measured, and with a typical range of 30-86 mcg/dL, 29.6% ( $n=16$ ) of the individuals had high levels (Table 2).

After evaluating the recovery of 54 research participants, 77.7% ( $n=42$ ) of them showed full recovery. Of the 16 cases, 29.6% had acute fulminant hepatic failure, while 14 subjects, or 25.9%, died. Only supportive care, such as bed rest and dietary changes, was given to the subjects during their severe illness. The intensive care unit was used to treat subjects who experienced acute fulminant hepatic failure.

## DISCUSSION

54 individuals with hepatitis A, whose mean age was  $6.3 \pm 3.7$  years, were evaluated in this research. All of the participants were under 15 years old and arrived at the Institute's pediatric department within the designated research period.

Most of the research participants were between the ages of 0 and 5. In comparison to girls, there were more men in the research. Most of the participants had previously consumed food from outside sources. The Hepatitis A vaccination was not administered to any of the subjects. Four participants had dengue as a co-infection, and two reported a history of nimesulide use. Twelve males and ten females were between the ages of 0 and 5; fourteen males and four females were between the ages of 6 and 10; and eight men and six females were between the ages of 11 and 1. These statistics were similar to those from other studies by Alam S et al. (2014) and Gripenberga M et al. (2014), in which the authors evaluated children with hepatitis A and similar demographics to the current research.

According to the research's findings, the most prevalent complaint among study participants with Hepatitis A symptoms was jaundice, which was reported by 100% of them. Fever and dark urine were reported by 92.6% and 81.4% of participants, respectively. Gastrointestinal symptoms, including vomiting, diarrhoea, stomach pain, and fatigue, came next in 55.5%, 22.2%, 59.3%, and 37% of cases, respectively. Among the individuals, irritability and altered sensorium were noted in 44.4% (n=24). The research participants had a lot of symptoms in common. Hepatomegaly was a common physical finding, occurring in 96% of the individuals. 3.7% (n=2) of the individuals had ascites, while 29.6% (n=16) had fulminant hepatic failure. In the intensive care unit, all cases were treated conservatively.

25.9% (n=14) of the participants died, whereas 7.4% (n=4) had co-infection with dengue, 3.7% (n=2) had chronic liver illness, and 3.7% (n=2) had a history of nimesulide consumption. There were no documented readmissions among the individuals. The present research's findings were in line with those of Rakesh P et al. (2014) and Arankalle V et al. (2014), who reported physical signs and symptoms of hepatitis A in their study participants.

In addition to the verified HAV IgM test, it was observed that participants with altered sensorium also had their serum ammonia levels, prothrombin time, liver function test, and total blood count evaluated as part of the laboratory testing. Values for several parameters in the laboratory research varied.

66.6% (n=32) of the individuals with TLC  $>10,000 \mu\text{L}$  had leucocytosis. For every patient with a serum bilirubin level more than 1 mg/dL, both direct and total serum bilirubin levels increased. Of the subjects, 92.5% had AST and ALT.

Serum albumin levels were low in 7.4% of participants (n = 4), while prothrombin time was abnormally long ( $>15$  seconds) in 44.4% of subjects (n = 24). Serum ammonia levels were measured in participants with altered sensorium, and of those with a normal range of 30-86 mcg/dL, 29.6% (n=16) had elevated values. These results were consistent with the findings of Singh MP et al. (2010) in 2-15 and Sowmyanarayanan TV et al. (2008), who also reported laboratory data in children with hepatitis A that was comparable to the current investigation.

Additionally, when the recovery of 54 research participants was evaluated, 77.7% (n=42) of the cases showed full recovery. Of the 16 cases, 29.6% had acute fulminant hepatic failure, while 14 subjects, or 25.9%, died. Only supportive care, such as bed rest and dietary changes, was given to the subjects during their severe illness. The intensive care unit was used to treat subjects who experienced acute fulminant hepatic failure. These findings were consistent with those of Girish N12 (2014) and Salahuddin M et al. (2014), whose research similarly found recovery data in children with hepatitis A comparable to the current study's findings.

## CONCLUSION

Taking into account its limitations, the current study comes to the conclusion that while hepatitis A infection is a self-limiting illness, co-infection, underlying liver disorders, and drug use may cause serious sequelae. Therefore, every instance of Hepatitis A infection needs to be closely monitored until they recover.

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Age range (years)	Male	Female	Total
0-5	12	10	22
6-10	14	4	18
11-15	8	6	14
<b>Total</b>	34	20	54

**Table 1: Demographic data of the study subjects**

Laboratory parameters	Range
<b>Ammonia</b>	Raised in 16 subjects
<b>PT (prothrombin time)</b>	11.4-11 sec
<b>Albumin</b>	1.7-4.1 mg/dl
<b>AST (Aspartate Transaminase)</b>	208-3096 IU/ml
<b>ALT (Alanine Transaminase)</b>	254-3111 IU/ml
<b>Conjugated bilirubin</b>	1.0-12.4 mg/dL
<b>Total bilirubin</b>	1.1-30.5 mg/dL
<b>TLC</b>	5000-44000 $\mu$ L

**Table 2: Laboratory parameters in the study subjects**

