

CLINICAL PROFILE OF ACUTE VIRAL HEPATITIS PATIENTS AT A TERTIARY CARE HOSPITAL IN NORTHERN INDIA- AN OBSERVATIONAL STUDY

Rajesh Kumar Arya¹, Sudhir Kumar Verma², Vivek Kumar³, Satyendra Kumar Sonkar⁴, Ajay Kumar⁵, Harish Gupta⁶, Satish Kumar⁷, Durga Prasad Verma⁸

¹Assistant Professor, Department of General Medicine, Government Medical College, Orai, Jalaun, India.

²Assistant Professor, Department of General Medicine, King George's Medical University, Lucknow, India.

³Professor, Department of General Medicine, King George's Medical University, Lucknow, India.

⁴Professor, Department of General Medicine, King George's Medical University, Lucknow, India.

⁵Associate Professor, Department of General Medicine, King George's Medical University, Lucknow, India.

⁶Assistant Professor, Department of General Medicine, King George's Medical University, Lucknow, India.

⁷Senior Resident, Department of General Medicine, King George's Medical University, Lucknow, India.

⁸Junior Resident, Department of General Medicine, King George's Medical University, Lucknow, India.

ABSTRACT

BACKGROUND

Acute viral hepatitis is a common cause of acute jaundice in India. Every year, we are getting outbreaks of viral hepatitis, most commonly in rainy season, leading to significant morbidity and mortality. Therefore, it is important to carry out an observational study to know the demographic profile, aetiology, clinical features, complications and mortality of viral hepatitis patients, so that appropriate measures can be taken to rectify deficits in the management of such patients for better outcome.

MATERIALS AND METHODS

This study was an observational study conducted in Department of Medicine, King George's Medical University, Lucknow, India for a period of three months in rainy season from July 2018 to September 2018. Patients' data was analysed for age, sex, occupation, address, clinical features, complications and outcome.

RESULTS

100 cases consisting of 56 males and 44 females were enrolled in the present study. The mean age of admitted patients was 33±14 years. 65 cases were from urban and 35 cases were from rural areas. Most of the patients belonged to low socio-economic status. Common presenting complaints were nausea, vomiting, yellowish discoloration of eyes and urine, fever, fatigue, loss of appetite and upper abdominal pain. Most common signs were icterus followed by tender hepatomegaly. Virology suggested that hepatitis E was the most common virus detected followed by hepatitis A, B and C. Co-infection with hepatitis A and E was observed in 8 patients leading to higher morbidity and mortality. Hepatic encephalopathy and haematuria was observed in 20 and 6 patients respectively. All patients were managed conservatively, and most patients were discharged in satisfactory condition. In spite of our best efforts, 27 patients expired.

CONCLUSION

Acute viral hepatitis is a public health problem causing significant morbidity and mortality. Most of the patients had hepatitis E and A, which are transmitted through faeco-oral route. Longer duration of symptoms, deeper level of coma in hepatic encephalopathy, bleeding manifestations, higher TLC, PT, INR, urea and creatinine are associated with higher mortality rate. So, public awareness programmes to maintain hygiene, clean drinking water, use of sanitary toilets and vaccination against hepatitis B and A should be promoted by the health care professionals.

KEYWORDS

Acute Hepatitis, Hepatotropic Viruses, Clinical Profile, Health Problem.

HOW TO CITE THIS ARTICLE: Arya RK, Verma SK, Kumar V, et al. Clinical profile of acute viral hepatitis patients at a tertiary care hospital in Northern India- an observational study. J. Evid. Based Med. Healthc. 2019; 6(6), 384-388. DOI: 10.18410/jebmh/2019/80

Financial or Other, Competing Interest: None.
Submission 25-01-2019, Peer Review 28-01-2019,
Acceptance 04-02-2019, Published 11-02-2019.

Corresponding Author:
Dr. Sudhir Kumar Verma,
Assistant Professor,
King George's Medical University,
Lucknow, India.

E-mail: sudhirkgmu@gmail.com
DOI: 10.18410/jebmh/2019/80



BACKGROUND

Acute viral hepatitis is a public health problem in India causing significant morbidity and mortality. Every year, we face outbreaks of acute viral hepatitis commonly in rainy season, imposing physical and financial burden to the healthcare sector. Therefore, we carried out an observational study to know the demographic profile, aetiology, clinical features, complications and mortality of viral hepatitis patients, so that appropriate measures can be

taken to rectify deficits in the management of such patients for better outcome.

Hepatitis is defined as inflammation of the liver parenchyma caused by mainly five types of hepatotropic viruses (hepatitis A, B, C, D and E). In developing countries such as India, although there is improvement in health awareness, sanitation and socioeconomic condition,¹ acute viral hepatitis is still common because of lack of public awareness about hygiene, availability of safe drinking water and traditional practices of defecating in open fields. Viral hepatitis have a wide range of clinical spectrum with entirely subclinical and in apparent infection to rapidly deteriorating fulminant hepatitis.² India is hyper-endemic for two hepatotropic viruses named hepatitis A virus (HAV) and hepatitis E virus (HEV).³ 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.⁴

Faecal-oral route of spread is found in two of the hepatitis viruses HAV and HEV while other three hepatitis viruses (hepatitis B virus (HBV), hepatitis C virus (HCV), and hepatitis D virus (HDV)) spread mainly through parenteral/haematological route. HBV and HCV are notorious for causing chronic hepatitis and its complications like liver cirrhosis and hepatocellular carcinoma.

All five hepatotropic viruses may cause an acute illness/acute hepatitis which is characterized by fever, jaundice, nausea, malaise, and abdominal pain. In India and worldwide most common cause of fulminant hepatitis in children is HAV while HEV is predominant in adults.⁵ Large outbreaks and epidemics in India with high attack rate and mortality in pregnancy is associated with HEV.⁶

MATERIALS AND METHODS

This study was an observational study conducted in the department of Medicine, King George’s Medical University, Lucknow, India for a period of three months in rainy season from July 2018 to September 2018. Patient’s data was analysed for age, sex, occupation, address, clinical features, complications and outcome.

Inclusion Criteria

Patients above 18 years presenting with clinical symptoms suggestive of hepatitis of less than 4 weeks with raised level of transaminases (SGOT, SGPT, serum alkaline phosphatases (SALP)); and positivity of serological markers for HAV, HBV, HCV, and HEV.

Exclusion Criteria

Following patients were excluded from the present study:

1. Patients with clinical symptoms of more than one month.
2. Patients of chronic liver disease.
3. Subjects with non-viral causes of hepatitis including autoimmune, toxic/drug-induced hepatitis, and fatty liver.
4. Subjects reluctant to give consent.

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).

Statistical Analysis

Statistical analysis was performed using SPSS version 20.0. Continuous variables were presented as mean ± SD and frequency (%) were given for categorical variables. Chi-square test was used for testing of association. P value of <0.05 was considered as statistically significant.

RESULTS

We enrolled 100 patients in our study, out of which 56 (56%) were male and 44(44%) were female, with male to female ratio of 1.27:1. Cases were diagnosed by serological confirmation. All patients were managed conservatively and most of the patients were discharged in satisfactory condition. However, despite our best efforts, 27 patients died during treatment. Table 1 depicts distribution of hepatotropic viruses in our study population.

Hepatotropic Viruses	Number of Patients (n=100)	Percentage
HAV	28	28%
HEV	44	44%
HBV	26	26%
HCV	2	2%
HAV + HEV both	8	8%

Table 1. Distribution of Hepatotropic Viruses in Study Population

Most of the cases were due to hepatitis E virus followed by hepatitis A virus.

The age wise distribution of enrolled patients is shown in Table 2. It shows that patient between 20 to 40 years were mostly affected (58%). The mean age of enrolled patients was 33±14.34 years.

Age	No. of Viral Hepatitis Cases	Percentage
13-19 Years	20	20%
20-40 Years	58	58%
>40 Years	22	22%

Table 2. Age Wise Distribution of Enrolled Patients

Table-3 shows sex wise distribution of study participants among hepatotropic viruses. Male were on higher side in number than female in most types of viral

hepatitis (HAV, HBV and HCV). However, among hepatitis E patients females were more affected than males.

Viral Hepatitis	Gender Wise Distribution	Percentage of Males Among Hepatotropic Viruses
HAV	14 Males + 14 Females	50%
HBV	22 Males + 4 Females	84.61%
HCV	2 Males	100%
HEV	18 Males + 26 Females	41%

Table 3. Sex Wise Distribution of Study Participants Among Hepatotropic Viruses

Among enrolled patients, yellowish discolouration of eyes and urine (99.1%), loss of appetite (98%), fatigue (89%), nausea and vomiting (80%), upper abdominal pain (67%) was the common presenting symptom. Previous history of jaundice was found in 4.7% of patients only. Hepatomegaly and splenomegaly were observed in 18% and 5% respectively while hepatosplenomegaly was seen in 2% of the patients.

Most common complication of acute hepatitis was hepatic encephalopathy which was observed in 20 patients (20%) followed by hematuria in 6 (6%). A total of 27 patients expired despite of our best efforts.

Sl. No.	Characteristics	Expiry (n=27)		Discharge (n=73)		Statistical Significance	
		Mean	SD	Mean	SD	t'	p'
1	Haemoglobin	10.02	1.76	10.40	1.95	-0.838	0.404
2	TLC	15380.37	10657.09	10123.85	4290.55	3.117	0.003
3	Neutrophil	76.19	8.50	72.31	9.20	1.822	0.072
4	Lymphocyte	18.44	7.81	21.46	8.96	-1.481	0.143
5	Platelet Count	1.71	0.87	1.45	0.64	1.515	0.134
6	S. Bilirubin	14.48	10.51	11.38	7.11	1.556	0.124
7	SGPT	570.07	700.44	532.09	764.79	0.215	0.830
8	SGOT	362.93	369.16	476.66	580.32	-0.924	0.358
9	SALP	573.78	439.83	425.42	329.00	1.690	0.095
10	S. Protein	6.17	0.91	6.45	0.77	-1.420	0.160
11	S. Albumin	2.90	0.79	2.98	0.61	-0.471	0.639
12	PT	27.90	19.67	19.11	9.57	2.628	0.010
13	INR	2.74	2.37	1.73	1.16	2.518	0.014
14	Na	142.68	12.24	138.98	8.72	1.516	0.134
15	K	3.68	1.24	3.88	0.91	-0.809	0.421
16	Urea	60.12	42.13	41.13	22.97	2.598	0.011
17	Creatinine	1.78	1.31	1.24	1.03	2.011	0.048

Table 4. Comparison Between Haematological and Biochemical Profile Among Expired and Discharged Patients

Table 4 shows a significant higher values of total leucocyte count, prothrombin time, INR and urea in expired patients as compared to discharged patients.

Hepatic parameters like total serum bilirubin and direct serum bilirubin (mg/dl), SGPT& SGOT were elevated in all patients of hepatitis A, B, C and E.

Elevated level of SALP was found in 12 (42.85%); 16(61.5%) and 32 (72.7%) cases of hepatitis A, B and E respectively. Raised PT was seen in 24(85.7%), 20(77%), 2(100%) and 30(68%) of Hepatitis A, B, C and E cases respectively. Renal function was deranged in 14 (50%), 8 (30.76%), 2(100%), and 14(32%) patients of hepatitis A, B, C and E respectively.

Table 5 shows association of various clinical variables with outcome in enrolled patients.

Sl. No.	Characteristics	Expiry (n=27)		Discharge (n=73)		Statistical Significance	
		Mean	SD	Mean	SD	t'	p'
1.	Mean Glasgow Scale (GCS)	14.23	4.83	10.85	2.20	-4.276	<0.001
		No.	%	No.	%	χ^2	p'
2.	Bleeding					13.96	0.007
	No Bleeding	18	66.7	70	94.2		
	Haematuria	4	7.4	2	1.9		
	Upper Gastro Intestinal Bleed	4	14.8	1	1.9		

	Gum Bleed	0	0.0	1	1.9		
	Sub Conjunctival Haemorrhage	3	11.1	0	0.0		
3.	Mean Duration of Jaundice \pm SD	20.81	9.13	14.04	7.06	3.653	<0.001

Table 5. Association of Various Clinical Variables with Outcome

Table 5 shows higher scores of Glasgow coma scales, bleeding manifestation and duration of jaundice in expired patients as compared to discharge patients

DISCUSSION

In present study of 100 viral hepatitis cases, maximum (44%) cases were of hepatitis E, followed by hepatitis A(28%), hepatitis B (26%) and hepatitis C (2%). Similar finding was also observed in study done by Dabadghao et al & Chandra NS et.al. where most of cases were hepatitis E followed by hepatitis A, hepatitis B and hepatitis C.^{7,8} Coinfection with HAV+HEV was found in 8 cases leading to higher morbidity and mortality of 5(62.5%) patients. Study done by Arora et al. found that mixed infection with HAV and HEV causes maximum chances of acute liver failure (ALF) in children (60%).⁹

Most of the cases were from rural background which lack safe drinking water and sanitation Similar findings were also found by Shapiro et al, that sanitary conditions are variable in developing countries like India and some regions of developed countries, where spread of infection is on higher side in children, adolescents or adults, on the basis of the geographic area.¹⁰

In this study, maximum cases of hepatitis E were 24 (54.54%), in the age group of 21 to 40 years among all 44 patients. Modi et al, reported that 12 years was the minimum age of participants and 67 was the oldest case in his study.¹¹ Study done by Chakrabarti et al also found that the majority of hepatitis E cases were seen between ages of 21-30 (33.3%).¹² Males were more infected with viral hepatitis than females which is also reported by Zhang et al, Dabadghao et al, Modi et al and Chakrabarti et al.^{11,12,13} The increased prevalence of viral hepatitis in young males were probably due to increased travelling outside for employment.

Mean duration of jaundice was 20.81 \pm 9.13 days in expired cases while it was 14.04 \pm 7.06 days in discharged cases. Hence, increased duration of jaundice is significantly associated with worse outcome (p<0.001).

Total leucocyte count, prothrombin time, international normalised ratio (INR), blood urea, and serum creatinine all were significantly higher in expired cases and was significantly associated with higher mortality rate. Similarly, serum bilirubin and transaminases were higher in expired cases although non-significant.

Bleeding manifestation like haematuria, hepatic encephalopathy (p<0.001), and longer hospital stay (p<0.001) were significantly higher in expired cases.

CONCLUSION

Viral hepatitis is a major public health problem in India. In the present study, hepatitis E was observed in most cases followed by hepatitis A, hepatitis B and C. Longer duration of symptoms, deeper level of coma in hepatic encephalopathy, bleeding manifestations, higher TLC, PT,

INR, urea and creatinine are associated with higher mortality rate. Most of the patients were from rural background and low socioeconomic status who lack safe drinking water and good sanitation habits. So, 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. Vaccination for HAV and HBV should be promoted, so that we can prevent morbidity, complications and mortality by viral hepatitis.

REFERENCES

- [1] Nandi B, Hadimani P, Arunachalam R, et al. Spectrum of acute viral hepatitis in southern India. *Med J Armed Forces India* 2009;65(1):7-9.
- [2] Tong MJ, el-Farra NS, Grew MI. Clinical manifestations of hepatitis A: recent experience in a community teaching hospital. *J Infect Dis* 1995;171(Suppl 1):S15-S18.
- [3] Acharya SK, Batra Y, Bhatkal B, et al. Seroepidemiology of hepatitis A virus infection among school children in Delhi and north Indian patients with chronic liver disease: implications for HAV vaccination. *J Gastroenterol Hepatol* 2003;18(7):822-827.
- [4] Satsangi S, Dhiman RK. Combating the wrath of viral hepatitis in India. *Indian J Med Res* 2016;144(1):1-5.
- [5] Aydogdu S, Ozgenç F, Yurtsever S, et al. Our experience with fulminant hepatic failure in Turkish children: etiology and outcome. *J Trop Pediatr* 2003;49(6):367-370.
- [6] Viral hepatitis in the countries of the World Health Organization South-East Asian Region, Regional strategy for the prevention and control of viral hepatitis. WHO 2013:p. 11-14.
- [7] Dabadghao V, Barure R, Sharma S, et al. A study of the clinical and biochemical profile of acute viral hepatitis. *Int J Biomed Adv Res* 2015;6(10):689-693.
- [8] Chandra NS, Sharma A, Rai RR, et al. Contribution of hepatitis E virus in acute sporadic hepatitis in North Western India. *Indian J Med Res* 2012;136(3):477-482.
- [9] Arora NK, Nanda SK, Gulati S, et al. Acute viral hepatitis types E, A and B singly and in combination in acute liver failure in children in north India. *J Med Virol* 1996;48(3):215-221.
- [10] Shapiro CN, Margolis HS. Worldwide epidemiology of hepatitis A virus infection. *J Hepatol* 1993;18(Suppl 2):S11-S14.

- [11] Modi TN, Patel SA, Mirani KM, et al. A study of clinical profile and outcome in acute viral hepatitis E. *Indian J Clin Pract* 2013;23(10):635-637.
- [12] Chakrabarti K, Ballala K, Rao K, et al. A study to assess the clinical and biochemical profile of patients diagnosed with hepatitis E in a large teaching hospital of Southern India. *Asian J Pharm & Clin Res* 2016;9(2):84-89.
- [13] Zhang S, Wang J, Yuan Q, et al. Clinical characteristics and risk factors of sporadic Hepatitis E in Central China. *Virology* 2011;8:152.