

Original Article

Prevalence of Hepatitis viruses in Chronic Hepatitis: Study at a Tertiary Care Centre

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Abstract:

Introduction: In present study we have focused on etiological and clinical spectrum of chronic viral hepatitis with its prevalence in clinically suspected cases of chronic hepatitis with jaundice and abnormal liver function tests.

Materials and methods: This study included 145 patients presented with clinical features suggestive of chronic hepatitis having jaundice more than six months and abnormal liver function tests. Blood samples collected from all 145 patients and subjected for IgM Anti-HBV and IgM Anti-HCV by ELISA (ERBA LISA), IgM Anti-HAV and IgM Anti-HEV by ELISA (DIA.PRO) according to manufacturer's kit instructions.

Results: Prevalence of chronic hepatitis B was 68.75% (11 cases) and chronic hepatitis C was 31.25 % (05cases). Overall clinical features of chronic hepatitis B and C cases were similar. In chronic hepatitis B, most common presenting signs and symptoms were pain in abdomen (45.5%) and hepatomegaly (72.7%) which were absent in chronic hepatitis C. There was no significant difference in levels of serum bilirubin, ALT and AST in cases of chronic hepatitis B and C

Conclusion: It is not possible to differentiate type of chronic viral hepatitis due to Hepatitis B or Hepatitis C based only on clinical manifestations or Liver Function Tests. So the Sero-diagnosis is essential for confirmed diagnosis of chronic viral hepatitis

Keywords: Prevalence Chronic Hepatitis B, Chronic Hepatitis C

Introduction:

Viral hepatitis is a serious public health problem affecting billions of people globally.¹ This is a major public health problem in India also and has been reported from all parts of this country.² More than 2 billion people in the world have been reported to be infected with HBV, in which more than 360 million are chronically infected and 1.2 million die from chronic hepatitis, cirrhosis and HCC.³ World Health Organization reported that about 130-150 million people globally have chronic hepatitis C infection and 3, 50,000 to 5, 00,000 people die each year from liver diseases due to HCV.⁴

Chronic hepatitis is defined as a series of liver disorders of varying causes and severity in which hepatic inflammation and necrosis continue for at least 6 months.⁵ The most frightening aspect of this global epidemic lies in the fact that clinical signs and symptoms of the different types of chronic viral hepatitis are similar regardless of the etiologic agent.⁶ Hence it is necessary to diagnose the specific etiology of chronic viral hepatitis.

The present study focuses on the etiological and clinical spectrum of chronic viral hepatitis with its prevalence. Hence an attempt was made to diagnose the viral etiology in clinically suspected cases of chronic hepatitis with jaundice more than six months duration and abnormal liver function tests.

Aims& Objectives

1. To study prevalence of Hepatitis viruses in chronic hepatitis cases.
2. To study clinical spectrum of chronic viral hepatitis.

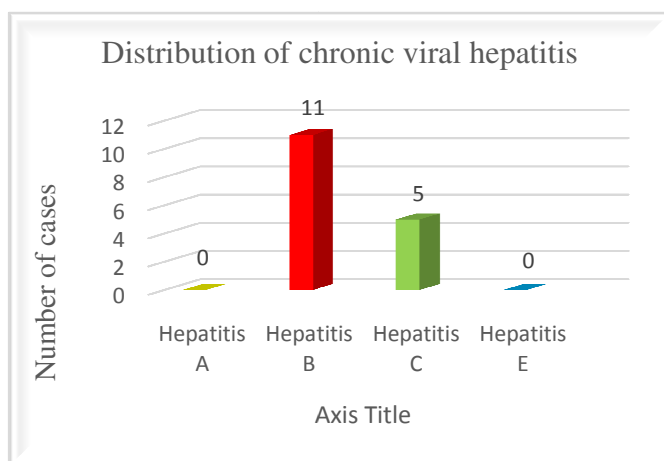
Material and methods:

This study was conducted in department of microbiology at a tertiary care hospital over a period of 2 years from Dec-2013 to Dec-2015. The study protocol was approved by ethical committee of the college. A total of 145 serum samples were included in the study. These comprised of cases having jaundice more than six months and showing raised levels of serum bilirubin and two liver function enzymes, aspartate aminotransferase (AST) and alanine aminotransferase (ALT). All subjects with known noninfectious hepatitis were excluded from the study. Detailed history of the patients was recorded in a questionnaire which had several questions related to social background, drug abuse, sexual risk behavior and blood transfusion. For detecting the presence of viral hepatitis markers, 5mL of blood was withdrawn from each patient included in the study aseptically taking adequate precautions and consent. Serum was separated and preserved at -20°C till the tests were performed. Serum samples were tested for HBsAg using ELISA kits by ERBA LISA, IgM anti-HCV using ELISA kits by ERBA LISA, IgM Anti-HAV and IgM Anti-HEV using ELISA kits by DIAPRO. The methodology and technique detailed in the information inserts provided with these kits were strictly adhered to.

Observation and Results:

A total of 145 patients with clinically suspected chronic hepatitis were included in present study. In this study, maximum number (37.9%) of patients belonged to age group of 41-50 years followed by (27.6%) of 31-40 years. Out of 145 chronic hepatitis cases, 16 (11%) were found to be confirmed cases of chronic viral hepatitis.

Table 1: Distribution of chronic viral Hepatitis [n=16]



Out of 16 confirmed cases of chronic viral hepatitis maximum were of hepatitis B (68.75%) followed by hepatitis C(31.25%).This difference between incidence of chronic hepatitis B and chronic hepatitis C among the total diagnosed 16 cases was statistically not significant.(chi square=2.25, P>0.05).

None of the chronic viral hepatitis case was found to be due to hepatitis A or hepatitis E.

Out of 16 chronic viral hepatitis cases one case was co-infected with both Hepatitis B Virus and Hepatitis C Virus.

Table 2: Signs and symptoms of chronic Viral hepatitis [n=16]

Clinical features	Hepatitis B n=11	Hepatitis C n=05	Total
	No (%)	No (%)	No (%)
Fever with chills	03(27.3)	2(40)	5(31.3)
Pain in abdomen	05(45.5)	0	5(31.3)
G. I. Bleed	00	2(40)	2(12.5)
Clay colored stool	03(27.3)	1(20)	4(25)
Pruritus	03(27.3)	1(20)	4(25)
Hepatomegaly	08(72.7)	0	8(50)

Overall clinical features of Hepatitis B and Hepatitis C were similar.

In chronic hepatitis B Cases common feature was pain in abdomen (45.5%) and hepatomegaly (72.7%) which were absent in hepatitis C.

Table 3: Liver function tests in chronic viral hepatitis [n=16]

	Hepatitis B		Hepatitis C	
	Observed Range	Mean value	Observed Range	Mean value
Sr.Bilirubin	2-10mg/dl	5.58mg/dl	2-15 mg/dl	4.3mg/dl
ALT	100-1500IU/L	334.4 IU/L	100-800 IU/L	336 IU/L
AST	100-1500IU/L	319.3IU/L	200-750 IU/L	312IU/L

There was no much difference in mean levels of serum Bilirubin, ALT and AST in cases of chronic hepatitis B and C. The difference in level of serum bilirubin in hepatitis B and C was statistically not significant (Unpaired t test=0.552, P=0.590) The difference in level of serum ALT in hepatitis B and C was statistically not significant (Unpaired t test=1.541, P=0.146).The difference in level of serum AST in hepatitis B and C was statistically not significant (Unpaired t test=0.914, P=0.376)

DISCUSSION:

The study was comprised of total number of 145 clinically suspected cases of chronic hepatitis with Jaundice more than six months duration and abnormal liver function tests. Out of 145 patients, maximum number (37.9%) of patients was in age group of 41-50 years followed by 31-40 years of age group. Out of 145 clinically suspected cases of chronic hepatitis, 16(11%) were found to be of viral etiology.

In present study, among 16 chronic viral hepatitis cases, 11(68.75%) cases of hepatitis B followed by hepatitis C 5 (31.25%) cases. Arora et al⁷ also suggested that Infections due to Hepatitis B Virus and Hepatitis C Virus may progress to chronic hepatitis and liver cirrhosis. Out of 16 chronic viral hepatitis cases 11 (68.75%) cases were of hepatitis B. Shantha et al⁸ in their study found that the percentage of chronic viral hepatitis B cases was 43.7% which was little less than present study. Prevalence of hepatitis B varies from country to country, city to city and even village to village and can change with time.⁹ This could be the reason for difference in prevalence of chronic hepatitis B of the present study and study by Shantha et al⁸ Out of 16 chronic viral hepatitis cases 5 (31.25%) were found to be of hepatitis C in present study. Prevalence of chronic hepatitis due to HCV by Khan TS et al¹⁰ showed in their study that 251 (40.8%) chronic viral hepatitis cases were due to hepatitis C virus which was comparable to present study. Usha Arora et al¹¹ in their study of chronic viral hepatitis found that chronic hepatitis C was present in 13% cases which were lower than present study.

In present study, Prevalence of Chronic Hepatitis B was more (68.75%) than the prevalence of Chronic Viral Hepatitis C. A study by Abel Girma Ayele et al¹² also reported that prevalence of chronic viral hepatitis B was more (35.8%) than chronic hepatitis C (22.5%). More prevalence of hepatitis B than C in chronic hepatitis cases was

found by Shantha et al⁸ also. Amirudin R et al¹³ showed in their study that chronic viral hepatitis B (25.4%) cases were more than chronic viral hepatitis C (16.3%).

Combined chronic viral Hepatitis infection due Hepatitis B virus and Hepatitis C virus is possible because of common modes of viral transmission.¹² Out of 16 chronic hepatitis cases in present study one chronic viral hepatitis case(6.25%) was positive for both Hepatitis B Virus and Hepatitis C Virus. Similarly a study by Devi et al¹⁴ also found co-infection with Hepatitis B Virus and Hepatitis C Virus in 4.28% of chronic hepatitis cases. Co-infection of Hepatitis B Virus and Hepatitis C Virus leads to more aggressive liver disease with the two viruses interacting in poorly defined ways to increase the rate of hepatic fibrosis.¹⁴ Persons with co infection with Hepatitis B Virus and Hepatitis C Virus are at higher risk of developing hepatocellular carcinoma (HCC).¹⁵ Hence it is necessary to look for co-infection of Hepatitis B Virus and Hepatitis C Virus in each and every case of chronic viral hepatitis caused by Hepatitis B Virus or Hepatitis C Virus.

None of the case of chronic hepatitis could be attributed to Hepatitis A Virus and Hepatitis E Virus infection in present study. Clinically the cases of hepatitis A present with mild or self- limited disease with no chronicity.¹⁶ Hepatitis E Virus can cause chronic liver disease in immunocompromised patients.¹⁷ Not a single case in present study had underlying immunocompromised condition. This could be the reason that none of the chronic hepatitis case was due to Hepatitis A Virus and Hepatitis E. Among chronic hepatitis B cases in present study along with jaundice common features were pain in abdomen (45.4%). Usha Arora et al¹¹ in their study found that jaundice was followed by pain in abdomen (35.71%) which was comparable to present study. Present study showed pruritus in 27.3% of chronic hepatitis B cases in concordance with Usha Arora et al¹¹ study which found pruritus in 21.43% of chronic hepatitis B cases. Present study showed hepatomegaly in 72.2 % of patients of chronic hepatitis B comparable (60%) to study by Arora et al.⁷

In present study G.I bleed was found in 2 (40%) cases of chronic hepatitis C cases. Sood et al¹⁸ found that G.I bleed was present in 3 cases(27.3%) of chronic hepatitis C. In present study pruritus and clay stool was found in only single case(20%). A study by Usha Arora et al¹¹ found that pruritus and clay stool was present in 3 cases (23.1%) of chronic hepatitis due to Hepatitis C Virus which was comparable to present study. In present study majority of clinical features of chronic hepatitis B and C cases were similar. Prerana et al¹⁹ also suggested that both Hepatitis B Virus and Hepatitis C Virus have diverse genomes and replication strategies, but their pathologic effects on liver and clinical features are similar. In hepatitis B cases common clinical features were pain in abdomen (45.5%) and hepatomegaly (72.7%) which were absent in chronic viral hepatitis C cases. Two cases of hepatitis C were presented with G.I. bleed which was absent in hepatitis B cases.

Present study observed that the difference in mean levels of serum bilirubin, ALT and AST in cases of chronic hepatitis B and C was not found to be statistically significant. In the present study serum bilirubin level range was found to be from 2-20 mg/dl in chronic hepatitis B cases with a mean bilirubin level of 5.58mg/dl. A. Kumar et al²⁰ studied 105 chronic hepatitis B patients and found that mean serum bilirubin level was 3.60 ± 3.99 mg/dl comparable to present study. While Usha Arora et al¹¹ in their study found that mean serum bilirubin level in chronic hepatitis B patients was 15.35mg/dl which was higher than present study. In present study in chronic hepatitis B cases mean serum ALT level was found to be 334.4 IU/L. Usha Arora et al¹¹ in their study found that mean serum

ALT level in chronic hepatitis B patients was 590IU/L which was higher than present study. A. Kumar et al²⁰ studied 105 chronic hepatitis B patients and found that mean serum ALT level was 108.42 ± 76.09 IU/L lower than present study. Holgado et al²¹ suggested that ALT levels should be monitored to predict the duration of hospitalization in cases of chronic hepatitis B.

In our study in chronic hepatitis cases B mean serum AST level was found to be 319.286 IU/L Usha Arora et al¹¹ in their study found that mean serum AST level in chronic hepatitis B patients was 580IU/L which was higher than present study. A. Kumar et al²⁰ studied 105 chronic hepatitis B patients and found that mean serum AST level was 64.30 ± 44.0 IU/L which was lower than present study.

The ALT concentrations are higher than those of AST in chronic hepatitis B cases .¹⁵ Present study also found serum ALT more than serum AST level in chronic hepatitis B. Present study found that all cases of chronic hepatitis C were having serum bilirubin levels in the range of 2-15 mg/dl with mean value of 4.3mg/dl. In a study by Arora et al⁷ found that all five cases of chronic hepatitis C cases showed high serum bilirubin level with mean value of 3.0mg/dl which was comparable to present study. A study by Usha Arora et al¹¹ observed that all 13% cases of chronic hepatitis C showed mean value of serum bilirubin level 9.83mg.dl which was higher than present study. In present study all cases of chronic hepatitis C were having ALT levels in the range of 100-800 IU/L with mean value of 336 IU/L. A study by Usha Arora et al¹¹ found that chronic hepatitis C cases were having a mean ALT level of 314 IU/L which was comparable to present study. In a study by Arora et al⁷ found that all five cases of chronic hepatitis C cases showed serum ALT level with mean value of 323 IU/L which was also comparable to present study. Alfredo et al²² explained that the risk of progression in chronic hepatitis C was influenced by the ALT profile. Progression of Chronic Hepatitis C was significantly higher in patients with initially mild disease and elevated ALT than in cases with mild disease and persistently normal ALT.

In the present study all cases of chronic hepatitis C were having AST levels in the range of 200-750 IU/L with mean value of 312 IU/L. A study by Usha Arora et al¹¹ found that all chronic hepatitis C cases were having a mean AST level of 240 IU/L which was comparable to present study. In a study by Arora et al⁷ found that all cases of chronic hepatitis C cases showed serum AST level with mean value of 242 IU/L which was also comparable to present study. This institution based study had several limitations like small sample size and final outcome of the patients was not looked for. These factors could well underestimate the results obtained.

CONCLUSION:

It is important to know the etiological agent in clinically suspected cases of chronic viral hepatitis since many of the clinical manifestations are indistinguishable. Hence it is an essential step to do serological diagnosis along with Liver Function Tests for establishing confirmed diagnosis of chronic viral hepatitis to initiate treatment so as to prevent their long term sequelae viz. chronic active hepatitis, cirrhosis and hepatocellular carcinoma.

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