



## CLINICAL PROFILE AND THE CIRCULATING GENOTYPES OF HEPATITIS C VIRUS IN A TERTIARY CARE HOSPITAL IN WEST BENGAL

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### ABSTRACT

**Background and objectives-** Hepatitis C virus (HCV) infection is a major cause of chronic liver disease worldwide, with majority of the patients being asymptomatic and when they present to clinicians, they have already advanced liver disease in form of cirrhosis or hepatocellular carcinoma. Data from developing countries on this evolving global health problem are sparse. Hence this study was planned with the aim to determine the HCV genotypes prevalent in patients attending a tertiary care hospital with their clinical profile.

**Materials and Methods-** Detailed history taking and clinical examination were done of consecutive 30 patients who attended out-patient department or admitted at in-patient department of Tropical Medicine with chronic hepatitis C. Laboratory investigations like LFT, viral serology (HBsAg, AntiHCV, HIV), prothrombin time, ultrasonography of upper abdomen, HCV-RNA Quantitative assay with genotyping were done. Data were collected and then analysed using standard statistical methods.

**Result-** Of proposed 30 sample size, complete data could be collected of 28 patients and accordingly, analysis was done. Of the 28 HCV seroreactive individuals, majority (20) were males. The mode of transmission was unknown in 19 patients, blood transfusion in 5 patients who were thalassemic and hemodialysis in remaining 4 patients. Most of the patients (18/28) were asymptomatic even if their viral load was high. Most common presenting symptom was dyspepsia. LFT showed significant transaminitis in 50% of the patients. Of the 28 seroreactive patients, 15 (53.57%) were HCV RNA positive based on RT-PCR. HCV rNA was below detectable level in 13 patients. HCV genotype 3 was the predominant genotype found in 11 individuals followed by genotype 1 found in 3 and genotype 2 was seen in one individual.

**Conclusion-** Community screening specially among high risk individuals is needed for early diagnosis and prompt treatment of chronic hepatitis C to prevent its several complications and also to prevent community spread.

**KEYWORDS :** Hepatitis C virus, Chronic Liver disease, Genotyping

### INTRODUCTION:

Hepatitis C is an emerging infection in India as well as an evolving global health problem<sup>1</sup>. According to World Health Organisation(WHO), about 3% of the world population is infected with Hepatitis C virus (HCV) with about 1.7 million cases reported every year<sup>2</sup>. Hepatitis C is an enveloped RNA virus of Flaviviridae family with a positive sense, single-stranded RNA genome<sup>3</sup>. Prospective studies have shown that 80% of cases of acute hepatitis C progress to chronic infection<sup>4</sup>. The persistence of chronic hepatitis C virus (HCV) infection is due to the existence of various genotypes and its various subtypes. A majority of patients with chronic hepatitis C virus are asymptomatic<sup>5</sup>. Although the most common presentation is incidental detection, a large number of patients present with advanced liver disease which is known to progress to liver cirrhosis and hepatocellular carcinoma. The persistence of chronic HCV infection is due to the existence of various genotypes and its various subtypes and majority of HCV patients are asymptomatic. There are seven different genotypes of HCV<sup>6</sup>. These genotypes vary in their severity to cause infections as well as their response to treatment. The characteristics of HCV infection differs from individual to individual and depends on factors like age, immune response, HIV/HBV co-infection, lifestyle factors like chronic alcohol consumption<sup>7</sup>. The average time taken for development of chronic hepatitis after HCV infection is around 10yrs, and development of cirrhosis and hepatocellular carcinoma(HCC) being around 20 and 30yrs respectively according to few studies<sup>8</sup>.

As, the epidemiology and clinical profile of hepatitis C virus (HCV) varies worldwide, and data from developing countries are very few, this study was planned to determine the HCV

genotypes prevalent in patients attending a tertiary care hospital with their clinical profile.

### MATERIALS AND METHODS:

It was a single centre, prospective, observational study. In the School of Tropical Medicine, Kolkata, we have virology OPD, for which we get referrals from other centers for the management of liver disease due to hepatitis C. The study was done for two years period at out-patient department of Tropical Medicine and in-patient department of Carmichael Hospital for Tropical Diseases, School of Tropical Medicine, Kolkata. from January 2017 to January 2019 on 30 patients with chronic hepatitis C. The diagnosis of chronic hepatitis C was made by positive blood report for Anti-HCV. All the selected patients were subjected to detailed assessment including focussed interview and history elicitation with particular emphasis relating to liver involvement. All venous blood samples were tested for bilirubin, AST, ALT, alkaline phosphatase, albumin, globulin, PT and INR, complete hemogram, urea, creatinine. First sample was also tested for HBsAg and ELISA for HIV. Further evaluation for those patients included HCV RNA quantification, genotyping and ultrasound examination. A predesigned proforma was used to collect information from the patients. By using the proforma data were collected from 30 patients with chronic HCV infection but due to loss of follow up we collected full data from 28 patients. Standard statistical methods was used for data analysis.

### RESULT:

Of proposed 30 sample size, complete data could be collected of 28 patients and accordingly, analysis was done. Of the 28 HCV seroreactive individuals, 20(71.42%) were males and

8(28.57%) were females. Their ages ranged from 5 to 75 yr with the mean age being 38.17 years.

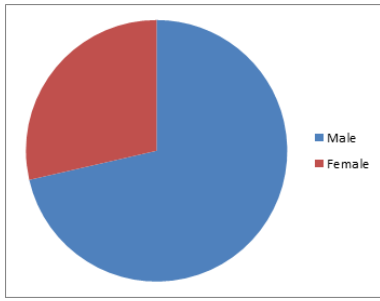


Figure 1: Pie chart showing gender distribution

All these patients were diagnosed as chronic hepatitis C. Among them 17 were incidentally detected during preanesthetic checkup or during blood donation, 5 patients were thalassemic with history of multiple blood transfusion, 4 patients were chronic kidney disease with history of regular hemodialysis and 2 patient were diagnosed as evaluation during chronic liver disease (Table I).

Table I: Mode of transmission of hepatitis C

Mode of transmission	Number of patients	Percentage
Unknown	19	67.85%
Blood transfusion	5	17.85%
Hemodialysis	4	14.28%

Among all patients most of the patients (18/28) were asymptomatic even if their viral load was high. Most common presenting symptom was dyspepsia which was seen in 4 patients. Other symptoms were jaundice, gastritis, ascites, edema. Hematemesis and DVT were seen in only 1 patient.

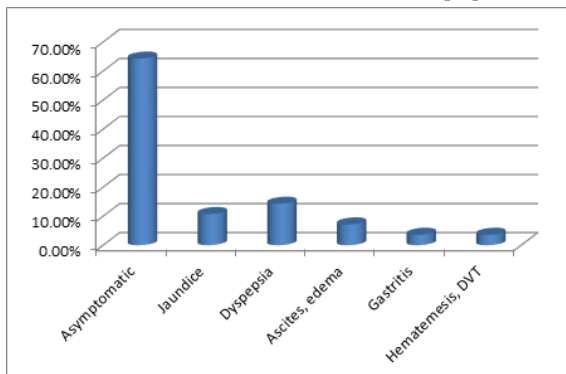


Figure 2: Bar diagram showing different clinical parameter according to frequency.

Liver enzymes such as SGOT and SGPT are indicators of the health of liver. Analysis of liver function parameters showed that SGOT and SGPT were significantly elevated among 50% of the patients. Of the 28 seroreactive patients, 15 (53.57%) were HCV RNA positive based on RT-PCR.

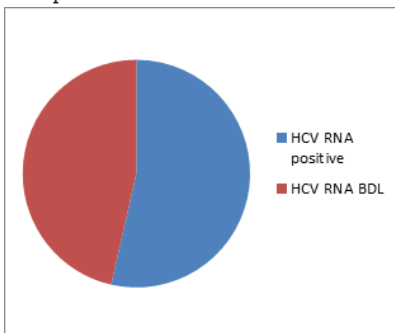


Figure 3: Pie chart showing HCV- RNA positivity

HCV viral load ranged from 756 to 187848210 IU/ml. Different range of viral load has shown in Table II and also in the bar diagram.

Table II: Different range of viral load of hepatitis C patients

Range of viral load	Number of patients	Percentage
BDL(below detectable level)	13	46.42%
<1000 IU/ml	1	3.57%
1000 - 10000 IU/ml	3	10.71%
10000 – 100000 IU/ml	1	3.57%
100000 – 1000000 IU/ml	8	28.57%
>10lakhsIU/ml	2	7.14%

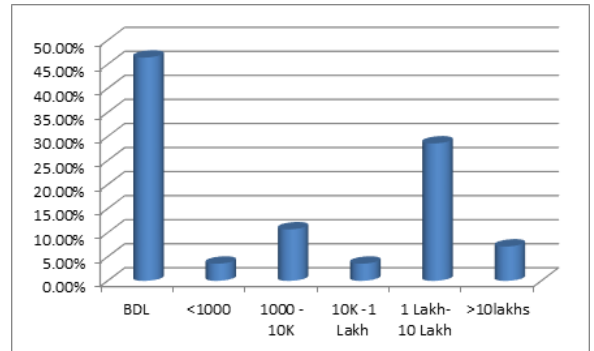
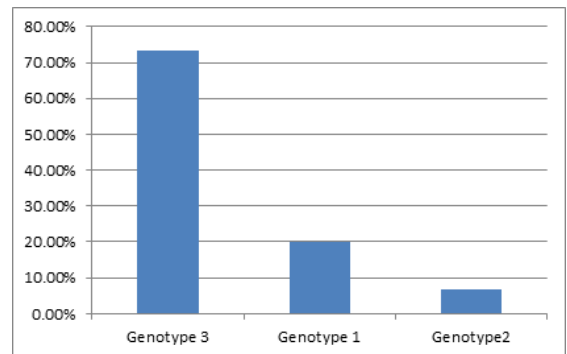


Figure 4: Bar diagram showing different range of viral load according to frequency.

HCV genotype 3 was found in 11 (73.33%) individuals followed by genotype 1

(n=3, 20%) and genotype 2 was seen in one individual (6.66%). Among the genotype 3, subtype 3awas present in 54.54% (n=6), 3b and 3i in 18.18% in each (n=2) and 3c was seen in 1 individual.

Figure 5: Bar diagram showing different genotypes of hepatitis C.



**DISCUSSION-**

Although Hepatitis C virus is an important evolving cause of necro-inflammatory and neoplastic liver disease, HCV infection is a preventable disease with good treatment response especially with the availability of newer antiviral drugs. The burden of the disease can be lowered down significantly if its seroprevalance and clinical profile is better known in the population.

Our study reported predominance of Genotype 3 followed by genotype 1. This is in accordance with most studies from India<sup>9,10,11</sup>. In India, the predominant genotype is 3 followed by genotype 1. HCV genotype 3 is found to be more prevalent in North, East and West india whereas genotype 1 is more prevalent in South India<sup>12</sup>. Although genotypes 1 and 3 are the most prevalent genotypes in India, genotypes 4 and 6 are also reported to be in high prevalence in southern and northeastern parts of our country<sup>13</sup>.

In our study, most of the diagnosed cases were males. Male dominance has been reported in most studies from Northern India<sup>14</sup>. This is because of the fact that IV drug abuse, high risk sexual behaviour is more in males. HCV is transmitted mainly by parenteral route (transfusion of blood or blood products, needle stick injuries, transplantation, dialysis of infected blood/its products or organs/tissues, sharing of contaminated syringes) accounting for upto 80% of transmissions. Sexual and vertical transmissions are less common modes<sup>15</sup>. This is reflected in our study also.

The major limitation of our study is that this is a single institution based study with small sample size. However, the study results do through light on the prevalent genotypes and clinical profile of the patients. More studies need to be done in developing countries so as to aid in prevention, treatment and control of the disease.

#### CONCLUSION:

Majority Anti HCV-positive patients are asymptomatic and a large number of patients do not requiring treatment. Patients with elevated ALT and HCV RNA levels need an in-depth evaluation and treatment. Though the mode of transmission is unknown in majority patients, still community screening specially among high risk individuals is needed for early diagnosis and prompt treatment of chronic hepatitis C to prevent its several complications and also to prevent community spread.

**CONFLICT OF INTEREST:** There are no conflicts of interest.

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