

## Seroprevalence of Hepatitis C Virus Among the Patients Attending A Tertiary Care Hospital in Manipur,India

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### Abstract:

**Introduction :** Hepatitis C virus infection is a global health problem affecting a significant portion of the world's population.

**Aims & Objectives:** This study was carried out to determine the seroprevalance of hetatitis C virus (HCV) among the patients attending a tertiary care hospital in Manipur.

**Materials and methods :** This prospective study was carried out in the Department of Microbiology during the period from January 2016 to November 2018 to determine the seroprevalance of hepatitis C virus among the patients attending a tertiary care hospital in Manipur. Serum samples were collected from various out-patient and in-patient departments, ART centre and blood bank, and screened for anti-HCV antibody using a third generation ELISA. Anti-HCV positive samples were further subjected to qualitative detection of HBsAg using third generation ELISA method.

**Results :** Of the 45591 serum tested in this study, 1096 (2.40%) were found to be positive for anti-HCV antibody. Seropositivity was seen more in males (3.5%) as compared to females (1.4%). Highest occurrence of HCV was found in the age group of 21-30 years (5.4%) for males and 51-60 years (2.9%) for females. Seroprevalence of 1.08%, 1.09% and 0.13% were observed among pre-operative patients, blood donors and antenatal mothers respectively. However, co-infection of HCV and HBV was observed in 0.067% and that of HCV with HIV in 21.47%.

**Conclusion :** The present study highlights current scenario of HCV infection in our tertiary care hospital and prevention of Hepatitis C should target those at risk of acquiring the virus.

**Keywords:** Anti-HCV antibody, ELISA, Hepatitis C virus, Seroprevalence.

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### I. Introduction

Hepatitis C is a common health problem affecting a significant portion of the world's population<sup>1</sup>. It is a RNA virus belongs to the Flaviviridae family and genus Hepaci virus and was first detected in 1989 using molecular biology techniques after extensive testing of serum from experimentally infected animals<sup>2</sup>. It is one of the important risk factor causing acute to chronic illness in form of alter liver function or development of chronic hepatitis, cirrhosis, hepatocellular carcinoma and liver failure<sup>3,4</sup>. Globally it has been estimated that 71 million people have chronic hepatitis C infection and approximately 399000 people die each year from hepatitis C, mostly from cirrhosis and hepatocellular carcinoma. Most of the cases of acute hepatitis C are asymptomatic, and about 15-45% of infected persons spontaneously clear the virus within 6months of infection without any treatment. The remaining 60-80% of persons will develop chronic HCV infection<sup>5</sup>. Among the Indian blood donor's the seroprevalence varies from 0.48% to 1.85%<sup>6,7</sup>. And co-infection of HBV and HCV in HIV positive patients is associated with reduced survival and an increased risk of progression to severe liver diseases with higher susceptibility towards hepatotoxicity due to antiretroviral therapy<sup>8</sup>.

Hepatitis C is blood borne virus<sup>9</sup>. The incubation period for hepatitis C is 2 weeks to 6 months. It is most commonly transmitted by injecting drug use through the sharing of same needle, by reuse or inadequate sterilization of medical equipment especially syringes and needles and by transfusion of unscreened blood and blood products<sup>10,11</sup>. HCV can also be transmitted sexually and can be passed from an infected mother to her baby<sup>8,12</sup>.

The impact of this infection is increasing in India. In the absence of efficient anti-HCV screening in our country, the HCV infection from various sources like will unscreened donors, drug abuser, unsafe injection etc. continue to add to the disease pool<sup>13,14</sup>. There is paucity of information regarding seroprevalance of Hepatitis C

in large based population. A tertiary care hospital catering to the needs of a large population represents an important centre for serological survey. The present study was undertaken to assess the prevalence of HCV among patients attending a tertiary care hospital in Manipur and to highlight the presence of co-infection of HBV and HIV, if any, among HCV infected patients.

## II. Materials and Method

This is a hospital-based prospective study conducted in the Department of Microbiology during the period from January 2016 to November 2018. The study includes serum samples from patients of all age groups and both sexes attending various out-patient and in-patient departments, ART centre and blood bank.

A 5ml venous blood sample was collected from patients and blood was allowed to clot for at room temperature and the serum was separated by centrifugation at a speed of 3000 rpm for 10 minutes. All the serum samples were screened for anti-HCV antibody using 3rd generation ELISA (Qualisa HCV, Qualpro Diagnostics, Goa, India) following standard protocol and manufacturer's instructions with adequate quality control. Samples were considered reactive according to the manufacturer's specifications. However, any doubtful or indeterminate results were excluded from analysis. HCV positive samples were further subjected to qualitative detection of HbsAg using 3rd generation ELISA method (Qualisa HCV, Qualpro Diagnostics, Goa, India).

Statistical analysis of data was done using descriptive statistics such as percentage.

## III. Results

A total of 45591 serum samples were collected and processed for HCV during the study period of 3years. Among these, 25706 and 19885 were from outpatient and inpatient departments respectively (Table 1).The sero-prevalence of HCV was found to be 2.40%.

In this study, seropositivity was higher amongst males (3.5%) as compared to females (1.4%). The highest occurrence of HCV infection among males was observed in the age group of 21-30 years (5.4%) followed by 31-40 (3.9%) years and 41-50 years (3.5%) years (Table 2). Among females, highest prevalence was found in age group of 51-60 (2.9%) years followed by 41-50 (1.9%) years and 31-40 (1.4%) years (Table 2).

Seroprevalence among pre-operative patients, blood donors and antenatal mothers were 1.08%, 1.09% and 0.13% respectively (Fig 1).

In this study, co-infection of HBV and HCV co-infection was observed in 0.067% (Fig 2). However, HIV co-infection with HCV and HBV was seen in 21.47% and 0.85% respectively (Table 3).

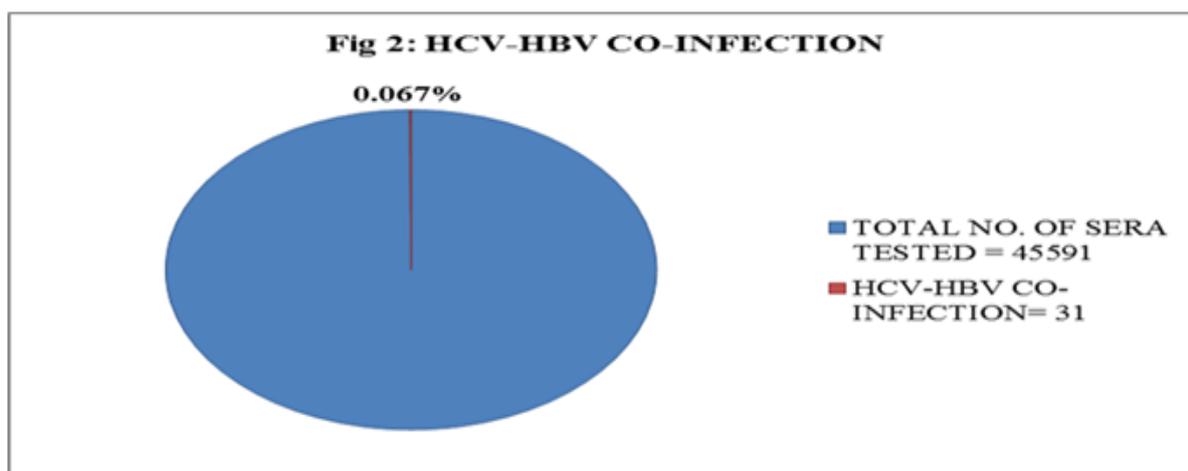
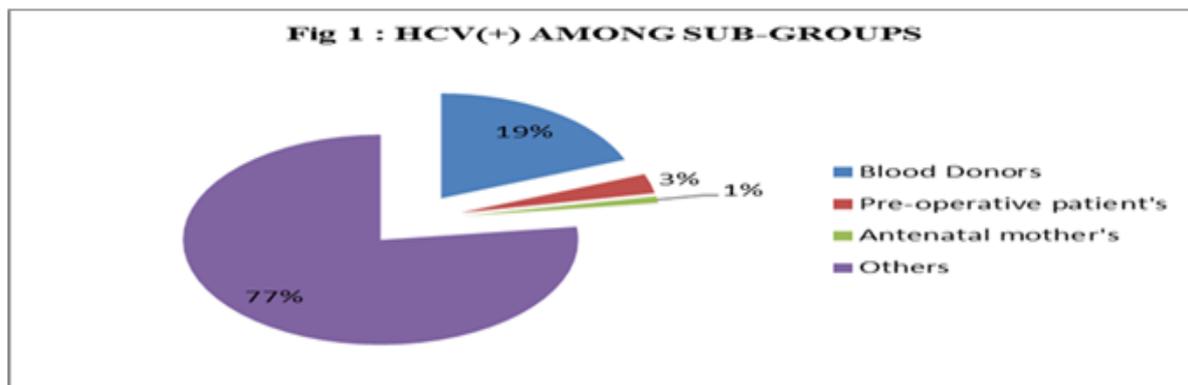
**Table 1:** Distribution among OPD and IPD patient

Department	Total no. of sera tested	Anti HCV Ab positive(%)
OPD	25706	597 (2.32%)
IPD	19885	499 (2.50%)
Total	45591	1096 (2.4%)

OPD: Outpatient department, IPD: In patient department

**Table 2:** Age-Gender wise distribution

Age in years	Gender		Anti HCV Ab positive (%)		Total
	Male	Female	Male	Female	
0-10	962	847	2(0.2%)	1(0.1%)	3(0.3%)
11-20	2494	2696	87(3.4%)	21(0.7%)	108(4.1%)
21-30	3859	5752	210(5.4%)	54(0.9%)	264(6.3%)
31-40	4672	4923	186(3.9%)	73(1.4%)	259(5.3%)
41-50	3257	4897	114(3.5%)	94(1.9%)	208(5.4%)
51-60	2986	2716	101(3.3%)	81(2.9%)	182(6.2%)
>60	3026	2504	49(1.6%)	23(0.9%)	72(2.5%)
Total	21256	24335	749(3.5%)	347(1.4%)	1096(2.4%)



#### IV. Discussion

The seroprevalence of HCV among general population of India has been reported between 0.22-1.8 per cent (Gowri et al)<sup>13</sup>. In the present study, the seroprevalence of HCV was found to be 2.4% which is similar to the findings of Preeti et al (2.6%)<sup>15</sup> Mishra et al (1.5%)<sup>16</sup> and Baheti et al (2.46%)<sup>17</sup>.

In our study, higher HCV prevalence was observed among in males (3.5%) as compared to the females (1.4%). Findings were in concordance with other earlier studies done by Patil et al (0.67% Vs 0.33%)<sup>1</sup>, Preeti et al (2.8% Vs 2.5%)<sup>15</sup>, Atreyi et al (71.6% Vs 28.4%)<sup>18</sup>. Male predominance of Hepatitis C virus infection as compared with the female might be probably due to the higher exposure of male to risk factors such as unsafe injection practices, intravenous drug abuse or unsafe sexual practices.

Among males, highest occurrence was found in age group of 21-30 yrs(5.4%) followed by 31-40 (3.9%) years and 41-50 years (3.5%) years. Similar finding was observed by Jemilohun et al<sup>19</sup>. Among females, highest prevalence was found in age group of 51-60 years(1.4%) followed by 41-50 (1.9%) years and 31-40 (1.4%) years which was in concordance with the study of Patil et al<sup>1</sup>.

Data on small numbers of voluntary donors tested in various blood transfusion centres across the country by ELISA has reported prevalence rates ranging from 0.2%-4%<sup>20-23</sup>. Seroprevalence among blood donors was found to be 1.09% which was similar to the results of Panigrahi et al (1.85%)<sup>7</sup>, Irshad et al (1.5%)<sup>24</sup> and Nanu et al (1.49%)<sup>25</sup>. The low occurrence in our study may be due to the fact that a large number of voluntary donors have participated for blood donation. However, Machave et al<sup>26</sup> demonstrated a low prevalence (0.44%) of HCV among blood donors.

In the present study, occurrence of HCV among antenatal mothers (0.13%) and pre-operative patients (1.08%) was lower as compared to the studies of Kumar et al (1.03%)<sup>27</sup> and Ali Naqvi et al (4.3%)<sup>28</sup> respectively.

In our study, co-infection of HBV and HCV was observed in 0.067% which was lower than that of Desikan et al (1.89%)<sup>29</sup>. Of the total 703 HIV infected individuals included in our study, co-infection with HCV and HBV was observed in 21.47% and in 0.85% respectively. The higher prevalence rate of HCV positivity in HIV infected patients could be attributed to diverse factors such as increase in the rate of drug addiction, lack of vaccine for HCV. However, co-infection of HIV was noticed more in HBV rather than HCV in most of the Indian studies<sup>30, 31</sup>.

## V. Conclusion

The present study highlights current scenario of HCV infection in our tertiary care hospital. The large reservoir of HCV infection in the community provides an opportunity to investigate risk factors for transmission, the natural history of infection and effectiveness of preventive methodologies. Prevention of Hepatitis C should target those at risk of acquiring the virus and should involve providing education, risk reduction counseling, HCV screening and substance abuse treatment.

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