

Incidence of Seropositive But HIV-1 Viral RNA Not Detected Naive Cases In Rajasthan

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ABSTRACT

Objectives: To identify cause of HIV seropositive but Viral RNA undetected naive cases in Rajasthan.

Materials and Methods: This study included 250 HIV seropositive cases from ICTC Centre, SMS Jaipur. HIV Viral load was done by Qiagen HIV-1 viral load kit on ABI 7500 Fast dx Real Time PCR, while CD4 count was done on FACS CALIBUR flowcytometer (BD Biosciences).

Results: A total of 250 HIV Serological confirmed positive samples were tested for HIV-1 RNA viral load & CD Count in the period of 2014-19. Out of 250, 26 (10.4%) cases were found in which viral RNA were undetected. out of 26 seropositive but HIV RNA undetected case, 16(61.5%) were Male while 10 (38.5%) were females. Mean of CD4 in Female was 565 while 650 in males.

Conclusion: HIV-1 seropositive patients but undetected viral load is not uncommon in society. HIV sero-positive but viral RNA undetected males CD4 count were higher than females. It was also observed that all the cases of seropositive with undetected viral load had higher CD4 count comparative with seropositive with viral RNA detected patients. It is concluded

that RNA viral load test is a prognosis test, although such patients who had seropositive but viral load undetected need further investigations after 3-4 weeks to monitor the status of the disease.

Keywords: Naive HIV-1, Viral Load Undetected, CD4 Count.

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INTRODUCTION

HIV was first identified in The USA in 1983 in homosexual & the 1st case of AIDS was found in San Francisco and New York. According to WHO a worldwide estimate, globally around 42 million people are affected .which causes deaths of >30 lacs every year.¹ The first case of HIV infection was reported in a sex worker in Chennai in 1986. Now India has become the largest no. of HIV cases in asia & second highest globally.²

HIV Transmission depends on viral infectivity rate and exposure duration. Infectivity is greatest during the early and late stages of the disease where viral loads are highest. It is estimated that 5-50% of infections accounts from individuals newly infected themselves. Furthermore, infection risk depends upon viral load, STD coinfection, route of transmission and behavioral characteristics.^{3,4}

This study was carried out to analyze the various factors of HIV-1 seropositive but RNA viral load undetected in HIV-1 naive Patients. So far, there is no report of similar studies being

conducted in North-east India, and these findings will be of great help to the medical professional in taking the right decision for the better management of ART-naive HIV-1-infected individuals with undetectable viral RNA in blood plasma sample.

As per the guideline of NACO (National AIDS Control Organization Report 2008, blood investigation has been carried out of all the HIV suspected cases.

AIMS AND OBJECTIVES

To identify the cause of seropositive but HIV-1 viral RNA Undetected cases.

MATERIALS AND METHODS

Study Centre: 250 HIV-1-infected ART-naive individuals, who were eligible for first-line ART, have been enrolled for this study. All HIV-infected patients visiting Integrated Counseling and testing centre (ICTC) and ART Clinic at S.M.S. Medical College, Jaipur,

were screened for eligibility. They were confirmed for HIV-1 seropositivity by three sets of Enzyme linked Immunosorbent Assay (ELISA) according to NACO guidelines. Detailed treatment history has been taken from all patients. Those who reported no prior exposure to antiretroviral drugs has been considered as ART naïve.

Inclusion Criteria: HIV seropositive confirmed cases as per NACO guideline were included in this study

Exclusion Criteria: HIV seropositive but on ART patients were excluded in this study. Below 15 yrs of age HIV positive case has been also excluded.

Methodology: HIV Viral load was done by Qiagen HIV-1 viral load kit on ABI 7500 Fast dx Real Time PCR, while CD4 count was done on FACS CALIBUR flowcytometer (BD Biosciences) as per standard protocol. 2ml plasma sample were collected from each patient

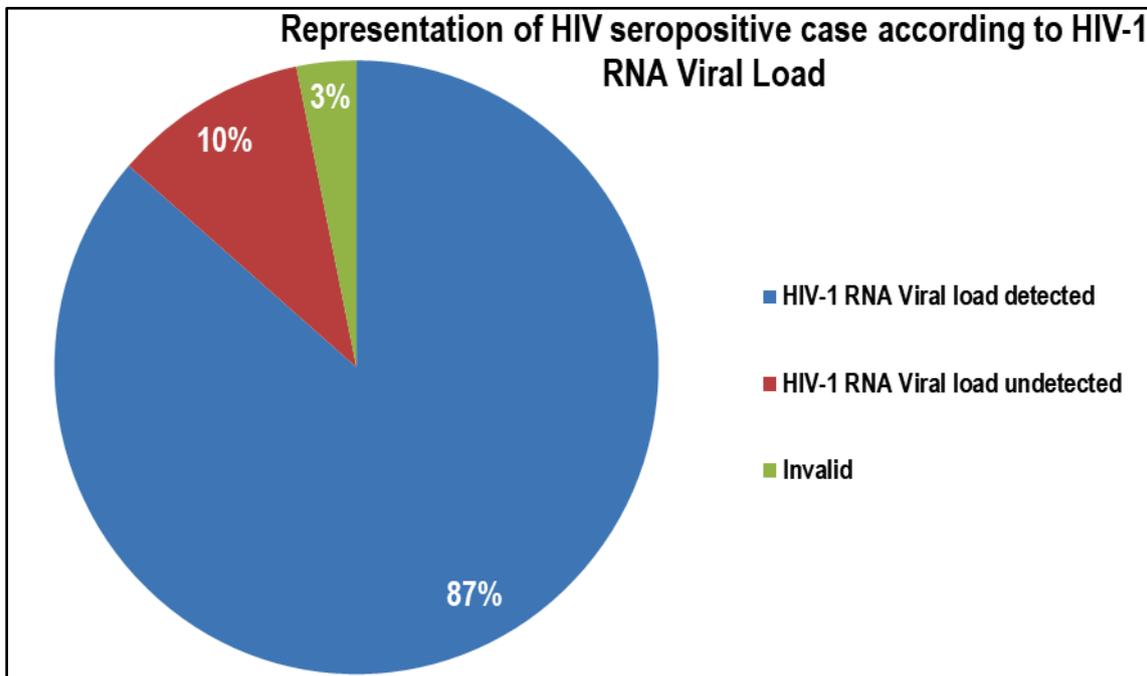


Fig 1: Representation of HIV-1 Seropositive case according to HIV-1 RNA Viral load.

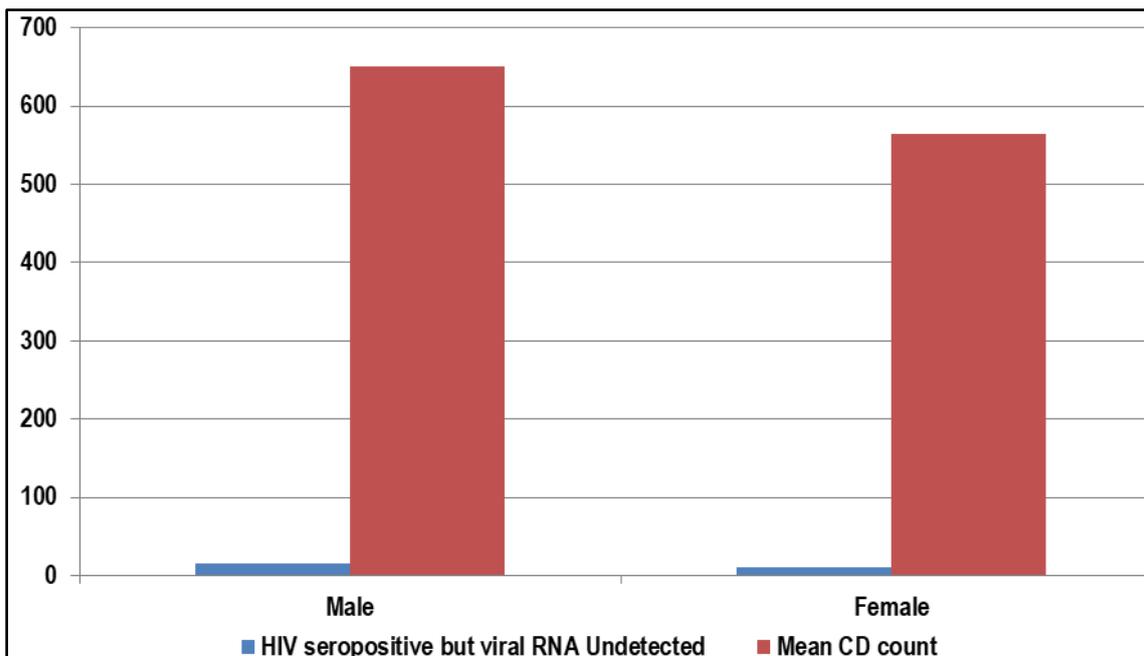


Fig 2: Gender wise correlation of CD4 count in HIV seropositive but RNA undetected cases.

RESULTS

A total of 250 HIV Serological confirmed positive samples were tested for HIV-1 RNA viral load & CD Count. Out of 250, 26 (10.4%) cases were found in which viral RNA were undetected.(fig.1) Out of 26 seropositive but HIV RNA undetected

case, 16(61.5%) were Male while 10 (38.5%) were females. Mean of CD4 in Female was 565 while 650 in males. All the patients were educated (100%), 92.3% were married and the mean age was 34 yrs in males while 28.7 yrs in females.(Fig.2)

DISCUSSION

In the present study we have test HIV seropositive ART naive patients for HIV-1 RNA viral load & for CD4 count. And we have found 26 cases who were seropositive but viral RNA undetected. According to present study all the 26 such patients were in the age of 21-45 yrs and mean of age were was 34 yrs in males while 28.7 yrs in females. Most common method of all among cases was unprotect sexual intercourse which was similar with data obtained from NACO state HIV epidemic fact sheet 2014. Total 26 (10.4%) Viral RNA undetected in ART Naive cases were found in our study while 8.5% were found in the study of Paotinal Haokip et al,2015 in northeast India, & 9.5% in Nigeria.^{5,6} HIV-1 RNA viral load undetected, indicated that, it was below to lower limit of the assay. But it does not mean it is 100% cleared from blood. A strong immune system with a representation of >500 CD4 count or some genetic variation could be a reason of Undetected RNA from plasma samples of seropositive cases. In the study of Pereyra et al, A low-level of HIV viremia was present in the majority of controllers, with a mean of RNA viral load of 2 copies/mL.⁷ Re et al. 2001, has conducted a study over the high level of HIV-1 antibody against specific TAT peptide protein 6-14,36-50,46-60 were associated with undetected viral RNA among those patients.⁸

In the present study mean CD4 count in males 650 cells/ul were found while in females it was 565 cells/ul while in the study of Paotinal Haokip et al,2015 there was no significant gender differences in CD4 count.⁵ Co-infection of all seropositive but viral RNA undetected cases studied out for tuberculosis, bacterial infections etc. Only 1 (3.84%) case out of 26 were positive for tuberculosis rest of all were asymptomatic.

CONCLUSION

HIV-1 seropositive patients but undetected viral load is not uncommon in society. HIV sero-positive but viral RNA undetected males CD4 count were higher than females. It was also observed that all the cases of seropositive with undetected viral load had higher CD4 count comparative with seropositive with viral RNA detected patients. it is concluded that RNA viral load test is a prognosis test, it should not be used as diagnostic tool. although such patients who had seropositive but viral load undetected need further investigations after 3-4 weeks to monitor the status of the disease.

ETHICAL CONSIDERATIONS

Permission for this study was obtained from the Institutional Ethics Committee.

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