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ORIGINAL RESEARCH

Study of clinical spectrum of hepatitis A in children at a tertiary hospital

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ABSTRACT

Background: Hepatitis A is one of the highly communicable diseases of mankind and remains one of the most common forms of acute viral hepatitis worldwide. Children with HAV most commonly present with nonspecific gastrointestinal symptoms in addition to fever. Present study was aimed to study clinical spectrum of hepatitis A in children at a tertiary hospital. Material and Methods: Present study was single-center, prospective, observational study, conducted in patients of age 0-14 years, either gender, with signs and symptoms of acute viral hepatitis with positive HAV IgM. Results: In present study, 100 children admitted with signs and symptoms of acute viral hepatitis (loss of appetite, jaundice, nausea, vomiting, pain abdomen and itching), with positive HAV IgM were included. Majority children were from 6-10 years age group (45 %), followed by ≤5 years age group (39 %) & 11-14 years age group (16 %). Mean age was 8.1 ± 3.9 years. Male (57 %) children were more as compared to Female (43 %). Common clinical manifestations noted were fever (79 %), loss of appetite (78 %), yellowness of the eyes (71 %), dark-colored urine (70 %), abdominal pain (61 %), vomiting (47 %) & nausea (45 %). Mean levels of various laboratory parameters were TLC (18,452 ± 6,345 /µL), total Bilirubin (2.6 ± 1.7 mg/dL), conjugated Bilirubin (2.1 ± 1.6 mg/dL), alanine Transaminase (ALT) (106 ± 71 IU/ml), aspartate transaminase (AST) (210 ± 98 IU/ml), albumin (3.9 ± 1.3 mg/dL) & prothrombin Time (14.6 ± 3.1 secs). Conclusion: Hepatitis A is one of the most common cause of acute viral hepatitis in pediatrics population. Common clinical manifestations noted were fever, loss of appetite, yellowness of the eyes, dark-colored urine, abdominal pain, vomiting & nausea.

Keywords: Hepatitis A, acute hepatitis, viral hepatitis, children.

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INTRODUCTION

Hepatitis A is one of the highly communicable diseases of mankind and remains one of the most common forms of acute viral hepatitis worldwide.[1] This single-stranded non-enveloped RNA virus from the Picornaviridae family spreads via the feco-oral route and is mostly related to poor hygiene and unsanitary conditions in the community.[1,2,3]

HAV has an incubation period of ~4 weeks. Its replication is limited to the liver, but the virus is present in liver, bile, stools and blood during late incubation period and acute pre-icteric / pre-symptomatic phase of illness. Underlying liver disorder and immunocompromised state increases the risk for liver failure in cases with HAV infection.

Children with HAV most commonly present with nonspecific gastrointestinal symptoms in addition to fever. The visible yellowness of the eyes and urine (due to high bilirubin) is followed by abdominal pain, vomiting, nausea, and appetite loss with variable frequency.[4,5] Rare manifestations include fulminant hepatic failure, aplastic anemia, and prolonged cholestatic syndrome. Present study was aimed to study clinical spectrum of hepatitis A in children at a tertiary hospital.

MATERIAL AND METHODS

Present study was single-center, prospective, observational study, conducted in Department of Pediatrics, Government Medical College, Kathua, India. Study duration was of 1 year (April 2021 to March 2022). Study approval was obtained from institutional ethical committee.

Patients of age 0-14 years, either gender, with signs and symptoms of acute viral hepatitis (loss of appetite, jaundice, nausea, vomiting, pain abdomen and itching), with positive HAV IgM, parents willing to participate in present study were included. While children with chronic hepatitis, patients managed on OPD basis were excluded.

Study was explained to parents in local language & written consent was taken for participation & study. Patients were admitted for observation and further management. The indications for admission were poor general condition, not being able to eat properly due to protracted vomiting, high fever and altered sensorium. were excluded from our study.

All enrolled patients were carefully evaluated by detailed history, examination and investigation. Special emphasis was given on alcohol addiction, previous history of jaundice, hematemesis, malena, anasarca and hepatotoxic drugs. All patients participating in the study were subjected to the routine laboratory investigations such as complete blood count, blood sugar, renal function tests, liver function tests, PT and International normalised ratio (INR), urine (routine and microscopy), ultrasonography of whole abdomen and viral markers for hepatotropic viruses (A, E, B, C).

Data was collected and compiled using Microsoft Excel, analysed using SPSS 23.0 version. Statistical analysis was done using descriptive statistics.

RESULTS

In present study, 100 children admitted with signs and symptoms of acute viral hepatitis (loss of appetite, jaundice, nausea, vomiting, pain abdomen and itching), with positive HAV IgM were included. Majority children were from 6-10 years age group (45 %), followed by ≤5 years age group (39 %) & 11-14 years age group (16 %). Mean age was 8.1 ± 3.9 years. Male (57 %) children were more as compared to Female (43 %). Area of residence in majority was urban (56 %) as compared to rural area (44 %). Majority were from lower-middle socioeconomic status (35 %) followed by low socioeconomic status (32 %), upper-middle (22 %) & high socioeconomic status (11 %). Mean duration of illness was 6.5 ± 3.1 days.

Table 1- General characteristics

Characteristics	No. of patients	Percentage
Age (years)		
≤5	39	39
6-10	45	45
11-14	16	16
Mean age (mean ± SD)	8.1 ± 3.9	
Gender		
Male	57	57

Female	43	43
Area of residence		
Rural	46	46
Urban	54	54
Socioeconomic		
Low	32	32
Lower-middle	35	35
Upper-middle	22	22
High	11	11
Duration of illness (days)	6.5 ± 3.1	

Common clinical manifestations noted were fever (79 %), loss of appetite (78 %), yellowness of the eyes (71 %), dark-colored urine (70 %), abdominal pain (61 %), vomiting (47 %) & nausea (45 %).

Table 2- Presenting complaint

Presenting complaint	**No. of patients**	**Percentage**
Fever	79	79
Loss of appetite	78	78
Yellowness of the eyes	71	71
Dark-colored urine	70	70
Abdominal pain	61	61
Vomiting	47	47
Nausea	45	45

In present study, mean levels of various laboratory parameters were TLC (18,452 ± 6,345 /µL), total Bilirubin (2.6 ± 1.7 mg/dL), conjugated Bilirubin (2.1 ± 1.6 mg/dL), alanine Transaminase (ALT) (106 ± 71 IU/ml), aspartate transaminase (AST) (210 ± 98 IU/ml), albumin (3.9 ± 1.3 mg/dL) & prothrombin Time (14.6 ± 3.1 secs).

Table 3. Laboratory Parameters

Investigations	**Lab Parameters (Mean ± SD)**
TLC	18,452 ± 6,345 /µL
Total Bilirubin	2.6 ± 1.7 mg/dL
Conjugated Bilirubin	2.1 ± 1.6 mg/dL
Alanine Transaminase (ALT)	106 ± 71 IU/ml
Aspartate Transaminase (AST)	210 ± 98 IU/ml
Albumin	3.9 ± 1.3 mg/dL
Prothrombin Time	14.6 ± 3.1 secs

DISCUSSION

Viral hepatitis is a major public health problem affecting children globally. HAV multiplies in liver cell hampering its functions and leading to stimulation of immune response resulting in liver inflammation and antibody synthesis of both IgM and IgG type.[6] Since the development of jaundice is not diagnostic of acute viral hepatitis, definitive diagnosis is made by testing blood serum of patient for detection of specific anti-viral antigens or antibodies.[2]

IgM antibodies against HAV are generally detectable 5-10 days before onset of symptoms and can persist for up to 6 months. Anti-HAV IgM antibodies indicate acute infection. IgG antibodies against HAV becomes the predominant antibody during convalescence and remains detectable indefinitely.

India is hyper-endemic for HAV infection. Studies conducted in the 2000s observed that nearly 90% of adolescents, adults, and most children acquired immunity to HAV infection in their preschool years.[7] However, recent studies have indicated a shift in epidemiology of HAV infection over the past decade.[8,9] Acute hepatitis is a self-limiting illness characterized by an abrupt onset of symptoms with the hepatocellular inflammation usually resolving completely within 4-6 weeks. When there is a continuing inflammation beyond six months (three months in children), it is labeled as chronic hepatitis.[3]

Biradar PA et al.,[10] studied 300 children, aged 1–12 years, admitted with confirmed viral hepatitis. A small majority (52%) were boys. The mean age of presentation was 6.9 ± 2.8 years with the commonest symptoms being anorexia or vomiting (in 98%), fever (in 89%) and jaundice (in 71.3%). Tender hepatomegaly was seen in 31.7%. Almost all (97.6%) had hepatitis A, though mixed infection (A & E) was seen in 1.7%. Only 8% had serum bilirubin levels >200 μmol/L. Significantly elevated (>20 μkat/L) levels of aspartate transaminase and alanine transaminase were seen in 19% and 25.3% of cases respectively. Coagulopathy (PT >15 s) was present in 11.0% cases. HAV remains the most common cause of viral hepatitis in children in our environment. Public awareness and universal vaccination should be the focus to prevent morbidity and mortality due to these pathogens.

In study by Mohanty N et al., among 80 patients, mean age of hospitalisation was 5.5 years. 90% children were having jaundice. 85% patients were having liver enzyme high. Most common complication was gallbladder wall thickening followed by ascitis, pleural effusion etc. Encephalopathy was observed in three patients. Total three patients died. Maximum death was seen in infancy with delay in hospitalisation.

Sayma MR et al.,[12] noted that, atypical presentations were manifested in 19 (20%) out of 95 children with hepatitis A virus (HAV) infection. The mean age of atypical patients [6.32 (SD 3.45) years] was significantly lower than that of typical patients [8.22 (SD 3.58) years] (P=0.0041). The most common atypical manifestation was ascites (11/19), followed by hepatic encephalopathy (9/19), acute liver failure (7/19), thrombocytopenia (2/19), pleural effusion (2/19), and cholestasis (1/19). Children with atypical features had significantly higher international normalized ratio (INR) and serum bilirubin, as well as lower hemoglobin level than the typical group. Children of atypical group had significantly higher number of organomegaly and coagulopathy.

Vikrant Sood et al.,[13] noted that, HAV infection accounted for about half (48.6% of acute hepatitis and 46.5% (92/ 198) of acute liver failure cases) of all acute onset icteric illness, with significant morbidity and mortality. As per seroprevalence data, 16.2% of children between 10-18 years of age, and 10.3% of adults aged 18-30 years remained susceptible to HAV infection. HAV infection is the major contributor the overall pediatric liver disease burden. A significant proportion of subjects remain susceptible to HAV infection even after 10 years of age.

World Health Organization recommends that countries undergoing transition from High to Intermediate HAV endemicity should consider introduction of large scale HAV vaccination. However, this decision must be based on actual national seroprevalence data like seroepidemiological surveys, intensive disease surveillance, cost effectiveness analyses.[14]

Indian Academy of Pediatrics recommends two doses for any of the licensed vaccines which has to be given six months apart to children aged one year or older. In immune compromised individuals and for post-exposure prophylaxis (PEP), inactivated vaccines are preferred.[2] Universal immunisation against HAV in children in India is still controversial with limited national epidemiological data on HAV epidemiology.[15] Promotion of good sanitation habits, ways of cleaning drinking water, measures of disposal of sewage, and education of public for viral hepatitis protection should be the main agenda of viral hepatitis prevention.

CONCLUSION

Hepatitis A is one of the most common cause of acute viral hepatitis in pediatrics population. Common clinical manifestations noted were fever, loss of appetite, yellowness of the eyes, dark-colored urine, abdominal pain, vomiting & nausea. Creating awareness regarding mode of transmission, proper hygiene and vaccination are simple preventive measures.

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