SAS Journal of Medicine
Abbreviated Key Title: SAS J Med
ISSN 2454-5112
Journal homepage: https://saspublishers.com

OPEN ACCESS

Gastroenterology

Demographic and Clinical Profile Analysis of Acute Viral Hepatitis: An Ultra-Sonographic Evaluation in Bangladesh

Dr. Mohammed Shafiqul Islam Bhuiyan[1*], Dr. Mohammad Sofiul Kadir[2], Dr. Md. Shahidur Rahman[3], Dr. Mohammad Jakir Hossain[4], Dr. Mohammad Abu Faisal[5], Md. Rafiqul Islam[6], Dr. Jannatul Ferdous Suma[7]

[1]Associate Professor of Gastroenterology, US-Bangla Medical College Hospital, Bangladesh
[2]Assistant Professor of Gastroenterology, Sheikh Hasina Medical College Hospital, Tangail, Bangladesh
[3]Assistant Professor of Gastroenterology, Mymensingh Medical College Hospital, Mymensingh, Bangladesh
[4]Associate Professor of Gastroenterology, Sir Salimullah Medical College and Mitford Hospital, Bangladesh
[5]Assistant Professor of Gastroenterology, Cox's bazar Medical College Hospital, Bangladesh
[6]Assistant Professor of Gastroenterology, Patuakhali Medical College Hospital, Patuakhali, Bangladesh
[7]Assistant Registrar, Gynecology and Obstetrics, Victoria General Hospital, Narayanganj, Bangladesh

DOI: 10.36347/sasjm. 2023.v09i05.025 | **Received:** 02.04.2023 | **Accepted:** 08.05.2023 | **Published:** 24.05.2023

***Corresponding author:** Dr. Mohammed Shafiqul Islam Bhuiyan
Associate Professor of Gastroenterology, US-Bangla Medical College Hospital, Bangladesh
Orcid Id: https://orcid.org/0000-0002-8891-0302

Abstract **Original Research Article**

Background: Acute viral hepatitis (AVH) is a major public health issue throughout the world which affecting millions of people in every year. Clinical features of AVH may vary from asymptomatic to hepatitis, liver failure, cirrhosis and even cancer. The role of ultrasound in acute viral hepatitis (AVH) is limited to exclude the surgical causes of jaundice. A clear concept on the demographic and clinical profile of acute viral hepatitis may be helpful in the treatment procedure of this disease. ***Aim of the study:*** The aim of this study was to analyze the demographic and clinical profile of acute viral hepatitis patients based on sonographic findings. ***Methods:*** This was a prospective observational study which was conducted in the Department of *Gastroenterology*, US-Bangla Medical College & Hospital, Dhaka, Bangladesh during the period from January 2019 to December 2019. Along with other diagnosis, ultrasonography was considered as principal diagnosis for the inclusion of study subjects. As per the exclusion criteria of this study, patients detected to have HBV infection or with gall stone were excluded from the study. Sonographic data were collected and tabulated in an Excel sheet and was analyzed using IBM-SPSS version 22.0 to determine the means and proportions. Chi-squared test was done to compare the ultrasound findings. $P<0.05$ were considered to indicate a statistically significant difference. ***Results:*** In this study, among majority of our participant's spleen was found as normal in size which was in 96% cases. In only 4% cases splenomegaly was found. In the final ultrasonogram report of our participants we observed that, among a good number of patients, hepatomegaly, GBW thickening and contracted GB were found which were in 79%, 75% and 56% cases respectively. Besides these, porta nodes, splenomegaly and periportal cuffing were associated in 35%, 15% and 13% cases respectively. ***Conclusion:*** The ultrasonographic findings of hepatomegaly, contracted gallbladder, enlarged porta hepatis nodes and GB wall thickening are significant and suggesting a role of ultrasound in the early diagnosis of acute viral hepatitis.

Keywords: Demographic, Clinical profile, Acute viral hepatitis, AVH, Ultrasonography.

INTRODUCTION

Clinical features of AVH may vary from asymptomatic to hepatitis, liver failure, cirrhosis and even cancer. The role of ultrasound in acute viral hepatitis (AVH) is limited to exclude the surgical causes of jaundice. Acute viral hepatitis (AVH) continues to be a major health issue worldwide especially in developing countries caused viruses either hepatitis A, B, C, D and E and these agents can be distinguished by their molecular as well as antigenic properties [1, 2]. Hepatitis A and E are transmitted by orofecal route and are endemic in many developing countries which is responsible for both sporadic as well as epidemic acute viral hepatitis (AVH) and does not lead to chronicity but may have two atypical courses i.e. relapsing hepatitis and prolonged cholestasis [3]. On the other hand, hepatitis E which commonly affects older children as well as adults resulting in symptoms and also pregnant women [4]. Hepatitis B is transmitted via

blood and/or blood products or by sexual or perinatal exposure and clinical features differs from asymptomatic infection to cholestasis hepatitis with jaundice and cirrhosis and chronic hepatitis [5]. Improvement in hygiene or sanitation and socioeconomic conditions leads to decrease the number of viral infections like (AVH) [6]. Now a day, an increase in susceptible adults with an associated increased proportion of clinical disorders is noted, especially acute viral hepatitis A [7]. The vaccination against hepatitis A and B may play a vital role in preventing AVH (Acute viral hepatitis). [8] HDV demographics are still not well known and possibly underestimated [9]. According to the WHO (World Health Organization), approximately 12 million individuals are coinfected with HDV worldwide [10]. However, a recent meta-analysis [11] reported to a much higher prevalence.

OBJECTIVE

General Objective:

The general objective of the study was to analyze demographic and clinical profile of acute viral hepatitis based on sonographic findings.

Specific Objective:

- To assess the demographic status of participants.
- To accumulate the ultrasonographic findings on liver, biliary trees, gall bladder and spleen of the participants.
- To evaluate the final reports of participants as per ultrasonogram.

METHODOLOGY

This was a prospective observational study which was conducted in the Department of *Gastroenterology*, US-Bangla Medical College & Hospital, Dhaka, Bangladesh during the period from January 2019 to December 2019. A total of 52 confirmed cases of acute viral hepatitis were enrolled as the distended or empty GB in the fasting state indicated the reduced volume of the GB. Sonographic data were collected and tabulated in an Excel sheet was analyzed using IBM -SPSS version 22.0 to determine the means and proportions. Chi-squared test was done to compare the ultrasound findings. $P<0.05$ were considered to indicate a statistically significant difference.

RESULTS

In this study, among total 52 participants, 83% were male whereas the rest 17% were female. So male participants were dominated in number and the male-female ratio was 4.8:1. The mean age of the participants was 23.60±14.31 years and about one-third (35%) were found from 11-20 year's age group. Among 100% of our participants, liver was found as normal in size. In this study, in analyzing the biliary trees status of our participants as per the findings of ultrasonogram we observed that, extrahepatic biliary trees were in 62.5% cases and Intrahepatic biliary trees were in 37.5% cases. In assessing gall bladder status of patients, we found GBW thickening, normal size of GB and contracted GB were found as some major features. Among majority of our participant's spleen was found as normal in size which was in 96% cases. In only 4% cases splenomegaly was found. In this study, in the final ultrasonogram report of our participants we observed that, among a good number of patients, hepatomegaly, GBW thickening and contracted GB were found which were in 79%, 75% and 56% cases respectively. Besides these, porta nodes, splenomegaly and periportal cuffing were associated in 35%, 15% and 13% cases respectively.

Table 1: Demographic status of participants (N=52)

Characteristics	n	(%)
Gender distribution		
Male	43	82.7
Female	9	17.3
Age distribution		
5-10 yrs.	11	21.2
11-20 yrs.	18	34.6
21-30 yrs.	9	17.3
31-40 yrs.	4	7.7
>40 yrs.	10	19.2
Mean ±SD Age	23.60±14.31	

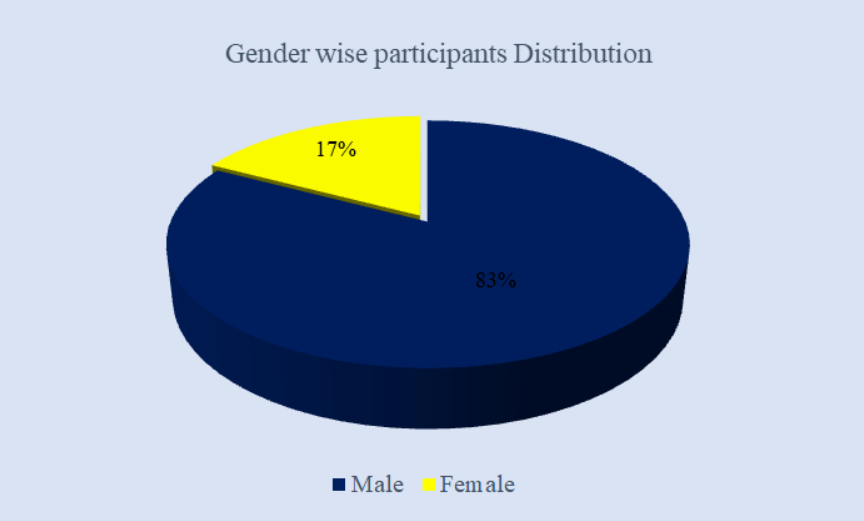

Figure I: Pie chart showed Sex wise participants. (N=52)

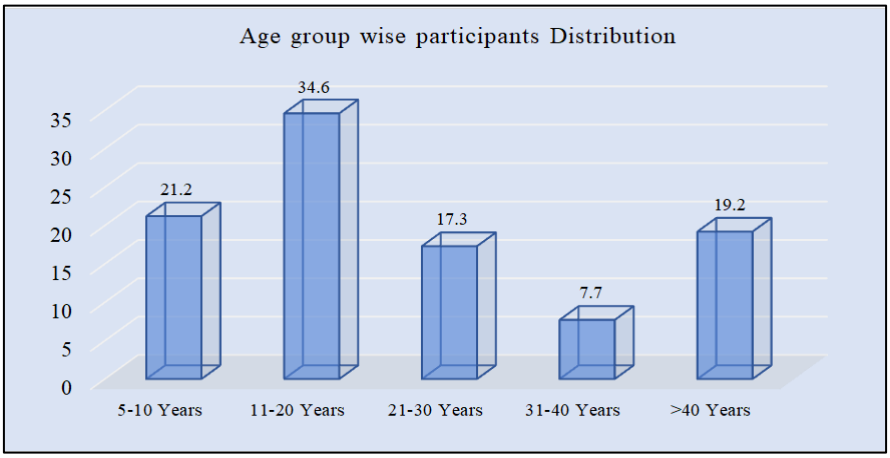

Figure II: Bar chart showed Age wise participants. (N=52)

Table 2: Status of liver as per ultrasonogram among participants (N=52)

Liver	n	(%)
Normal size	52	100%
Echotecture in liver	43	82.7%
Porta nodes	18	34.6%

Table 3: Biliary trees status as per the findings of ultrasonogram among patients (n=8)

Biliary trees	n	(%)
Extrahepatic	5	62.5%
Intrahepatic	3	37.5%

Table 4: Gall bladder status of patients (N=52)

Gall Bladder	n	(%)
GBW thickening	39	75%
Normal Size	38	73.1%
Contracted GB	29	55.8%
Pericholecystic collection	3	5.8%

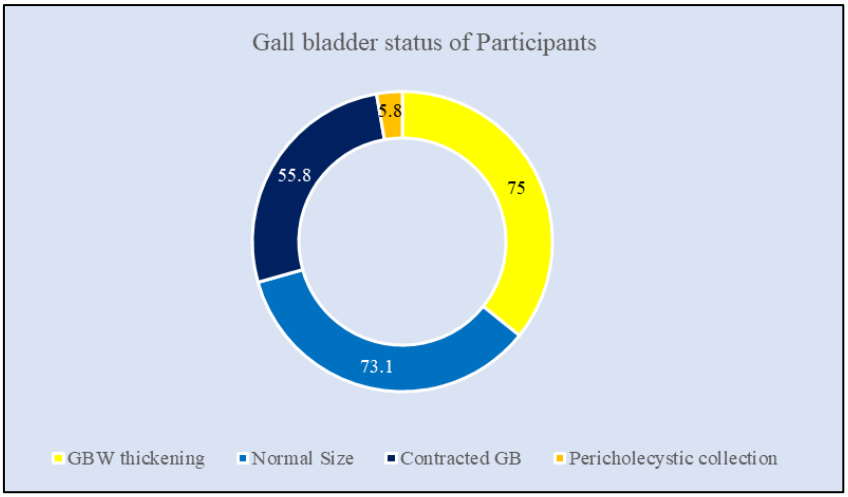

Figure III: Ring chart showed patients Gall bladder status. (N=52)

Table 5: Status of spleen among patients (N=52)

Spleen	n	(%)
Normal size	50	96.2
Splenomegaly	2	3.8

Table 6: Final reports of participants as per ultrasonogram (N=52)

Major findings	n	%
Hepatomegaly	41	79%
GBW thickening	39	75%
Contracted GB	29	56%
Porta nodes	18	35%
Splenomegaly	8	15%
Periportal cuffing	7	13%

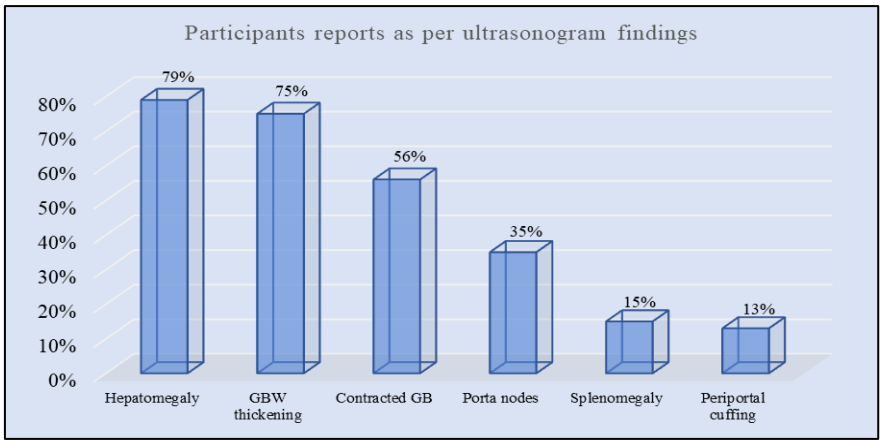

Figure IV: Bar chart showed per ultra-sonogram wise participants Final reports. (N=52)

DISCUSSION

The aim of this study was to form a demographic and clinical profile of acute viral hepatitis based on sonographic findings. There are definite sonographic features, that point toward the diagnosis of viral hepatitis even before the onset of clinical jaundice [14]. These sonographic features are seen for a period of 7 to 10 days from the onset of the symptoms [3]. Ultra-sonographic features which are observed in acute viral hepatitis (AVH) are hepatomegaly, contracted GB on fasting scans, GB wall thickening, splenomegaly, porta hepatitis nodes and periportal cuffing [14]. In this study, in the final ultrasonogram report of our participants we observed that, among a good number of patients, hepatomegaly, GBW thickening and contracted GB were found which were in 79%, 75% and 56% cases respectively. Besides these, porta nodes, splenomegaly and periportal cuffing were associated in 35%, 15% and 13% cases respectively. The slightly higher incidence of splenomegaly could be because of the measurement of spleen on ultrasound, whereas some other studies relied on clinical examination for

diagnosing splenomegaly [15]. In this study, the maximum splenic size recorded was 13.5 cm. GB abnormalities in acute viral hepatitis have been described in the literature [16]. In this study GBW thickening was seen in 75% cases. Sharma and Dasarathy [16] in their study, of acute viral hepatitis cases found GBW thickening in 98.2% of the cases. Contracted gallbladder in acute viral hepatitis (AVH) is also a transient finding just like GBW thickening and has been well documented in various series [17]. Enlarged porta hepatis lymph nodes have been reported as the most frequent ultrasound finding in acute viral hepatitis [18]. Porta nodes was found among 35% patients of our settings. But, Toppet et al. in their study, found enlarged porta hepatis nodes in all the cases [19]. The plausible reason for detection of porta hepatis nodes is reactive enlargement secondary to inflammation in the liver [19].

LIMITATION OF THE STUDY

This was a single centered study with a small sized sample. So, findings of this study may not reflect the exact scenario of the whole country.

CONCLUSION & RECOMMENDATION

The ultrasonographic findings of hepatomegaly, contracted gallbladder, enlarged porta hepatis nodes and GB wall thickening are significant and suggesting a role of ultrasound in the early diagnosis of acute viral hepatitis. So, ultrasonography should be carried out in all patients clinically suspected to have Acute viral hepatitis not only to rule out surgical obstructive jaundice but also to reinforce the diagnosis sometimes even before the clinical onset of jaundice. For getting more specific findings we would like to recommend for conducting similar more studies with larger sized samples in several places.

REFERENCES

1. Waheed, Y., Shafi, T., Safi, S. Z., & Qadri, I. (2009). Hepatitis C virus in Pakistan: a systematic review of prevalence, genotypes and risk factors. *World journal of gastroenterology: WJG*, *15*(45), 5647.
2. Han, S.H., Saab, S., & Martin, P. (2000). Acute Viral Hepatitis. *Curr Treat Options Gastroenterol*, 3(6): 481-486.
3. O'Connor, J.A. (2000). Acute and chronic viral hepatitis. *Adolesc Med*, 11(2): 279-92.
4. Cuthbert, J. A. (2001). Erratum: Hepatitis a: Old and new (clinical microbiology reviews (2001) 14: 1 (38-58)). *Clinical Microbiology Reviews*, *14*(3).
5. McIntyre, N. (1990). Clinical presentation of acute viral hepatitis. *British medical bulletin*, *46*(2), 533-547.
6. Jain, P., Nijhawan, S., Rai, R. R., Nepalia, S., & Mathur, A. (2007). Acute pancreatitis in acute viral hepatitis. *World journal of gastroenterology: WJG*, *13*(43), 5741.
7. Dolganiuc, A. (2015). Alcohol and viral hepatitis: role of lipid rafts. *Alcohol research: current reviews*, *37*(2), 299.
8. Kamar, N., Dalton, H. R., Abravanel, F., & Izopet, J. (2014). Hepatitis E virus infection. *Clinical microbiology reviews*, *27*(1), 116-138.
9. Vieira Barbosa, J., Sahli, R., Aubert, V., Chaouch, A., Moradpour, D., & Fraga, M. (2021). Demographics and outcomes of hepatitis B and D: A 10-year retrospective analysis in a Swiss tertiary referral center. *PLoS One*, *16*(4), e0250347.
10. Stockdale, A. J., Kreuels, B., Henrion, M. Y., Giorgi, E., Kyomuhangi, I., de Martel, C., ... & Geretti, A. M. (2020). The global prevalence of hepatitis D virus infection: systematic review and meta-analysis. *Journal of hepatology*, *73*(3), 523-532.
11. ChenHY, S. (2019). Prevalenceandburdenof hepatitisDvirusinfectionintheglobalpopulation: asystematic reviewandmeta analysis. *Gut*, *68*, 512-521.
12. World Medical Association. (2001) . World Medical Association Declaration of Helsinki. Ethical principles for medical research involving human subjects. Bulletin of the World Health Organization, 79 (4) , 373 - 374. World Health Organization. https://apps.who.int/iris/handle/10665/268312.
13. Voigt, P., von dem Bussche, A., Voigt, P., & von dem Bussche, A. (2017). Enforcement and fines under the GDPR. *The EU General Data Protection Regulation (GDPR) A Practical Guide*, 201-217.
14. Maurya, V., Ravikumar, R., Gopinath, M., & Ram, B. (2019). Ultrasound in acute viral hepatitis: Does it have any role?. *Medical Journal of Dr. DY Patil University*, *12*(4), 335-339.
15. Nandi, B., Hadimani, P., Arunachalam, R., & Ganjoo, R. K. (2009). Spectrum of acute viral hepatitis in Southern India. *Medical Journal Armed Forces India*, *65*(1), 7-9.
16. Sharma, M. P., & Dasarathy, S. (1991). Gallbladder abnormalities in acute viral hepatitis: a prospective ultrasound evaluation. *Journal of clinical gastroenterology*, *13*(6), 697-700.
17. Maresca, G., De Gaetano, A. M., Mirk, P., Colagrande, C., Cauda, R., & Federico, G. (1984). Sonographic patterns of the gallbladder in acute viral hepatitis. *Journal of clinical ultrasound*, *12*(3), 141-146.
18. Nardi, P., Biagi, P., & Bocchini, S. (1990). Enlargement of the lymph nodes of the hilus hepatis: a further ultrasonographic sign of acute viral hepatitis. *La Radiologia Medica*, *79*(3), 212-214.
19. Toppet, V., Souayah, H., Delplace, O., Alard, S., Moreau, J., Levy, J., & Spehl, M. (1990). Lymph node enlargement as a sign of acute hepatitis A in children. *Pediatric radiology*, *20*, 249-252.