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Microbiology Section

Prevalence Of Hepatitis C Infection In A Tertiary Care Hospital In South India

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ABSTRACT

Introduction: Hepatitis is an inflammation of the liver which can be caused by different infectious agents. Hepatitis C is one of the causes of Hepatitis and may lead to hepatocellular carcinoma. Diagnosis of infection is based on antibody detection using serological methods.

Materials & Methods: Serum samples were collected from clinically diagnosed Hepatitis patients and screened for anti-HCV antibodies using Immunochromatographic card test and confirmed by ELISA.

Results: Among 333 serum samples collected, 8 were reactive for antibodies to HCV with a prevalence of 2.4% All these 8 sero-reactive patients belonged to a high risk group as they were undergoing dialysis.

Conclusion: Hence screening of high risk groups and population based studies will help us to identify prevalence rates in different regions.

Key Words: Hepatitis C, Inflammation, ELISA

INTRODUCTION

Hepatitis C is an emerging infectious disease all over the world especially in the developing countries. With approximately 170 million people world wide estimated to be infected with HCV, a figure that is 4 times the HIV infection status HCV has the potential to become the next pandemic [1]. The prevalence of HCV infection is different in different parts of the world. There have been studies conducted which have estimated the prevalence using general population data. However there are countries that do not have such data and hence area specific data has been calculated as against a country wise data. The prevalence has been recorded as < 1.0% in Northern Europe to >2.9% in Northern Africa [2]. The Lowest prevalence has been reported from the United Kingdom and Scandinavia(0.01%-0.1%) and the highest prevalence has been recorded in Egypt(15%-20%) [3]. In India Prevalence studies done in Arunachal Pradesh showed a higher rate of 7.89% as compared to Maharashtra (0.09%), Andhra Pradesh(1.4%) and West Bengal(0.71%) [4,5,6,7]. Hepatitis C although not as frequently encountered, has far greater implications for a patient once the patient is infected, as compared to Hepatitis A and B. The virus was traditionally called Non-A Non-B Hepatitis that was parenterally transmitted. Clinically the signs and symptoms of Hepatitis C cannot be differentiated from other viral causes of hepatitis infection. It is only a serological diagnosis which would ascertain the diagnosis [8]. It becomes very important to diagnose infection with Hepatitis C because chronic infection leads to hepatocellular carcinoma.

This virus was first detected in 1989 using molecular biology techniques after extensive testing of serum from experimentally infected animals [9]. It was later characterized to be an RNA virus, classified under the genus Hepacivirus of the family Flaviviridae [10]. People at risk for HCV infections include current and former injection drug users including those who injected only once many years ago, chronic haemodialysis patients and healthcare workers with occupational exposures to HCV positive blood. The incidence of transmission of HCV after blood transfusions and infusion of clotting factor concentrates has decreased after 1992 since testing of donated blood and advanced methods for manufacture of clotting factor concentrates were adopted [11]. It has been estimated that the global prevalence of Hepatitis C infection is around 2% with 170 million persons chronically infected with the virus and 3 to 4 million persons newly infected each year [12].

MATERIALS AND METHODS

This is a retrospective study of serum samples collected from 333 patients clinically diagnosed as hepatitis, who were ad-

mitted to M.S.Ramaiah Medical Teaching Hospital during the period from 1st January 2008 to 31st December 2008. The serum samples were screened for antibodies to HCV, using HCV Tridot, a 4th generation rapid visual test manufactured by Biomed Industries. (Antigens used are HCV antigens for core NS3, NS4 and NS5). The positive serum samples were confirmed by ELISA using HCV Microelisa. This is a 3rd generation in vitro qualitative ELISA detecting antibodies to HCV manufactured by J Mitra & Co.

RESULTS

Serum samples from 8 patients were reactive for antibodies to HCV out of the total 333 patients. The results were confirmed by ELISA. The prevalence rate for HCV infection was 2.4%. 52 patients out of the 333 patients were undergoing haemodialysis and all the 8 patients who were reactive for HCV antibodies belonged to this group. The prevalence rate among haemodialysis patients was 15%. All these 8 patients were non reactive for co-infection with HIV and Hepatitis B.

DISCUSSION

Viral Hepatitis is an infection which is transmitted parenterally. One of the etiological causes for infective Hepatitis is Hepatitis C Virus (HCV).

The prevalence in the present study was 2.4%. All the patients found positive for Hepatitis infection were haemodialysis patients. The prevalence of the infection in haemodialysis patients was 15%. Patients on haemodialysis are at an increased risk for acquiring hepatitis C infection as a result of cross contamination from the dialysis circuits. These patients are also anaemic, often requiring multiple blood transfusions making them susceptible to acquire the infection [13]. Different studies conducted from different metropolitan cities from India reported the HCV positivity in Haemodialysis patients varying from 4.3% to 13.23% [14,15]. Stringent measures need to be adapted to prevent transmission of Hepatitis C. This includes optimal methods for screening blood samples for HCV infection and strict protocols of Infection control with respect to Dialysis procedures and maintenance of dialysis machines. Further it is known that the antibody response in patients on chronic dialysis and after renal transplants is poor and hence testing for antibodies to HCV using ELISA alone may miss a few cases. ELISA also fails to differentiate between active and post-infection cases. A recombinant immunoblot assay (RIBA) is used to confirm the results of ELISA. The test which would indicate the active replication of the virus is detection of HCV RNA using RT-PCR. Despite the problems encountered in diagnosis ELISA based testing remains the mainstream test used in India due to its relative ease of implementation, automation and cost effectiveness [1].

CONCLUSION

Hepatitis C is an emerging infection in India whose long term implications will be felt in the decades to come. Seroprevalence of HCV needs to be monitored in order to record any regional variations.

Identification of high risk groups would enable us to work out strategies to decrease transmission rates of the infection. We would also like to identify the prevalence of patients who are co-infected with HIV, Hepatitis B and Hepatitis C. There are very few community based studies which record the prevalence of HCV infection in the general population. Although studies of this kind have been done in Andhra Pradesh, Maharashtra, West Bengal and Arunachal Pradesh there are very few studies recorded from Karnataka. A large scale population based study is required to identify the prevalence rate of Hepatitis C Viral infection.

REFERENCES

[1] Khaja MN, SK Munpally, MM Hussain and CM Habeebullah. 2002 Hepatitis C virus: The Indian scenario; *Current Science Vol* 83, No 3,10 August 2002, 219-24.

[2] Stanley M Lemon, Christopher Walker, Miriam J Alter, Minkyung Yi. Hepatitis C Virus in Fields Virology-Volume One(Eds-David M Knipe,Peter M.Howley), *Lippincott Williams & Wilkins,* Philadelphia,2007, p1280.

[3] Frank C, Mohamed MK, Stricland GT, et al.The role of parenteral and antischistosomal therapy in the spread of Hepatitis C in Egypt. *Lancet* 2000;355:887-91.

[4] Phukan AC,Das HK, Mahanta J. HCV activity in an isolated community in North East India.Indian J*ournal of Pathology and Microbiology*. 2001;44:403-05.

[5] Chadha MS, Tungatkar SP and Arankalle VA.Insignificant prevalence of antibodies to Hepatitis C in a rural area of Western Maharashtra. *Indian Journal of Gastroenterology.*1999;18:22-23.

[6] Chandra M, et al. Prevalence, risk factors and genotype distribution of HCV and HBV infection in the tribal population: a community based study in south India.Trop. *Gastroenterol.*2003;24:193-95.

[7] Chowdhury A, et al. Hepatitis C virus infection in the general population: a community based study in West Bengal, India. He*patology.* 2003;37:802-09.

[8] WHO Hepatitis C Fact sheet N o 164 Revised October 2000 available on www.who.com.

[9] Choo, et al. Isolation of cDNA clone derived from a blood borne Non-A, Non-B viral hepatitis genome; *Science*.1989;244:359-62.

[10] Rice CM, Flaviviridae. *The Virus and their Replication in Virology* (eds Fields,B.N. et al.), Lippincott-Raven, Philadelphia, 1996,p931.

[11] http://www.cdc.gov/hepatitis/HCV/HCVfaq.html.

[12] Shepard CW, Finelli L, Alter MJ. Global epidemiology of Hepatitis C virus infection. *Lancet Infect. Dis*.2005; 5:558-67.

[13] Mukhopadhya A. Hepatitis C in India; *J. Biosci*.2008;33:465 73.

[14] Agarwal SK, Dash SC & Irshad M. Hepatitis C virus infection during haemodialysis in India; *J.Assoc.Physicians India.*1999;47:1139-43.
[15] Reddy AK, Murthy KV & Lakshmi V. Prevalence of HCV infection in patients on haemodialysis: survey by antibody and core antigen detection; *Indian Journal of Medical Microbiology*. 2005; 23:106-10.

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