

**Research Article**

## **SEROPREVALENCE OF HEPATITIS C VIRUS ANTIBODIES AMONG GENERAL PATIENTS ATTENDING A TERTIARY CARE HOSPITAL AT PUDUCHERRY**

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### **ABSTRACT**

Hepatitis C virus (HCV) remains a major healthcare burden with a wide degree of variability throughout the world. In India Hepatitis C is an emerging infection and also an important pathogen causing liver disease. Most of the studies on seroprevalence of HCV antibodies were done on selected groups like blood donors, renal dialysis patients, acute & chronic hepatitis etc. Hence we carried out a hospital based survey to determine the prevalence of antibodies to HCV among general patients attending a tertiary care hospital at Puducherry. All outpatients and inpatients of our hospital, over a period of three months (August - October 2012), were included after their informed consent. All the blood samples were screened for Anti HCV antibody using third generation ELISA kit (J.Mitra). A total of 1226 blood samples were screened. Of 1226 samples tested 2 samples were found to be positive for HCV antibodies. The seroprevalence rate of HCV antibody was detected as 0.16% among general patients attending our tertiary care hospital in Puducherry.

**Keywords:** *HCV Antibody, Seroprevalence, Hospital Patients*

### **INTRODUCTION**

Hepatitis C virus was first identified in the year 1989 as the main aetiological agent of Non A-Non B Hepatitis (Mukhopadhyaya, 2008). It belongs to Flaviviridae family and genus Hepacivirus. Hepatitis C genome consists of single stranded RNA with atleast 10 different structural and non-structural proteins NS2, NS3, NS4A, NS5A, NS5B (Sharma, 2010).

It has been estimated that Global Prevalence of Hepatitis C virus infection is around 2%, with 170 million persons chronically infected persons & 3-4 millions newly infected per year (Perz et al., 2004).

Risk factors of disease transmission include blood/ blood product transfusion, Intravenous drug abuse, acupuncture, dialysis, occupational exposure, multiple sexual partners, use of immunosuppressant drugs, unsafe therapeutic injections & other healthcare related procedures (Panigrahi et al., 1997).

Many studies on seroprevalence of HCV antibodies are on selected groups like blood donors ,dialysis patients, acute & chronic hepatitis etc and only limited data are available on general population. Hence a Hospital based study was carried out to find the local seroprevalence for Hepatitis C virus antibodies among general population in a tertiary care teaching Hospital at Puducherry.

### **MATERIALS AND METHODS**

This study was conducted using serum samples from outpatients and inpatients of Sri Manakula Vinayagar Medical College & Hospital, Puducherry, for the duration of three months from August 2012 to October 2012. All the procedures were approved by Institute Ethics Committee. After obtaining informed consent from the individuals willing to participate in this study, two millilitres of venous blood was collected dual into sterile test tubes and allowed to clot. The serum was then pipette out into sterile eppendorf tubes & stored at 2-8 °C for not more than 48 hrs. Subjects who were not willing & those who already diagnosed to have any type of hepatitis were excluded from our study.

#### **Assay for HCV Antibodies:**

Anti-HCV antibodies were assayed by ELISA method, using third generation ELISA kit (J.Mitra, India) as per instruction of manufacturer. The 3<sup>rd</sup> generation HCV Microlisa utilises a combination of antigen with a sequence of both HCV structural and non structural antigen i.e. CORE, E1, E2, NS3, NS4, NS5.

## Research Article

100 µl of the sample diluents is added in A1 well as blank. 100µl of negative control in well B-1 is added. 100µl of each sample diluted in sample diluents is added from F1.cover seal applied and incubated at 37° C for 30 mins. While samples are incubating working wash solution and working conjugate are prepared. After incubation the wells are washed 6 times. 100µl of working conjugate solution is added including A1. Cover seal applied and incubated at 37° C for 30 mins. Wells are washed. 100µl of working substrate solution is added including A1. Incubation done at room temperature for 30 minutes. 100 µl of stop solution added. Absorbance at 450 & 630 nm is read in ELISA reader. Cut off value was calculated by taking average absorbance values of three known negative samples plus a constant factor. Test specimens with absorbance value greater than cut off value were considered reactive for Anti-HCV. Test specimen with absorbance value less than the cut off value are considered non-reactive for Anti-HCV.

## RESULTS

During this study period, 1226 patients were screened for HCV antibodies. Out of them 1044(85.2%) were males & 182 (14.8%) were females of age group 18-65 years. Two blood samples (0.16%) were found reactive for HCV antibodies. Both belonged to male subjects of age 39 & 65 years showing positivity rate of 0.16%. All female blood samples were non reactive to HCV antibodies.

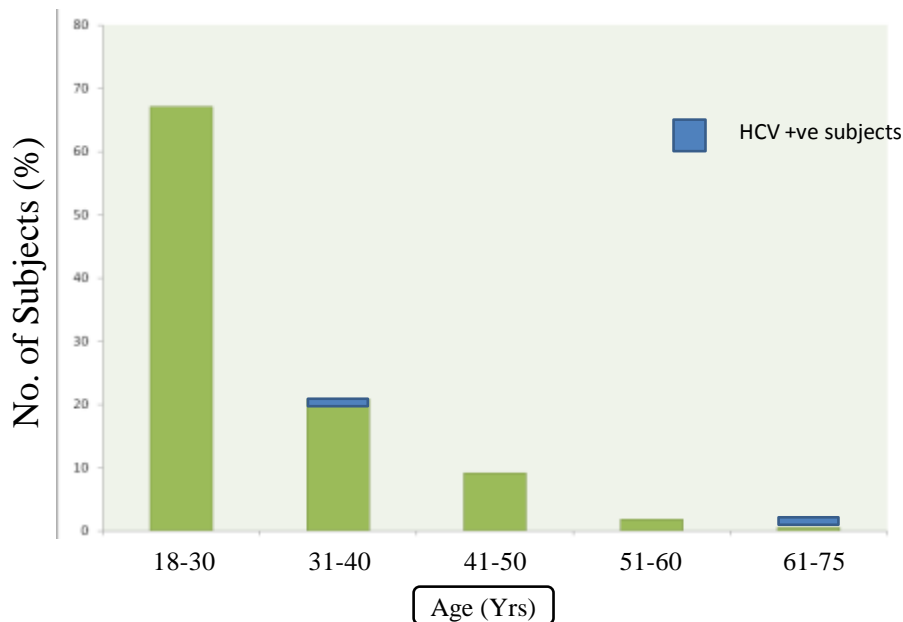


Figure 1: Age-wise distribution of HCV positive subjects

## DISCUSSION

Hepatitis C virus is a pathogen responsible for liver disease in various regions of India. Most studies of seroprevalence of Hepatitis C virus antibodies are on selected groups which does not reflect correct prevalence in general population (Jain et al., 2003). We studied on general population using third generation ELISA kit due to their easy availability and low cost. The sensitivity of this ELISA kit was 100% and specificity 99.73%.

No significant difference was found between male and female although the number of female subjects were less in our study, which was proved in another study by Jain et al (2003). Seroprevalence rate obtained in our study was 0.16% which was almost correlating with the recent study done at vellore (Tamilnadu) which was 0.22 (Gowri et al., 2012). In another study done at Pondicherry in the year 2003 in general population the overall seroprevalence is 4.8% (661 individuals including 36 health care

### Research Article

workers) (Bhattarcharya et al., 2003). There is significant decrease in seroprevalence rate (0.16%) in our study. This may be due to awareness of public & stringent Blood screening before transfusion & various types of Health education & Healthcare programmes.

Recent studies of Prevalence of Hepatitis C virus antibodies in the general population in different states of India (Gowri et al., 2012).

State	Study population	Prevalence
Andhra Pradesh	Camp study	1.4%
West Bengal	Rural	0.71%
Maharashtra	Rural	0.09%
Tamilnadu (Vellore)	Urban	0.22%
Arunachal Pradesh	Tribal	7.89%
Present study (Puducherry)	Rural/Urban	0.16%

Our study prevalence rate (0.16%) correlated with that of Tamilnadu Prevalence rate conducted at Vellore (0.22%)

### Conclusion

To sum up screening for Hepatitis C infection should be made mandatory and reuse of needles with improper sterilisation must be abandoned. An increased public awareness by health education about its mode of spread and stringent screening will only help in reducing the mortality and morbidity of Hepatitis C virus infection in the years to come.

### ACKNOWLEDGEMENTS

We acknowledge the technical support provided by Mr. during our study. We also thank Management and Director of Sri Manaklua Vinayagar Medical College & hospital for allowing us to conduct this work.

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