Scholars Journal of Applied Medical Sciences
Abbreviated Key Title: Sch J App Med Sci
ISSN 2347-954X (Print) | ISSN 2320-6691 (Online)
Journal homepage: www.saspublishers.com

OPEN ACCESS

Microbiology

A Study on Hepatitis E Virus Seropositivity among Apparently Healthy Adults in Chennai City –A Tertiary Care Hospital Experience

Dr. A.V.Sowmya[1], Dr. P.Balapriya[2*], Dr. Radhika Katragadda[3]

[1]Assistant Professor, Department of Microbiology, Government Medical College, Omandurar Govt. Estate, Chennai India
[2]Associate Professor, Department of Microbiology, Government Medical College, Omandurar Govt. Estate, Chennai India
[3]Professor, Department of Microbiology, Government Medical College, Omandurar Govt.Estate, Chennai India

***Corresponding author:** Dr. P. Balapriya
| **Received:** 13.05.2019 | **Accepted:** 25.05.2019 | **Published:** 30.05.2019
DOI: 10.36347/sjams.2019.v07i05.063

Abstract **Original Research Article**

Introduction: Hepatitis E virus (HEV) is a single stranded RNA virus causing significant threat to life primarily in pregnant mothers and immunocompromised patients. As it is primarily transmitted by faeco oral route, it indirectly indicates the hygienic and sanitary conditions of the community. This study is conducted to identify the presence of HEV exposure in our area. ***Materials and Methods:*** 2ml of blood samples, from around 200 apparently healthy individuals attending Master Health checkup were collected and tested for the presence of Anti HEV IgG antibodies by ELISA method. ***Results:*** Of the 200 study population 116 were males and 84 were females and majority of them were in the age group of 31-50 years (75.5%).Among the samples tested 10.5% were positive for Anti HEV IgG antibodies, with males contributing for 71.43% and females 28.57%. Common age group affected was 31-40 years (66.67%). ***Conclusion:*** This study indicates that the seropositivity rate in our area is less when compared to other parts of India. HEV surveillance programmes in all parts of India are needed to provide appropriate health recommendations to bring down the incidence of this emerging virus infection

Keywords: Hepatitis E virus, Anti HEV IgG antibodies, Seropositivity, Healthy adults.

INTRODUCTION

Hepatitis E virus is a single stranded, nonenveloped RNA virus, belonging to Hepeviridae family. The major route of transmission of HEV among population is via feaco-oral route that is through contaminated food and water supply. Hence HEV infection largely reflects the sanitary and hygienic condition of the nation. Also studies have indicated that HEV can also be transmitted through blood transfusion [1] and hence from mother to fetus causing perinatal mortality and congenital anomalies among pregnant mothers[2,3].

Hepatitis E virus (HEV) is one of the common causes of fulminant hepatitis, accounting for about 10.4% of viral hepatitis in India [4] with prevalence rates ranging between 29-50% [5]. Being water borne infection it is a major public health problem especially, in developing countries. Even though Hepatitis E virus infection causes mild, self-limiting illness in adults and non-pregnant women, it represents a significant threat to the health and to the life of the pregnant mothers, with fatality rates reported as high as 22%[6].The presence of Anti HEV IgM antibody indicates the presence of acute infection ,whereas detection of Anti HEV IgG antibodies among general population is used an indicator of exposure to HEV in the given population and hence their presence in that particular area[5].

HEV infection is of significant concern in developing countries and their prevalence varies among different parts of the country owing to the variations in the sanitation conditions and also to the various genotypes of HEV that are prevalent in that area. Also the clinical presentation of HEV infection varies from asymptomatic to acute self-limiting illness to severe fulminant hepatitis making it difficult to assess the actual burden of HEV infection [7].This study is aimed at identifying the rate of seropositivity of HEV among asymptomatic healthy adults in our area.

MATERIALS & METHODS

The study was conducted after getting Institutional Ethical Committee approval .A total of 200 subjects who are attending routine Master Health checkup clinic and apparently healthy was included as study population in a consecutive manner.

Informed consent was obtained from the study population. After explaining the procedure for blood sample collection to the study group, 2ml of venous blood was collected under strict aseptic precautions. The sample is centrifuged; serum is separated and transferred to aliquots. The aliquots were properly labelled and stored at -20^0 C in deep freezer until further analysis.

All the samples were tested in duplicate for the presence of IgG Anti-HEV antibodies using qualitative commercially available Enzyme Linked Immunosorbent Assay (ELISA) kits. The tests were performed according to the manufacturer's instructions. The results were recorded as positive or negative according to the standard procedures recommended by the manufacturer. The results were documented and statistically analysed.

RESULTS

A total of 200 apparently healthy individuals attending master health checkup clinic were included in the study population. Among the study group, 116 were males and 84 were females (chart 1).

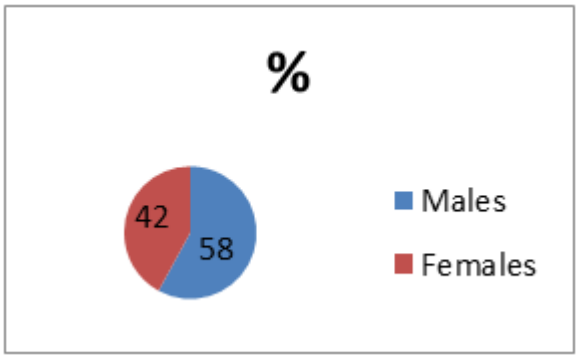

Chart- 1: sex distribution of the study population

The age group distribution of the study population is given below (Table 1). Majority of the study population are in the age group of 31-50 yrs of age (75.5%).

Table-1: Age group of the study population (n= 200)

Age group (yrs)	No.	%
18-20	-	-
21-30	6	3
31-40	71	35.5
41-50	80	40
51-60	25	12.5
61-70	18	9

Out of the total 200 samples tested, 21 samples tested positive for the presence of Anti –HEV IgG antibodies (10.5%), out of which 15 were males(71.43%) and 6 were females (28.57%) (Chart 2) (Table 2).

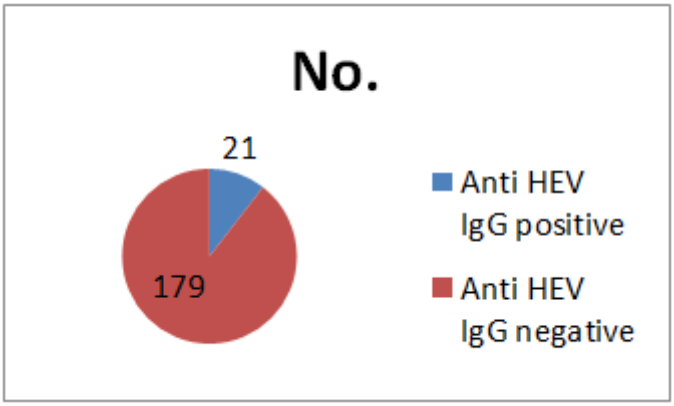

Chart-2: Seropositivity of test samples (n=200)

Table-2: Seropositivity of the test samples, in association with age and sex

Age group	Males (n=15)		Females (n=6)	
	No.	%	No	%
21-30	3	20	2	33.33
31-40	6	40	4	66.67
41-50	5	33.33	-	-
51-60	1	6.67	-	-
Total	15	100	6	100

Majority of the people tested positive for Anti HEV IgG antibodies were in the age group of 31-40 years (66.67%).

DISCUSSION

Hepatitis E virus, a member of Hepatitis virus group and is of major concern in the current scenario as an emerging infectious disease. Although it causes self-limiting acute illness in majority of normal healthy adults, it poses significant mortality among pregnant mothers and immunocompromised individuals [8]. The facts that most of the HEV infections among healthy adults being asymptomatic together with routes of transmission other than faeco oral route such as blood transfusion, hemodialysis, organ transplantation and even sexual intercourse had made it a major public health disease of importance [9, 10]. This study is aimed to identify the percentage of HEV seropositivity among healthy adults in our area, Chennai city.

In our current study about 58% of males and 42% of females were enrolled as study population (Chart 1) and 75.5% of them are in the age group of 31-50 years (Table 1). Among the 200 samples tested, 10.5% of the samples tested positive for Anti HEV IgG antibodies (Chart 2). Various studies conducted worldwide have documented a prevalence rate ranging from 9.3-26% among healthy people in developed countries [11]. In India the seroprevalence rates ranges from nil in pune to as low as 4% in Kashmir to as high as 29-35% in Delhi [12,13]. Our study results show that the seropositivity of HEV in Chennai city is low. This observed variation in the seropositivity rates among different areas of our country may be due to level of sanitation, hygiene, endemicity of virus, educational status of the people and so on.

In our study males (71.43%) are more commonly affected than females (28.57%), which is correlating with the study conducted by Tejas N Modi *et al.*[14]where they documented that seropositivity rate was higher among males (77%) of males when compared to females (23 %) (Table 2).The majority of HEV Anti IgG positive people in our study belongs to the age group of 31-40 years (66.67%) in contrast to studies by CP Luck *et al.* [15] and Maninder Kaur *et al.* [16]who had documented that the most common affected age group is in the range of 21-30yrs, 49.29% and 26.31% respectively. This difference is due to the fact that the samples in the current study are collected from patients who attended Master Health checkup clinic, when compared to the other study, where samples were collected from healthy blood donors and patients presented with symptoms of hepatitis.

CONCLUSION

This study was conducted to identify and to provide preliminary knowledge about the evidence of Hepatitis E Virus infection in our area. As the prevalence of HEV is closely associated with health education and sanitary conditions of the community, the seropositivity rates of Anti HEV IgG antibodies indicates the development status of the society and thus the country. Further studies using large study population and varied study groups may provide insight about the current existing nature of this emerging viral infection .Also these studies may provide guidance for HEV surveillance in general population including antenatal mothers to provide appropriate health recommendations and timely interventions, thereby reducing the burden of HEV infections and consequent complications in the community.

REFERENCES

1. Kaufmann A, Kenfak-Foguena A, André C, Canellini G, Bürgisser P, Moradpour D, Darling KE, Cavassini M. Hepatitis E virus seroprevalence among blood donors in southwest Switzerland. PloS one. 2011 Jun 20;6(6):e21150.
2. Singh S, Mohanty A, Joshi YK, Deka D, Mohanty S, Panda SK. Mother-to-child transmission of hepatitis E virus infection. The Indian Journal of Pediatrics. 2003 Jan 1;70(1):37.
3. Shinde NR, Patil TB, Deshpande AS, Gulhane RV, Patil MB, Bansod YV. Clinical profile, maternal and fetal outcomes of acute hepatitis e in pregnancy. Annals of medical and health sciences research. 2014;4(8):133-9.
4. CDC morbidity and mortality weekly report. Viral Hepatitis Surveillance –India. 2011-2013.July 24,2015/64(28);758-762
5. Begum N, Devi SG, Husain SA, Kumar A, Kar P. Seroprevalence of subclinical HEV infection in pregnant women from north India: a hospital based study. Indian J Med Res. 2009 Dec 1;130(6):709-13.

6. Kumar A, Beniwal M, Kar P, Sharma JB, Murthy NS. Hepatitis in pregnancy. Int J Gynae Obsts. 2004; 85: 240-4.
7. Shata MT, Navaneethan U. The mystery of hepatitis E seroprevalence in developed countries: is there subclinical infection due to hepatitis E virus?.
8. Farshadpour F, Taherkhani R, Ravanbod MR, Eghbali SS, Taherkhani S, Mahdavi E. Prevalence, risk factors and molecular evaluation of hepatitis E virus infection among pregnant women resident in the northern shores of Persian Gulf, Iran. PloS one. 2018 Jan 12;13(1):e0191090.
9. Marano G, Vaglio S, Pupella S, Facco G, Bianchi M, Calizzani G, Candura F, Catalano L, Farina B, Lanzoni M, Piccinini V. Hepatitis E: an old infection with new implications. Blood Transfusion. 2015 Jan;13(1):6.
10. Lee GY, Poovorawan K, Intharasongkroh D, Sa-nguanmoo P, Vongpunsawad S, Chirathaworn C, Poovorawan Y. Hepatitis E virus infection: Epidemiology and treatment implications. World journal of virology. 2015 Nov 12;4(4):343.
11. Olsen B, Axelsson-Olsson D, Thelin A, Weiland O. Unexpected high prevalence of IgG-antibodies to hepatitis E virus in Swedish pig farmers and controls. Scandinavian journal of infectious diseases. 2006 Jan 1;38(1):55-8.
12. Daniel HD, Warier A, Abraham P, Sridharan G. Age-wise exposure rates to hepatitis E virus in a southern Indian patient population without liver disease. The American journal of tropical medicine and hygiene. 2004 Nov 1;71(5):675-8.
13. Mathur P, Arora NK, Panda SK, Kapoor SK, Jailkhani BL, Irshad M. Sero-epidemiology of hepatitis E virus (HEV) in urban and rural children of North India. Indian pediatrics. 2001 May;38(5):461-75.
14. Modi TN, Patel SA, Mirani KM, Vaghasiya Dr, Makadia Gs, Usdadiya J. A study of clinical profile and outcome in acute viral hepatitis E. Indian Journal of Clinical Practice. 2013 Mar;23(10).
15. Luck CP, Srirangaramasamy J, Jeyakumari D, Balamurugan M. Seroprevalence of Hepatitis E IgG antibodies among Voluntary Blood Donors in a tertiary hospital. Annals of Pathology and Laboratory Medicine. 2017 Sep;4(5):A599-603.
16. Kaur M, Sidhu SK, Singh K, Devi P, Kaur M, Singh NJ. Hepatitis E virus: A leading cause of waterborne viral hepatitis in Northwest Districts of Punjab, India. Journal of laboratory physicians. 2017 Apr;9(2):121.