ORIGINAL RESEARCH PAPER
Volume - 13 | Issue - 02 | February - 2024 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

CLINICAL PROFILE OF VIRAL HEPATITIS A IN A TERTIARY CARE HOSPITAL: A RETROSPECTIVE STUDY

Paediatrics

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KEYWORDS

INTRODUCTION:

Hepatitis A virus (HAV) accounts for most acute viral hepatitis (AVH) globally, with around 1.5 million clinical cases each year and a rate of infection likely to be ten times higher because of underreporting.[1] The Global Burden of Disease study estimated that acute hepatitis A infections increased by 4.2% between 2005 and 2015, approximately from 109.6 to 114.2 million cases.[2,3]

HAV infection has been found to be the commonest during childhood in developing countries like India and usually results in mild anicteric hepatitis.[3] Hospital admissions due to viral hepatitis, leading loss of school days for the children[4] as well as the economic burden parents was the concern, along with the prevention of complications. It is crucial for a resource-poor countries to closely monitor the epidemiology of HAV infection and periodically undertake cost-effectiveness analyses of HAV immunization strategies as well.[4] Also, analysing the hospital based and community based HAV studies will clarify the prevalence of disease which will be helpful in enforcing the food safety rules if required.[5]

Hence, we have tried to know the amount of morbidity and clinical profile of Hepatitis A among other viral hepatitis. We had conducted this retrospective analysis to find the prevalence of Hep A induced hepatitis in children admitted to SDM hospital.

MATERIALS AND METHODS:

Present study was a Retrospective observational study by including the children who were admitted with acute hepatitis, presenting with symptoms of less than 15 days. The medical record discharge summaries between 1st November 2016 to 30th November 2021 had been included for analysis.

RESULTS:

Who found that, there were 234 cases presented with acute hepatitis , out of which 207 cases were Positive for HAV IgM. 12 cases were positive for Hep B and the rest 15 cases were classified as 'unclassified hepatitis'. Unclassified hepatitis is defined as those cases of hepatitis who were tested and proven negative for any serology of viral hepatitis (A, B, C, D, E), dengue, Wilson's disease, Autoimmune hepatitis and also other possible causes of acute hepatitis.[6] Also, there were no cases of Hep C, D or E reported. All the data of these 207 cases of Hepatitis A analysed are represented as tables and graphs below,

Table 1: Distribution of Age of the study population

Age groups	No of patients	% of patients
1-5yrs	89	43.00
6-10yrs	82	39.61
11-14yrs	36	17.39
Total	207	100.00
Mean	6.81	
SD	3.38	

From the above table, we can observe that the average age of the children affected by HAV was 6.81±3.38 years. Of these, majority of them were aged between 1 to 5 years (43%).

Out of these 207 cases, 112 (54.11%) were male children and the rest 95 (44.89 %) were female children. There was no significant difference in the distribution of age and gender of the study population.

Also, the socio-economic data showed that 178 (85.99%) had belonged to rural sector and only 29 (14.01%) cases from urban areas.

Below graph represents the distribution of symptoms. Majority of the study population had presented with multiple symptoms. Of these, 92.27% (191) were presented with fever followed by 68.6% (142) had yellowish discolouration of urine and eyes. 57.49% and 46.86% had complained of vomiting and pain abdomen.

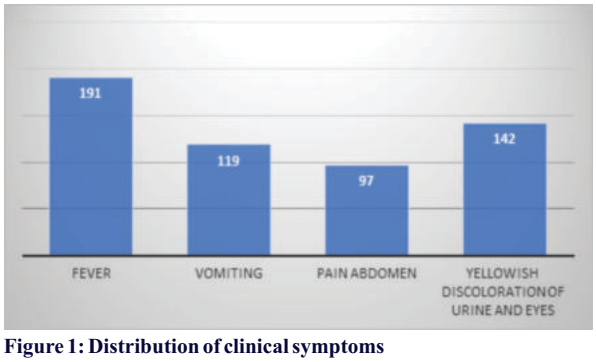

Figure 1: Distribution of clinical symptoms

Figure 2 explains the distribution of the status of protein energy mal nutrition. 177 (85.51%) of the children had normal distribution. Out of 30 with PEM, 20 (9.66% of 207) had Grade 1 PEM followed by 6 (2.9%) and 4 (1.93%) were reported to be Grade 2 and 3 of PEM.

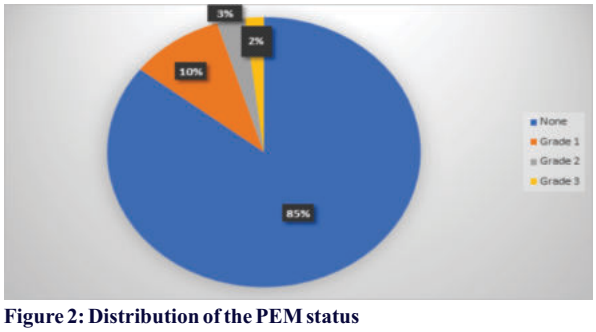

Figure 2: Distribution of the PEM status

Table 2: Distribution of the nature of liver damage

Nature of liver damage	No of patients	% of patients
Acute fulminant hepatic failure	2	0.96
Hepatic encephalopathy	1	0.48
Hepatomegaly	198	95.6
Hepatomegaly, ascites	6	2.90
Total	207	100.00

Incidence of Hepatomegaly was the commonest type of liver damage

observed involving 198 (95.6%) of the children had hepatomegaly followed by hepatic encephalopathy observed in 6 (2.9%). Two patients had fulminant hepatic failure and hepatomegaly with ascites was observed in one child.

The average duration of hospitalization was 4.43±2.27 days. Incidence of children admitted for 3 to 4 days was 47.34% (98/207) followed by 21.74% (45/207) were admitted for 5 to 6 days. 15.97% (33/207), 6.76% (14), 5.31% (11) and 2.9% (6) were admitted for the duration of 1 to 2 days, 7 to 8 days, 9 to 10 days and >/= 11 days respectively. the same has been explained in the below figure 3.

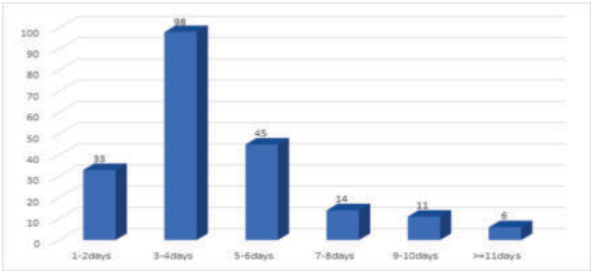

Figure 3: Distribution of the duration of hospitalisation

Out of these 207 cases admitted with hepatitis A, 206 (99.52%) were improved before discharging and the rest one case had been discharged against medical advice but the status of the child was stable as well. Hence, we could explain 100% recovery rate.

Table 3: Distribution of the laboratory parameters and the relative average duration of hospitalisation

Variables	Min	Max	Mean	Median	SD
Age	1.00	14.00	6.81	6.00	3.38
TB	0.25	8.10	3.79	3.45	1.67
DB	0.16	7.32	3.30	2.87	1.54
SGOT	53.00	3494.00	997.96	786.00	852.18
SGPT	62.00	2997.00	1133.48	874.00	862.02
INR	0.14	100.00	1.78	1.24	6.87
HAV titre	2.01	3.98	2.70	2.66	0.44
Days of stay	1.00	12.00	4.43	4.00	2.27

We could observe from the above table that, the patients with higher level of raised liver enzymes were required comparatively higher duration of hospitalization but the mean levels were almost within the normal limits which will be the indicator of higher recovery rate as we have observed.

We had analysed the socio-economic status of the families based on the modified Kuppuswamy's classification, the same has been tabulated below.

Table 4: distribution of socio-economic status

Socio-economic status	Number of cases (%)
Upper class	3 (1.44%)
Upper middle	118 (57.06%)
Lower middle	76 (36.71%)
Upper lower	6 (2.89%)
Lower	4 (1.9%)

Out of 207 cases, 118 (57.06%) of the families belonged to upper middle class followed by 76 (36.71%) to lower middle. Rest of the distribution is explained in the table 4.

Table 5: Distribution of economical factors

Parameter	Mean	SD
Direct cost for each case Includes the average cost spent on admission and the treatment	96.5USD	2.7
Indirect cost for each case Includes the cost spent on the food and travel expenses	19.11USD	3.2
Tangential cost for each case Includes the cost spent by the parent in the form of loss of pay from the work	24.19USD	2.97
Average number of days absent from school for the admitted child	5.8	4.91

Here we could observe that the average direct cost was higher compared to the other costs. Also, the tangential cost has been observed to be more than the indirect cost.

On further assessment of the cost analysis, we observed that 204 (98.55%) of them were benefitted by the government health schemes which had reduced the burden on parents. All the cases included in our study were vaccinated for hepatitis A.

DISCUSSION

Hepatitis A, an acute self-limiting inflammatory disease of the liver. HAV infection is common during childhood in developing countries like India and usually results in mild anicteric hepatitis. Majority of children (85%) below the age of 2 years and around 50% aged between 2 and 5 years have non-specific symptoms and are usually anicteric.[5] However, HAV infection was reported to cause severe disease with increasing age of the patient and with the presence of underlying chronic liver disease.[5]

The incidence of hepatitis A is associated with socioeconomic status, sanitation and lack of access to safe drinking water[1-5].

After analysing the recruited data, we found that there were 234 cases presented with acute hepatitis within a period of 15 days, out of which 207 cases were Positive for HAV IgM. The average age of these 207 children with positive HAV was 6.81±3.38 years. Incidence of Hepatitis A is most common among the children aged less than 6 years and decreases with increased age and has no gender specificity.[2,6-8] Similarly, 112 (54.11%) were male and 95 (44.89 %) were female children in the present retrospective analysis of HAV positive cases.

Majority of the study population had presented with multiple symptoms. Of these, 92.27% (191) were presented with fever followed by 68.6% (142) had yellowish discolouration of urine and eyes. Vomiting and pain abdomen were the other commonest symptoms. As per the reported evidences, HAV is a self-limiting condition, presenting with the minimal symptoms such as low-grade fever to the hepatic failure.[8,9] Reversible hepatitis and hepatomegaly have been the most common complications of HAV infection.[10] In the present study, hepatomegaly was the commonest type of liver damage, with the incidence of 198 (95.6%) followed by hepatic encephalopathy observed in 6 (2.9%). Two patients had fulminant hepatic failure and hepatomegaly with ascites was observed in one child.

The average duration of hospitalization was 4.43±2.27 days. Incidence of children admitted for 3 to 4 days was 47.34% (98/207) followed by 21.74% (45/207) were admitted for 5 to 6 days. Six cases were admitted for >/= 11 days. The maximum duration of hospitalisation was 14 days for two cases.

Out of 207 cases admitted with hepatitis A, 206 (99.52%) were improved before discharging and the rest one case had been discharged against medical advice but the status of the child was stable as well. Hence, we could explain 100% recovery rate. As per the available clinical data, the patients with HAV might require supportive treatment. Also, the studies have reported that full recovery could be expected even with the supportive management. Further researches explain that following an apparent initial recovery of HAV, there might be a biochemical relapse that may or may not be accompanied by clinical deterioration.[11]

Similarly, in the present study, the patients with higher level of raised liver enzymes were required comparatively higher duration of hospitalization but the mean levels were almost within the normal limits which was the main indicator of higher recovery rate as we have observed.

Out of 207 children, 30 had been reported as PEM. Out of these 30 cases, 20 with Grade 1 PEM followed by six and four children with grade 2 and 3 of severity. As we all know, PEM greatly increases susceptibility to major human infectious diseases including HAV, especially in children which is common in low-income countries. Malnutrition has been responsible, for almost 54% of deaths per year in children <5 years in developing countries.[12,13] Although the rate of mortality due to HAV is least common, the prevalence of infection is not negligible. Hence, working towards reduction in PEM cases will indirectly be reducing the incidences of HAV.

Our retrospective analysis showed that 178 (85.99%) had belonged to

rural sector and 29 (14.01%) from urban areas. The p value was <0.01, explaining that rural population been affected significantly than those living in urban areas. On analysing the socio-economic status based on the modified Kuppuswamy's classification, which includes the various components such as housing condition, per capita income, overcrowding, type of the house and many more, reflecting the parameters affecting the outcome of any given disease, out of 207 cases, 118 (57.06%) of the families belonged to upper middle class followed by 76 (36.71%) to lower middle. Although we did not observe any significant association between socio-economic data with the rate and severity of infection, we came across many epidemiological data, explaining that the hepatitis A infection in urban areas have experienced a decline in, while rates in rural areas have remained higher and the prevalence being lower in higher social groups.[14-16]

Average direct cost was 96.5 ± 2.7 USD, comparatively higher than other costs. The average indirect cost and tangential costs were 19.11 ± 3.2 USD and 24.19 ± 2.97 USD respectively. Similarly, another African clinical outcome study had reported that the mean patient-specific hepatitis A costs estimated was $***80.34,*** *this had included the cost of* investigations, radiology and medication[17] *which is comparatively lesser than ours.* On further assessment of the cost analysis, we observed that 204 (98.55%) of them were benefitted by the government health schemes which had reduced the burden on parents. All the cases included in our study were vaccinated for hepatitis A. Average duration of absence from school for the children was found to be 5.8±4.91 days. We came across many economical analysis researches which had reported either the cost for immunization or the outbreak management.[18] No studies other than the above mentioned had given the patient-specific cost analysis. Hence, the present study could be one the scientific health care related sources to analyse patient-specific cost for HAV in India.

With the above discussion, we would like to explain that the prevention of HAV infection is possible by improving the sanitary conditions and provision of safe, clean drinking water forms an imperative pillar in curtailing the spread of the HAV. Simple methods like maintaining proper hand hygiene are an effective method to curtail the virus. Vaccination forms a cornerstone in preventing HAV and both inactivated and live attenuated vaccines are available for use. Also, the status of Vaccination, Indian Academy of Pediatrics recommends two doses for any of the licensed vaccines which have to be given 6 months apart to children aged 1 year or older, will be helpful in reducing the incidence of HAV as well as the related outcome.

CONCLUSION

Hep A is the most common cause of acute viral hepatitis with rare severe complications. Study implies to spread knowledge about sanitation and hygiene and nutrition among the rural areas in order to prevent the hospital admission of the children leading the loss of the school days along with the prevention of the complications. There is a strong need for inclusion of Hep A vaccination under National Immunization schedule.

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