Diagnostic Dilemma In HIV And HCV Co-Infected Individuals-Cross Sectional Study

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Abstract. Hepatitis C infection is more severe disease in HIV positive individuals. There is an exponential progression of HCV related liver fibrosis along with more chances of liver failure and hepatocellular carcinoma A cross sectional study conducted in the Department of Microbiology. The population group consisted of age group 20-55 years involved in counseling from Testing Center (ICTC). 100 newly diagnosed HIV infected individuals who were not on ART were involved . As per NACO strategy 3, testing of HIV was done using three Serological rapid kits for detection of antibodies CD-4 T lymphocyte count was determined using FACS Count TM. As per WHO guidelines, three groups based on the CD-4 count in HIV Patients Similarly clinical staging was done according to same guidelines. No association could be established between HCV infectivity and alcoholism. No statistical significance was found between HCV infectivity and raised aspartate transferases(AST) levels. HIV infected individuals have a greater risk co-infection with HCV and false negative anti HCV antibody tests are a common scenario in HIV infected patients.

Key word: HIV, HCV, CD4 COUNT, RT PCR

INTRODUCTION

Viral infections like hepatitis C virus (HCV) pose severe problem in HIV positive patients due to the common routes of transmission. Global prevalence of HCV –HIV co infection is around12-15%, but in India, studies have shown varied prevalence among different geographical areas from 2-8% [1].

Hepatitis C infection presents as a more severe disease in HIV positive individuals. In standalone HCV infection, there is an exponential progression of HCV related liver fibrosis along with more chances of liver failure and hepatocellular carcinoma (HCC) [2,3].

Spontaneous resolution of HCV does not occur in patients who are unable to develop CD4T-cell responses or have been unable to sustain these responses.[4].

Co infected individuals present with atypical serology thus complicating the diagnosis. Effect of HCV on HIV progression is not clear and most studies depict no impact of HCV on HIV progression [2].

Many guidelines have been created in the United States and Europe which recommend
mandatory screening of entire HIV infected population for HCV to help in correct management. In India, such guidelines are unavailable

Hence we need to address this issue in depth and form guidelines to mark a correlation between HIV and HCV and to evaluate the severity of HCV in HIV infected individuals.

METHODS

The present study was a cross sectional study conducted in the Department of Microbiology. The population group consisted of age group 19-56 years who came to attend the Integrated Counseling and Testing Center (ICTC).The case group consisted of 100 newly diagnosed HIV infected individuals who were not on ART. The control group consisted 100 non HIV high risk individuals. which included intravenous drug abusers, commercial sex workers, men who have sex with men, individuals with history of multiple sexual partners and recipients of repeated blood transfusion.

Counselling and informed consent were taken from all the patients before Blood samples were collected.. Serum was separated and alliquoted till testing of HIV and HCV were done using commercially available kits. As per NACO strategy 3, testing of HIV was done using three Serological rapid kits for detection of antibodies

The absolute CD-4 T lymphocyte count was determined using FACS Count TM. As per WHO guidelines, HIV infected people were categorized into three groups based on the CD-4 count.Similarly clinical staging was done according to same guidelines [5].

To diagnose hepatitis C virus infection, ELISA with commercially available Kit was performed to detect anti HCV Ab. Further, RNA was extracted and then reverse transcriptase-nested-polymerase chain reaction (RT-PCR) was done.[6]. Then the serum samples positive for HCV RNA were quantified using Taq Man

Chemistry. Genotyping was further conducted in positive samples by Restriction fragment length polymorphism [7,8].

Statistical methods: SPSS-18 software was used for any statistical analysis needed.

RESULTS

A total of 100 HIV positive patients were included in the study. Males were more in number as compared to females. Mean age group of the study population was
37.4 years. Heterosexual partenership (85%) was the most common mode of catching HIV infection, followed by intravenous drug use, blood transfusion, and needle prick injury
Out of all, 11 were found to be HIV/HCV co-infected whereas in the control group, only 4 individuals were HIV/HCV co- infected (p=0.145). Age group 25-35 years were infected to a greater extent.
Amongst the 11 coinfected cases, there were 6 cases positive only for HCV Ab, 4 were HCV RNA alone positive. There aws a single sample which was both HCV RNA and anti HCV Ab positive. Amongst these co infected cases CD-4 count below 350 cells/ul was observed in three individuals with.
We observed that HIV positive patient with lowest CD-4 count had highest viral load. HIV positive patients had the viral load higher in compared to the HIV negative patients.
On genotyping in HIV positive cases, genotype 3 was observed in maximum individuals. Among the HIV negative control group, genotype 1 was found to be more common. Highest viral load was found in patient with genotype 3.
.No association could be established between HCV infectivity and alcoholism. No statistical significance was found between HCV infectivity and raised aspartate transferases(AST) levels.

DISCUSSION

The mean age of study population was 37.4 years and males predominated the study which was as per “HIV sentinel surveillance and HIV estimation in India 2007” report by NACO [9]. Heterosexual route was the commonest mode of transmission correlating with other studies [10].
We observed a higher coinfection rate if compared to many previous studies probably because we had again tested the sero-negative blood samples for HCV RNA thus enabling us to diagnose more patients [10].
The case with HCV RNA alone positive had active HCV infection and could not sero-convert because of the immunosuppressed condition of these HIV positive patients. This clearly depicts the value of further confirmatory test such as HCV RNA once screening with anti-HCV antibody has been done this fact has been highlighted by other studies as well[11].
In different geographical areas,co-infection rates differ due to varying modes of transmission. This can be implied from a study in North East India where IVD as compared to heterosexual in our study is the most common mode oftransmission.[12].
As is seen in many studies, HCV infection in HIV patients was higher in comparison to the HIV negative high risk group [10]. In our study, prevalence of HCV infection in HIV negative individuals was also higher implying that high risk behavior plays a pivotal role for HCV transmission [10].
In South India, a study was done in which CD-4 count was less than 350 cells/ul in cases with only HCV RNA reactive with no antibodies present, [13]. However, in our study, amongst the cases with only HCV RNA positive, equal number of patients had CD-4count below 350 cells/ul and above 350 cells/ul. The individuals with CD-4 count more than 350 cells/ul could be in the early stage of infection, and moreover, antibodies against HCV take almost 6 weeks to 6 months to appear. On the other hand, patient with less CD4 count (< 350cells/ul) may have been unable to mount an antibody response considerin the immunosuppressed state.
We observed that cases with HCV antibody positive and no HCV RNA detection few had CD-4 count below 350cells/ul. This could be due to spontaneous clearance of the infection way before the setting of immunosuppression and remained anti HCV antibody positive after that.
Similar to previous studies, HCV RNA levels were higher in co-infected individuals compared to HIVnegative individuals.. This study also reported that, more the CD-4 count, lesser is the HCV RNA level which is a finding similar to current study.
The commonest genotype in our study was genotype 3 which is in contrast to Indian studies but simulates a few studies abroad. This difference in genotype preponderance is due to the varied risk behaviours demonstrated by individuals at different geographic locations. Few studies on HCV genotyping have been done in North India but no such study in co-infected individuals has been conducted so far.
In a European study, serum HCV RNA levels were higher with genotype 1 patients which is in contrast with our study.
Biochemical tests were done for all patients and we observed that raised AST levels were more in co-

infected patients. Such patients are at a higher risk of various hepatic complications [10-13]
Conclusion: HIV infected individuals have a greater risk co-infection with HCV and false negative anti HCV antibody tests are a common scenario in HIV infected patients. Hence further testing with HCV RNA must be done for confirmation in all HIV infected individuals. Considering heterosexual behavior as the commonest route of transmission, awareness campaigns should be done and use of barrier protection must be promoted.

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