

## Original Research Article

# Clinical and biochemical profile of patients with viral hepatitis at tertiary care centre

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### ABSTRACT

**Background:** Viral hepatitis is known since ancient times. Hepatitis is an inflammation of the liver, most commonly caused by a viral infection. Different species of viruses, including Cytomegalovirus, Epstein-Barr, Herpes simplex, Adenovirus, Coxsackie virus and others cause parenchymal hepatic inflammation, but the term viral hepatitis generally implies to the five hepatotropic viruses: Hepatitis A, B, C, D and E virus.

**Methods:** This observational study was done from August 2014 to November 2016 in department of medicine of a medical college using a structured questionnaire.

**Results:** Anorexia was the most common symptom; followed by fatigue; nausea and vomiting. Total serum bilirubin and direct serum bilirubin were raised in all cases of hepatitis A and E. Raised SGPT and SGOT were observed in all cases of Hepatitis A and E. Among 43 patients of hepatitis B, SGPT and SGOT were raised in 32 and 31 cases respectively. Raised alkaline phosphatase was observed in 27; 25 and 16 cases of hepatitis A; B and E respectively. Raised prothrombin time was observed in 12; 11; 01 and 09 of Hepatitis A; B; C and E cases respectively.

**Conclusions:** Viral hepatitis is an important health care problem in India as it occurs epidemically and sporadically. The variability in nature of the disease regarding its onset, presenting symptoms, clinical course and development of complications are important aspects. So, it is very essential for health care professionals to be aware of all aspects of it so that it is detected and treated early.

**Keywords:** Biochemical profile, Clinical profile, Viral hepatitis

### INTRODUCTION

Hepatitis is a general term meaning inflammation of the liver and can be caused by a variety of different viruses such as hepatitis A, B, C, D and E. Since the development of jaundice is a characteristic feature of liver disease, a correct diagnosis can only be made by testing patients' sera for the presence of specific anti-viral antigens or antibodies.<sup>1,2</sup>

The incidence of infection with these five viruses is generally lowest in industrialized and developed

countries and highest in less-developed regions. Two of the viruses [hepatitis A virus (HAV) and hepatitis E virus (HEV)] spread principally by fecal-oral means and three [hepatitis B virus (HBV), hepatitis C virus (HCV), and hepatitis D virus (HDV)] spread principally by exposure to blood.<sup>3</sup>

All these viruses can cause an acute illness characterized by nausea, malaise, abdominal pain and jaundice.

The variability in nature of the disease regarding its onset, presenting symptoms, clinical course and

development of complications in viral hepatitis are important aspects which require clinical attention from time to time. Hence present study was undertaken in an attempt to share our experience on viral hepatitis at tertiary health care centre

**METHODS**

Present study was an observational study done on 106 cases of viral hepatitis (diagnosed serologically and clinically) during August 2014 to November 2016 in a tertiary care hospital.

**Inclusion criteria**

- Patients above 12 year of age.
- The presence of hepatitis symptoms including: weakness, lethargy, early fatigue, joint pains, jaundice (yellow skin) and Abdominal pain; an elevated liver enzymes; and positivity of serological markers for of HAV, HBV, HCV, HEV and HDV.
- Patients with the above condition willing to give written informed consent for study

**Exclusion criteria**

- Patients with non-viral causes of hepatitis such as toxic/drug-induced hepatitis, autoimmune and fatty liver.
- Patients who were unable or unwilling to give a written consent.

Ethical clearance from college Institutional Ethics Committee was obtained. Informed verbal and written consent was obtained from patients to take part in the study. Pre-tested and pre-designed questionnaire was used for collecting data. Data included demographic information, clinical history regarding illness including clinical symptoms and signs, clinical examination specially related to hepato biliary system.

The patients were subjected to the routine laboratory tests like complete blood count, blood sugar, liver function tests, renal function tests, urine routine and microscopy and peripheral smear.

The serological confirmations of viral hepatitis done for anti HAV immunoglobulin M (IgM), hepatitis B surface antigen (HBsAg), anti HCV total antibodies; IgM anti-HDV and anti HEV IgM. Whenever indicated, patients underwent ultrasound examination of abdomen to study radiological features of viral hepatitis.

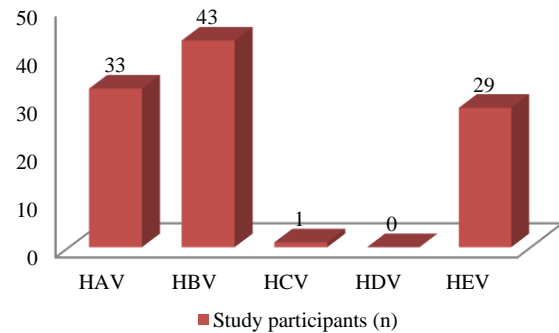
**RESULTS**

The present study was carried out to study the clinical presentations; biochemical profile and prognosis of viral hepatitis patients. There were total 106 patients which

were studied. Out of these 106 patients 8 patients died during treatment.

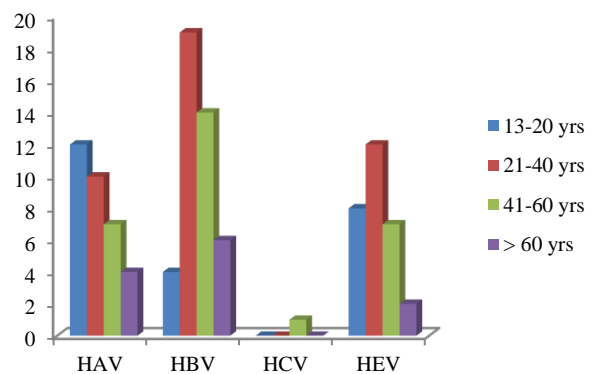
The maximum number of cases, 42 (39.6%), were seen in the group 21 to 40 years of age. The mean age of hospitalized patients was 36.2±3.5 years. In present study there were 65 (61.3%) male and 41 (38.6%) female and the male female ratio was found to be 1.58: 1.

The total numbers of medical admissions for the viral hepatitis were 106. Among them majority were hepatitis B 43 (40.5%) followed by hepatitis A 33 (31.1%) cases. There were 29 (27.3%) cases of hepatitis E. Serological confirmation was used for the diagnosis of cases (Figure 1).



**Figure 1: Distributions of study participants according to etiological pattern.**

Among hepatitis A cases; majority of cases were from 13 to 20 years of age i.e. 12 (36.3%) followed by 10 (30.3%) in 21-40 years of age. Maximum number of hepatitis B were cases from 21-40 years of age i.e. 19 (44.1%) followed by 14 (32.5%) from 41-60 years of age. Single case of hepatitis C was reported of 57 years of age. Out of 29 cases of hepatitis E majority of cases were 12 (41.3%) from 21 to 40 years of age (Figure 2).



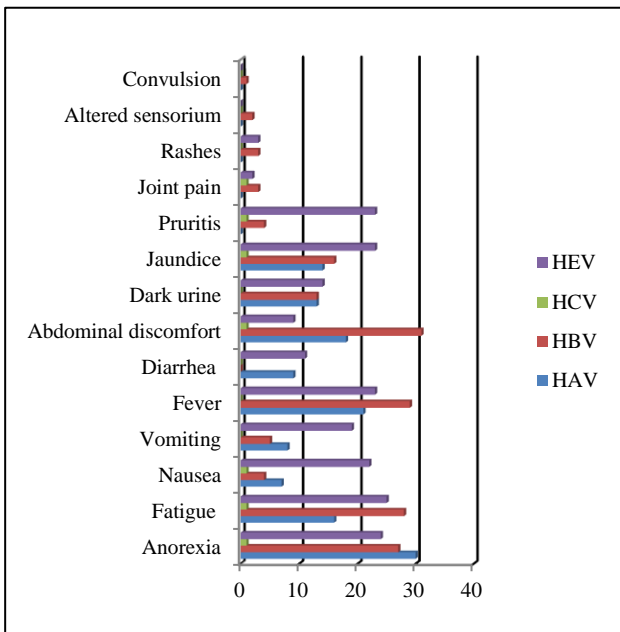
**Figure 2: Age wise distribution according to etiological pattern.**

Majority cases of viral hepatitis are male in all types of viral hepatitis. In hepatitis A, B, C and E male were 19 (57.5%); 28 (65.1%); 1 (100%) and 17 (58.6%) respectively (Table 1).

**Table 1: Sex wise distribution of study participants on the basis of etiological pattern.**

Sex	HAV (%) (n: 33)	HBV (%) (n: 43)	HCV (%) (n:01)	HEV (%) (n:29)
Male	19 (57.5%)	28 (65.1%)	1 (100%)	17 (58.6%)
Female	14 (42.5%)	15 (34.9%)	0	12 (41.4%)

Anorexia was the most common symptom present in all types of hepatitis; followed by fatigue; nausea and vomiting. Dark urine and jaundice were also common. Other different nonspecific symptoms are also mentioned in the (Figure 3).



**Figure 3: Symptoms among study participants.**

**Table 2: Clinical signs among study participants.**

Sign	HAV (%) (n: 33)	HBV (%) (n: 43)	HCV (%) (n:01)	HEV (%) (n:29)
Icterus	12 (36.3%)	39 (90.7%)	01 (100%)	13 (44.8%)
Pallor	06 (18.1%)	22 (51.1%)	01 (100%)	05 (17.2%)
Hepatomegaly	11 (33.3%)	38 (88.3%)	01 (100%)	14 (48.2%)
Splenomegaly	00	01 (2.3%)	00 (100%)	00
Edema	00	12 (27.9%)	01 (100%)	00

Icterus; pallor and hepatomegaly were present in all types of viral hepatitis cases. Icterus was the most common clinical sign among cases. Some uncommon manifestations like splenomegaly and edema were also found in hepatitis B and C cases (Table 2).

**Table 3: Haematological profile among study participant.**

Parameter	HAV (%) (n: 33)	HBV (%) (n: 43)	HCV (%) (n:01)	HEV (%) (n:29)
<b>Hemoglobin (gm%)</b>				
<10 gm%	10 (30.3%)	12 (27.9%)	01 (100%)	09 (31.1%)
>10 gm%	23 (69.6%)	31 (72.1%)	00	20 (68.9%)
<b>Platelet count (× 10<sup>4</sup>/cmm)</b>				
>1.5 lakh	31 (93.9%)	39 (90.7%)	01 (100%)	28 (96.5%)
<1.5 lakh	02 (6.1%)	04 (9.3%)	00	01 (3.4%)
<b>Total leukocyte count (TLC) (μL)</b>				
<4000	01 (3.3%)	02 (4.6%)	00	05 (17.2%)
4000-11000	29 (87.8%)	35 (81.4%)	01 (100%)	19 (65.5%)
>11000	03 (9.1%)	06 (1.9%)	00	05 (17.2%)

Haemoglobin level (<10 gm%) seen in 10 (30.3%); 12 (27.9%); 1 (100%) and 9 (31.03%) in hepatitis A; B; C and E respectively. Thrombocytopenia (platelet count <1.5 lakh) were observed in 02 (6.06%); 04 (9.3%); 1 (3.44%) in hepatitis A, B, and E respectively. Leukopenia (TLC count <4000/μL) was seen in 01 (3.03%); 02 (4.6%) and 05 (17.2%) cases of hepatitis A; B and E respectively (Table 3).

**Table 4: Serum bilirubin among study participants.**

Parameter	HAV (%) (n: 33)	HBV (%) (n: 43)	HCV (%) (n:01)	HEV (%) (n:29)
<b>Serum bilirubin (total)</b>				
0.2-1(mg/dl)	00	07 (16.3%)	00	00
>1(mg/dl)	33 (100%)	36 (83.7%)	01 (100%)	29 (100%)
<b>Serum bilirubin (direct)</b>				
0.3-0.8(mg/dl)	00	09 (20.9%)	00	00
>0.8(mg/dl)	33 (100%)	34 (79.1%)	01 (100%)	29 (100%)

Total serum bilirubin and direct sr. bilirubin (mg/dl) was raised in all cases of hepatitis A and E. In hepatitis B, total and direct serum bilirubin was raised in 36 (83.7%) and 34 (79.1%) respectively (Table 4).

Raised SGPT and SGOT were observed in all cases of hepatitis A and E. Among 43 cases of hepatitis B cases SGPT and SGOT was raised in 32 (74.4%) and 31 (72.1%) respectively (Table 5).

**Table 5: SGPT and SGOT among study participants.**

Parameter	HAV (%) (n: 33)	HBV (%) (n: 43)	HCV (%) (n:01)	HEV (%) (n:29)
<b>SGPT(IU/L)</b>				
0-40(IU/L)	00	11 (25.6%)	00	00
>40(IU/L)	33 (100%)	32 (74.4%)	01 (100%)	29 (100%)
<b>SGOT(IU/L)</b>				
0-40(IU/L)	00	12 (27.9%)	00	00
>40(IU/L)	33 (100%)	31 (72.1%)	01 (100%)	29 (100%)

Raised serum globulin and low sr. albumin was observed in 04 (12.12%) and 01 (3.44%) of hepatitis A and E cases respectively. Raised alkaline phosphate was observed in 27 (81.8%); 25 (58.1%) and 16 (55.2%) cases of hepatitis A; B and E respectively. Raised prothrombin time (sec) was observed in 12 (36.4%); 11(25.5%); 1(100%) and 09 (31.1%) of Hepatitis A; B; C and E cases respectively (Table 6).

**Table 6: Biochemical parameters among study participants.**

Parameter	HAV (%) (n: 33)	HBV (%) (n: 43)	HCV (%) (n:01)	HEV (%) (n:29)
<b>Serum albumin (gm %)</b>				
3.5-4.5gm%	29 (87.8%)	29 (67.4%)	01 (100%)	28 (96.5%)
<4.5gm%	04 (12.2%)	14 (32.5%)	00	01 (3.5%)
<b>Serum globulin (gm %)</b>				
2.5-3.5gm%	29 (87.8%)	30 (69.7%)	01 (100%)	28 (96.5%)
>3.5gm%	04 (12.2%)	13 (30.2%)	00	01 (3.5%)
<b>Alkaline phosphates (IU/L)</b>				
25-90IU/L	00	02 (4.7%)	00	00
>90IU/L	06 (18.2%)	16 (37.2%)	01 (100%)	13 (44.8%)
>180IU/L	27 (81.8%)	25 (58.1%)	00	16 (55.2%)
<b>Prothrombin time (sec)</b>				
<15	21 (63.6%)	32 (74.5%)	00	20 (68.9%)
>15	12 (36.4%)	11 (25.5%)	01 (100%)	09 (31.1%)

## DISCUSSION

In this study, among 106 hepatitis cases, majority were hepatitis B 43 (40.5%), followed by hepatitis A 33 (31.3%), hepatitis E 29 (27.3%) and Hepatitis C 1 (0.9%). Similarly, other study done by Dabadghao et al found among forty hepatitis cases, majority were hepatitis E (45%), followed by hepatitis A, hepatitis B and hepatitis C.<sup>4</sup> Similar results seen by Acharya SK et al and Chandra NS et al.<sup>5,6</sup> In Maharashtra, India the incidence of hepatitis A and E is increasing over the years. National Institute of Virology found an alarming increase in prevalence of hepatitis A and E in Mutha River, Pune, Maharashtra, India over the last 8 years.<sup>4</sup>

Recently a study conducted in India by Irshad M et al observed that hepatitis A infection is a common infection in children.<sup>7</sup> Shapiro et al reported that in developing countries and some regions of developed countries, sanitary conditions are variable, and transmission can predominate in children, adolescents or adults, depending on the geographic region.<sup>8</sup> In present study maximum number of hepatitis B cases were cases from 21-40 years of age. Study done by Tandon BN et al found that hepatitis B virus was noted as the next most important cause of hepatitis in adults in this study.<sup>9</sup> A total of 42% of cases of sporadic viral hepatitis in adults were caused by HBV, while only 9% of the children with this disease had HBV infection. Studies done by Tandon et al 26%; Dharmadhikari et al 21.6% karim et al and Ichhpujani et al 8.8% reported incidence of 62% of hepatitis B virus infection in adults.<sup>10-12</sup> However in the study done by Kamat S et al the prevalence of Hepatitis B infection gradually decreased with age from 34.9% in 15-30 years age group to 13.4% in patients older than 45 years of age.<sup>14</sup>

In present study, out of 29 cases of hepatitis E majority of cases were 12 (41.3%) from 21 to 40 years of age. In the study done by Modi et al, the youngest patient was a child of 12 years age and the oldest patient was a 67-year-old male.<sup>15</sup> Study done by Chakrabarti et al also reported that the maximum number of hepatitis E patients in this study was clustered between the ages of 21-30 (33.3%).<sup>16</sup> In adults, hepatitis E virus infection was found to be more common, 14 cases (29.8%) in study done by TM Laxmi et al.<sup>17</sup> Males were more affected compared to females in this study in viral hepatitis cases. Similar finding was also observed in a study conducted by Zhang et al who studied clinical features and risk factors with a large number of sporadic hepatitis patients.<sup>18</sup> Of the two hundred and ten patients, 85.2% were male. In the study done by Dabadghao et al males were more affected compared to females (70%).<sup>4</sup> Similar observation was also observed by Modi et al and Chakrabarti et al.<sup>15,16</sup>

In study done by Dabadghao et al in 40 patients of HAV found fever, malaise, generalized weakness and yellow discoloration of eyes as common symptoms of hepatitis.<sup>4</sup> Study conducted by Zhang et al also observed that the

common clinical symptoms were jaundice (85.7%), fatigue (70.5%) and anorexia (64.8%).<sup>18</sup> In present study 33 cases of hepatitis A showed fever in 21 (63.6%); anorexia 30 (90.9%) and diarrhoea 9 (27.7%). Similar results were shown by study done by Tong et al.<sup>19</sup>

In present study regarding serum bilirubin higher level was observed in all types of viral hepatitis. Study done by Ashraf-uz-zaman et al and Anand B et al showed similar pattern of variations of serum bilirubin of viral hepatitis.<sup>20,21</sup> Study done by Tong et al showed that the mean presenting laboratory tests from 59 hepatitis A patients, included total bilirubin of 5 mg/dL (mean peak. 7 mg/dL), alkaline phosphatase of 269 units/L (mean peak. 319 units/L), AST of 1442 mIU/ mL (mean peak. 1754 mIU/mL) and ALT of 1952 mIU/ mL.<sup>19</sup> Atypical lymphocytes were noted in 7% of the patients. Similar results were observed in the study done by Chakrabarti et al which showed 90.7% of patients had deranged total bilirubin at the time of admission.<sup>16</sup> Kivel mentioned that Leukopenia, atypical lymphocytes and macrocytosis are three characteristic, if not pathognomonic, findings.<sup>22</sup> In the study done by Rahman et al, out of 79 positive males, 3, 21 and 9 patients were found to have elevated bilirubin, ALT and AST levels, consecutively.<sup>23</sup>

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*Ethical approval: The study was approved by the institutional ethics committee*

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