

Frequency of Hepatitis E among Patients Visiting Rural Health Centre Ranipur Sindh

1. Ashok Kumar 2. Rukhsar Ali Shahani 3. Saira Baloch 4. Suhail Ahmed Bajarani

1. Asstt. Prof. of Pathology, Isra University, Hyderabad 2. Assoc. Prof. of Community Medicine, Isra University, Hyderabad 3. Asstt. Prof. of Medical Research Center, LUMHS, Jamshoro 4. Senior Lecturer of Community Medicine, Isra University, Hyderabad

ABSTRACT

Objective: To determine frequency of Hepatitis E among patients visiting rural health centre Ranipur Sindh.

Study Design : Retrospective study

Place and Duration of Study: The study was conducted in patients visiting OPD at rural Health Centre Ranipur from June 2011 To February 2012.

Materials & Methods: The study was conducted in patients visiting OPD with the complaints of gastrointestinal symptoms and jaundice. A designed, structural Performa was filled with the consent of the patients after taking permission from hospital administration. A sample random technique was used to get blood sample and sent to the local laboratory for screening Hepatitis E through Immunochromatography method. 10 to 50 years aged male and female patients were included in the study. The data was analyzed using SPSS 16.

Results: Total 2118 patients were screened. 98 (4.27%) cases were positive for Hepatitis E. Among them, the frequency of HEV was highest in children (10-15 years), followed by young adults (16-30) and older adults (31-50). In all patients, females were 58% and males were 42%.

Conclusion: In this study we found significant number of HEV cases, among whom the larger number was from children. In all age groups, females were more affected. Further research should be done for making plans and designed strategies to prevent the epidemic of HEV.

Key Words: Hepatitis E, Prevalence, Epidemics

INTRODUCTION

Hepatitis E is an inflammatory disease of the liver, caused by a virus called Hepatitis E virus (HEV). It is estimated that HEV causes 271000 deaths per year globally¹. The virus is transmitted through oro-faecal route, mainly through contaminated water and food. It can also be acquired through ingestion of infected meat. HEV Infected Blood transfusion and products are additional routes of transmission^{2,3}. It affects most commonly the young and middle aged adults of 15-40 years^{4,5}. The disease generally presents with acute illness. Clinical features include flu like symptoms, lethargy, loss of appetite, abdominal pain, fever, jaundice and hepatomegaly. The disease has no specific treatment but symptomatic only. The disease can be prevented by proper hygienic measures. Proper disposal of waste, clean water supply, self hygiene and the use of hygienic food prevent this disease^{6,7}.

The disease is generally self-limited within few weeks and generally does not progress to the chronic disease. However, two recent reports have shown the evidence of chronic HEV infection in transplanted patients^{8,9}. Hepatitis E has a mortality rate of 0.2–1% in the general population². HEV results in increased mortality in the patients, suffering from chronic liver disease¹⁰. It is diagnosed by detection of antibodies against HEV and HEV nucleic acids in serum through Immuno chromatography (ICT) or ELISA and Polymerase chain reaction (PCR), respectively^{11,12,13}. There are two types

of antibodies, i.e., immunoglobulin M (IgM) and immunoglobulin G (IgG). During acute phase, IgM is elevated, which then declines to base line within 3 to 6 months. IgG is also raised during acute phase and can be detected for two years. Other studies have shown that IgG for HEV can be detected till 13 years post infection^{14,15}. Hence, presence of IgM indicates acute infection. IgG is more valuable in studies for detection of HEV seroprevalence¹¹. These antibodies can be detected in the patients' serum by using commercial kits of various international companies¹⁴. As in most of the cases, HEV has a self-limiting outcome, therefore the patients are ignored regarding the management of the disease, which results in fulminant hepatic failure and death of few patients. Hence in the presented study, we investigated the frequency of HEV in our region to help the proper management and prevention of the disease outbreak.

MATERIALS AND METHODS

Retrospective study was conducted in OPD of Rural Health Centre Ranipur Sindh from June 2011 To February 2012. Total 2118 patients of 10 to 50 years age, both male and female, presenting with signs and symptoms of hepatitis such as, jaundice, right hypochondrial or epigastric pain, loss of appetite, nausea, vomiting, lethargy, muscle ach and fever were included in the study. A designed structural Performa was filled with the consent of the patients after taking permission from the hospital administration. A sample

random technique was used to get blood sample (2 to 3 ml) and sent to the local laboratory, where the serum was isolated for HEV screening. HEV test was performed by using EIA (enzyme linked immunosorbent assay) method, which detects antibodies against hepatitis E virus. The data was collected and analyzed using SPSS version 16.

RESULTS

Out of 2118 patients, 98 (4.27%) were positive for HEV infection. Maximum number of affected patients was from children (10-15 years). Overall, females were more affected than males. Further details for gender and frequency of HEV in various age groups are listed in table 1.

Table No.1: Frequency of Hepatitis E

Gender	Male n = (%)	Female n = (%)	Total n = (%)
Gender	41 (41.8)	57 (58.2)	98 (100)
Age	Male n = (%)	Female n = (%)	Total n = (%)
10 to 15yrs	17 (41.5)	24 (58.5)	41 (41.8)
15 to 30yrs	14 (41.2)	20 (58.8)	34 (34.7)
> 30 yrs	10 (43.5)	13 (56.5)	23 (23.5)
Total	41 (41.8)	57 (58.2)	98 (100)

n: number

DISCUSSION

In the presented study, the frequency of hepatitis E infection was determined, which was 98 (4.67%) among 2118 patients, presenting with symptoms of suspected hepatitis. This is the first time study in our region regarding HEV infection. Very few studies have been conducted in other parts of our country in which HEV prevalence was found to be 12.5%²⁴. Our results correlate with the other studies conducted in Turkey and Israel where HEV frequency was found to be around 4% and 2%, respectively¹⁶. There are multiple studies conducted on the prevalence of HEV worldwide. Various results have been shown by various groups. In our neighbouring countries such as Iran, it was 7.4%²⁵, in India 35%¹⁷ and in Bangladesh 22.5%¹⁸. Literature review shows variations in the incidence of hepatitis E in the same country, for example, another study in India showed the frequency of HEV infection to be 18%¹⁸. Prevalence of HEV infection in school children of Chennai India was previously described to be 16%¹⁹. The variation depends upon the outbreak of the virus, which can be due to epidemiological factors, including weather changes, water and food supplies, and social hygienic conditions. It has already been shown that these factors affect the out breaks of hepatitis E^{20,21}. Our findings regarding the HEV

infection to be commonest among females correlate with the other studies^{22,23}. Another important finding of our study was that the children group (10-15 years old) was most commonly affected, which varies from the other studies conducted in other countries which show the young adults to be the most common group affected. However, another study conducted in Egypt showed that HEV infection was most common in age group of 10-20 years. As in our region, children of 10-15 years are school going and belong to poor families. Lack of awareness of health and the poverty are the major factors to cause outbreaks of various infectious diseases including hepatitis E among children.

Therefore, further studies are required to know the frequency and causative factors of HEV infection in our region at various time points so that the disease can be prevented and the awareness programs regarding personal hygiene, hygienic food and water supply, and the social sanitation could be launched.

CONCLUSION

Hepatitis E is a common health issue in our region affecting more commonly children and females. More attention and awareness programs for the people are needed to prevent this disease and increase the quality of life with a good health.

REFERENCES

- Wierzba TF, Panzner U. Report on the International Symposium on Hepatitis E, Seoul, South Korea, 2010. *Emerg Infect Dis* 2012;18(5).
- Aggarwal R, Kini D, Sofat S, Naik SR, Krawczynski K. Duration of viraemia and faecal viral excretion in acute hepatitis E. *Lancet* 2000;356(9235):1081-2.
- Guo QS, Yan Q, Xiong JH, Ge SX, Shih JW, Ng MH, et al. Prevalence of hepatitis E virus in Chinese blood donors. *J Clin Microbiol* 2010;48(1):317-8.
- Chandra V, Taneja S, Kalia M, Jameel S. Molecular biology and pathogenesis of hepatitis E virus. *J of Bio Sci* 2008;33(4):451-64.
- Emerson SU, Nguyen HT, Torian U, Mather K, Firth AE. An essential RNA element resides in a central region of hepatitis E virus ORF2. *J Gen Virol* 2013;94(Pt 7):1468-76
- Yeung LT, Roberts EA. Current issues in the management of paediatric viral hepatitis. *Liver international. J Int Assoc for Study of Liver* 2010;30(1):5-18.
- Teshale EH, Howard CM, Grytdal SP, Handzel TR, Barry V, Kamili S, et al. Hepatitis E epidemic, Uganda. *Emerg Infect Dis* 2010;16(1):126-9.
- Haagsma EB, van den Berg AP, Porte RJ, Benne CA, Vennema H, Reimerink JH, et al. Chronic hepatitis E virus infection in liver transplant recipients. *Liver transplantation. Am Assoc for*

- study of Liver Dis. *Int Liver Transplant Soc* 2008;14(4):547-53.
9. Kamar N, Selves J, Mansuy JM, Ouezzani L, Peron JM, Guitard J, et al. Hepatitis E virus and chronic hepatitis in organ-transplant recipients. *New Engl J of Med* 2008;358(8):811-7.
 10. Hamid SS, Atiq M, Shehzad F, Yasmeen A, Nissa T, Salam A, et al. Hepatitis E virus superinfection in patients with chronic liver disease. *Hepatol* 2002;36(2):474-8.
 11. Zhou YH, Purcell RH, Emerson SU. An ELISA for putative neutralizing antibodies to hepatitis E virus detects antibodies to genotypes 1, 2, 3, and 4. *Vaccine* 2004;22(20):2578-85.
 12. Moal V, Legris T, Burtey S, Morange S, Purgus R, Dussol B, et al. Infection with hepatitis E virus in kidney transplant recipients in southeastern France. *J Med Virol* 2013;85(3):462-71.
 13. Rogee S, Talbot N, Caperna T, Bouquet J, Barnaud E, Pavio N. New models of hepatitis E virus replication in human and porcine hepatocyte cell lines. *J Gen Virol* 2013;94(Pt 3):549-58.
 14. Jameel S. Molecular biology and pathogenesis of hepatitis E virus. *Expert reviews in molecular Med* 1999;1999:1-16.
 15. Mushahwar IK. Hepatitis E virus: molecular virology, clinical features, diagnosis, transmission, epidemiology, and prevention. *J Med Virol* 2008; 80(4):646-58.
 16. Karetnyi YV, Favorov MO, Khudyakova NS, Weiss P, Bar-Shani S, Handsheer R, et al. Serological evidence for hepatitis E virus infection in Israel. *J Med Virol* 1995;45(3):316-20.
 17. Das K, Agarwal A, Andrew R, Frosner GG, Kar P. Role of hepatitis E and other hepatotropic virus in aetiology of sporadic acute viral hepatitis: a hospital based study from urban Delhi. *Euro J Epidem* 2000;16(10):937-40.
 18. Labrique AB, Zaman K, Hossain Z, Saha P, Yunus M, Hossain A, et al. Epidemiology and risk factors of incident hepatitis E virus infections in rural Bangladesh. *Am J Epidem* 2010;172(8):952-61.
 19. Mohanavalli B, Dhevahi E, Menon T, Malathi S, Thyagarajan SP. Prevalence of antibodies to hepatitis A and hepatitis E virus in urban school children in Chennai. *Ind Pediat* 2003;40(4):328-31.
 20. Aggarwal R, Naik S. Epidemiology of hepatitis E: current status. *J Gastro and Hepa* 2009;24(9): 1484-93.
 21. Teshale EH, Grytdal SP, Howard C, Barry V, Kamili S, Drobeniuc J, et al. Evidence of person-to-person transmission of hepatitis E virus during a large outbreak in Northern Uganda. *Clinical infectious diseases. An Off Pub Infect Dis Soc Am* 2010; 50(7):1006-10.
 22. Kumar A, Beniwal M, Kar P, Sharma JB, Murthy NS. Hepatitis E in pregnancy. *International journal of gynaecology and obstetrics. Int Fed Gynaecol & Obstet* 2004;85(3):240-4.
 23. Voiculescu M, Iliescu L, Ionescu C, Micu L, Ismail G, Zisoveanu D, et al. A cross-sectional epidemiological study of HBV, HCV, HDV and HEV prevalence in the SubCarpathian and South-Eastern regions of Romania. *J Gastro and liver Dis* 2010;19(1):43-8.

Address for Corresponding Author:**Dr. Ashoke Kumar,**Asstt. Prof. of Pathology, Isra University,
Hyderabad