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RESEARCH ARTICLE

PREVALENCE OF HEPATITIS B AND HEPATITIS C CO-INFECTION IN SEROPOSITIVE HIV INDIVIDUALS FROM TERTIARY CARE HOSPITAL

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ABSTRACT

Aim: To determine the prevalence of hepatitis B and hepatitis c co-infection in patients who are seropositive for HIV infection from tertiary care hospital.
Materials and methods: All the HIV positive serum samples were collected from Department of Microbiology during the period of one year from October 2011 to October 2012 in our tertiary care teaching hospital. These samples were confirmed as HIV positive by 3 tests which include enzyme immuo assay, tridot and comb AIDS by the ICTC. These samples were stored in a freezer at a temp of -16°C to -20°C and they were checked for the presence of antiHCV antibodies and HBsAg by third generation ELISA where recombinant antigens and antibodies are used.
Results: In the study group, out of the hundred HIV positive sera tested, 5 were HBsAg positive and one was antiHCV positive. No serum sample contained both HBsAg and anti HCV. In the control group, HBsAg positive percentage was 1.8%.
Conclusion: Five serum samples were found to be positive for HBsAg and one sample was found to be positive for anti-HCV. The positive percentage of HBsAg in the control group was 1.8% lesser when compared to test group.

INTRODUCTION

Human immunodeficiency virus (HIV), Hepatitis B virus (HBV) and Hepatitis C virus (HCV) are major public health concerns. Because of shared routes of transmission HIV-HBV co infection and HIV-HCV co infection are common. So HIV positive individuals are at risk of co infection with HBV and HCV infection. The prevalence rates of co infection with HBV and HCV in HIV positive patients have been variable worldwide depending on the geographic regions and type of exposure. (1) Human immuno deficiency virus is known to influence the natural history of infection with certain hepatitis viruses. Interactions between HIV and hepatitis viruses in these co infections may alter the natural history and treatment response of both diseases. There is high degree of epidemiological similarity between hepatitis B virus and hepatitis C as regard to high risk groups and route of transmission. Infection with hepatitis C virus is being recognized as an important problem these days. Blood transfusion is well documented route of transmission of HCV. A larger number of HCV infections have been associated with intravenous drug abuse or administration of blood products. The importance of sexual transmission of HCV is still debated. Co infection of HIV with HBV and / or HCV is known to result in higher viral load of hepatitis viruses and greater liver damage. It is thus clear that apart from other infections, HIV infected individuals have a high probability of getting co infected with HBV and HCV. HIV disease progression and enhanced immuno suppression has a direct bearing on the natural history and pathogenesis of these infections. Sexual transmission of both HBV and HCV also appears to be significant and is of epidemiological importance in the light of heterosexual transmission of HIV in India. (2)
The present study was undertaken to know the prevalence rates of HBV and HCV in samples that were screened to be positive for HIV

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MATERIALS AND METHODS

Specimen collection: All the HIV positive serum samples were collected from department of Microbiology during the period of one year from October 2011 to October 2012 in our tertiary care teaching hospital. These samples were confirmed as HIV positive by 3 tests which include enzyme immuo assay, tridot and comb AIDS. All these samples were stored in a freezer at a temp of -16°C - -20°C and they were checked for the presence of antiHCV antibodies and HBsAg by third generation ELISA where recombinant antigens and antibodies are used.

RESULTS

In the study group, out of the hundred HIV positive sera tested, 5 were positive for HBsAg and one was antiHCV positive **(**Table 1). No serum sample contained both HBsAg and anti HCV. In the control group, HBsAg positive percentage was 1.8% **(**Table 2)
Of total 100 HIV positive samples, 60 were male and remaining 40 were female, however only one sample were

positive for HCV **(**Table 3).Of 60 male HIV positive samples, 7 samples are from age group 20-29, 22 from age group 30-39, 13 samples from age group 40-49 and 9 samples from age group 50-59.So most of male patient are from age group30-39 whereas of 40 female HIV positive samples maximum of 14 samples are from age group 20-29 followed by 12 samples from age group30-39 and by 10 samples from age group 40-49. **(**Table 4)

Table 1: Shows HBsAg positives and negatives in test group

Gender	HIV positive samples	HbsAg positives	HbsAg Negatives
Male	60	4	56
Female	40	1	39
Total	100	5	95

Table 2: Shows HBsAg positives in control group

Total number of samples screened for HBsAg in one year	**5367**
Total number of positives	98 (1.8%)

Table 3: Shows HCV positives and negatives in test group

Gender	HIV positive samples	HCV positives	HCVnegatives
Male	60	1	59
Female	40	0	40
Total	100	1	99

Table 4: Shows prevalence of HIV in different age groups

Gender	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	TOTAL
Male	Nil	Nil	7	22 (HbsAg Positive = 3) (HCV Positive = 1)	13	9 (HbsAg Positive 1)	8	1	60

DISCUSSION

The primary purpose of this study was to estimate the prevalence rates of Hepatitis-B and Hepatitis-C co-infection in patients who are diagnosed as seropositive for HIV. The study considered the common belief that most of the Hepatitis-B and Hepatitis-C co-infections in HIV seropositive patients are due to shared routes of transmission of these viruses. This study showed some differences as well as similarities in the prevalence rates of Hepatitis-B and Hepatitis-C co-infection in HIV seropositive patients in comparison to other studies carried out in India and in other developed and developing countries. These could be attributed to the epidemiologic conditions of the viruses that depend on various factors including the overlapping degree of risk factors in order to get infected with them. The prevalence rates of Hepatitis-B and Hepatitis-C in the present study were 5% and1% respectively. A study by Alavi and Etermadi in 2007 in south Iran which showed the co-infection rates with HIV/ HBV as 44% and with HIV/HCV as 74%. In year 2009 a study by Mohsen Mohammadi, Gholamreza and Alisheikhian in west Iran showed co-infection rates is 14.5% with HIV/HBV and 72% with HIV/HCV. [(1)] These co-infection rates when compared to the present study are much higher. In 2001 two studies by Dodig *et al* and Tavill *et al* showed co-infection rates of 6-14% with HIV/HBV and 25-50% with HIV/HCV. The above two studies showed moderate rates of co-infection with HBV i.e., 14.5% and 6.14% but higher rates of co-infection with HIV/HCV i.e. 72% and 25-50% respectively. The above mentioned studies were done out of India. The studies carried out in India gave results which did not differ greatly from the present study. Mahajan and Tandon in the year 2008 carried out a study in India which gave results very much similar to the present study. The HIV/HBV co-infection rate was 3.4% and HIV/HCV was 0%.In 2007 a study from northern India by Tripathi and Khanna showed co-infection rates of 2.25% with HIV/HBV and 1.6% with HIV/HCV. The co-infection rates of HIV/HBV being lesser when compared to the present study. Apart from the above mentioned Indian studies a few foreign studies also gave results which were much similar to the results of our study. A study from Brazil by Silva and Braga in the year 2007 showed co-infection rates of 6.4% with HIV/HBV. The co-infection rate with HIV/HCV was 6% in their study, moderately greater than the present study. A study by Luksamijarulkul and Thammata in Thailand in 2002 shows co-infection rates of 4.6% with HIV/HBV and 2.9% with HIV/HCV. This study showed closest proximity with the results of the present study.

The low prevalence rate of HCV in our study i.e., 1% can be attributed to sexual mode being the major risk factor in the study group. HCV is mainly transmitted through blood transfusion and intravenous drug abuse which is not the major risk factor in the study group. The rate of HCV transmission through sexual mode is very less and the reason might be low numbers of HCV virions in the vaginal and seminal fluids. The reason for all the above mentioned studies showing variable rates of co-infections might be due to the different risk factors to which the people in the test group were exposed to. Concurrent infection with all the three viruses was not seen in the present study. However, Alavi and Etermadi in the year 2007 in their study in south Iran found a co-infection rate of 20% with all the three viruses. Mohsen Mohammadi and Gholamreza Talei in the year 2009 reported a co-infection rate of 7.9% with all the three viruses. Consequent co-infection

with all the three viruses will increase the risk of cirrhosis, liver deficiency and mortalities in comparison to when a person is infected with only one of the three viruses. It is a known fact that HBV as such is not cytopathic to the liver cells and the pathogenecity in the disease is mainly immune mediated. In HIV although the inflammation of liver is reduced due to decrease in cell mediated immunity the carrier rates are more thereby leading to hepatocellular carcinoma. In case of co-infection there is no alternative but to give a single class of drugs i.e., NRTI as the other two groups i.e., NNRTI & PI have adverse side effects. Once resistance develops to these drugs we are left with no alternatives. The highly active antiretroviral treatment that is given to patients with co-infection should be monitored carefully as these antivirals are highly hepatotoxic and they may worsen the condition of already damaged liver. Therefore diagnosing HBV and HCV in HIV positive patients is vital in order to take care of them and allot resources in health plans. So, all the HIV positive patients should be tested for both HBV and HCV

Conclusion

A total of hundred HIV positive serum samples were tested for HBsAg and anti-HCV using third generation ELISA. Five serum samples were found to be positive for HBsAg and one sample was found to be positive for anti-HCV. The positive percentage of HBsAg in the control group was 1.8% lesser when compared to test group.

REFERENCES

1. Mohsen mohammadi *et al*. Survey of hepatitis B Virus (HBsAg) and hepatitis C virus (HCV-Ab) co-infection among HIV positive patients. Virology Journal 2009; 6: 202.
2. Tankhiwale SS, Khandara RK, Jagoankar SV. Seroprevalence of antiHCV and hepatitis B surface antigen in HIV infected patients. Indian J Med Microbiol 2003; 21: 268-270.
3. Sepkovitz KA. "AIDS the first twenty years". N Engl J Med 2001; 344 (23): 1764-72.
4. Gaof,Bailes E etal. "Origin of HIV-1 in the chimpanzee pantroglodytes" Nature 1999; 397(6718): 436-41.
5. Gottlieb MS. "Pneumocystis pneumonia-Los angles". Am J Public Health 2006; 96(6): 980-83.
6. CDC 1982. "Opportunistic infections and kaposis sarcoma among haitians in the United states". Am J Public Health 2006; 96(6): 980-83.
7. The Kallings lo. "The first post modern pandemic 25 years of HIV/ AIDS".J Intern Med 2008; 263(3):218-43.
8. Hamlyn E,Easter brook P. "Occupational exposure to HIV and the use of post exposure prophylaxis". Occup Med (lond) 2007; 57(5): 329-36.
9. Ananthnarayan R, Jayaram Paniker CK. Ananthnarayan and paniker's Text book of Microbiology: 8th ed. (Universities Press Private Limited, Hyderabad, India) 2009: 569-70; 575-79.
10. Farley R Cleghorn, Marvin S Reitz, Jr.,Mikulas Popovic, Robert C Gallo. Human immune deficiency viruses. In:Mandell, Douglas and Bennett's Principles and practice of infectious diseases. Volume 2. 6th ed. Gerald L Mandell, John E Bennett and Raphael Dolin, editors. Churchill Livingstone Elsevier, London,UK; 2005:2123.
11. Dodig M, Tavill AS: Hepatitis C and human immunodeficiency virus coinfections. J Clin Gastroenterol 2001, 33:367-374
12. Joanne M. Wiley, Linda M Sherwood, Christopher J Woolverston. Prescott, Harley and Klein's Microbiology: 7th ed. (Mc Graw-Hill,Newyork,USA) 2008: 926-930.
13. Geo F Brooks, Janet S Butel, Stephen A Morse. Javetz, Melnick and Adelberg's Medical Microbiology: 22nd ed. . (Mc Graw-Hill,Newyork, USA) 2002:524.
14. Dhanvijay AG, Thakar YS, Chande CA. Hepatitis B infection in HIV infected patients. Indian J Med Microbiol 1999; 17(4): 167-69.
15. Ramanamma MN, Ramani TV. Incidence of hepatitis B infection in Visakhapatnam. Indian J Med Microbiol 2000; 18(4): 170-71.
16. Saillour F, Dabis F etal. Prevalence determinants of antibodies to hepatitis C virus and markers for hepatitis B virus infection in patients with HIV infection in Aquitaine. BMJ 1996; 313: 461-64.
17. Ockenga J, Tillmann HL etal. Hepatitis B and C in HIV infected patients,prevalence and prognostic value. J.Hepatol; 27(1): 18-24.
18. Usha arora, Amitmann. Prevalence of hepatitis B virus, hepatitis C virus and HIV in patients of chronic liver disease in Amritsar. JIACM 2007; 8(1): 29-31.
19. Deluca A, Bugarini R etal. Coinfection with hepatitis viruses and outcome of initial antiretroviral regimens in previously naïve HIV infected subjects. Arch Intern Med 2002; 162(18): 2125-32.
20. MC Nair AN, Main J, Thomas HC. Interactions of the human immuno deficiency virus and the heterotropic viruses. Seminliver Dis 1992; 12(2): 188-96.

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