Nature & Environment
Vol. 18 (1&2), 2013: 114-120
Website: www.natureandenvironment.com

ISSN (Print) : 2321-810X
ISSN (Online) : 2321-8738

RESEARCH ARTICLE

Observations on Age and Sex, more prone to HIV and its mode of Transmission

Seema Srivastava and Sureena Chauhan
Department of Zoology, University of Rajasthan, Jaipur
Email: drseemaa07@gmail.com

Received: 21st Nov. 2012, Revised: 28th Dec. 2012, Accepted: 4th Jan. 2013

ABSTRACT

HIV has become an epidemic throughout the world. With various mode of transmission is spreading in almost all ages and both sexes. Control of disease needs to know the most affected age sex and mode of transmission to be checked. The present study aims to find out the maximum mode of transmission and age and sex more prone to the disease. Results infer that the maximum mode of infection is sexual followed by mother to fetus and more in males in comparison to females that too in sexually active age as compared to others.

Key words: *Transmission, HIV, Age, Sex*

INTRODUCTION

Acquired Immune Deficiency Syndrome (AIDS) was first recognized in USA in 1981. The causative agent of AIDS was first reported by Luc Montagnier and colleagues of the Pasteur institute Paris in 1983. They called it lymphadenopathy associated virus (LAV). Robert Gallo and colleagues from National institute of health, Bethesda (USA) reported isolation of retrovirus and called it human T cell lymphotropic virus 3(HTLV-3). In 1986 the international committee on virus nomenclature gave a name human immune deficiency virus (HIV) a member of family Retroviridae subfamily Lentivirinae and genus Lentivirus. It is a rapidly mutating virus. Two antigen types of HIV have been identified HIV-1 represents the original LAV/HTLV-3. HIV-2 was isolated from West Africa in 1986. It causes similar spectrum of disease. HIV transmission is possible by many means like infected blood transfusion, parentral transmission: by infected mother to infants either interpartum perinatal or via breast milk or sexual transmission. Sexual transmission being the most important cause of disease the infection is called as sexual disease. Looking into all these aspects of HIV infections the present study was conducted to find out the age, sex and the mode of acquiring the infection in particular in pushkar district of Rajasthan (India).

OBJECTIVES OF THE STUDY

1. Identification of HIV patients
2. Identification of age more prone to disease
3. Identification of sex more prone to disease
4. Maximum mode of transmission of the disease

MATERIAL AND METHODS

Patients attending JLN hospital Ajmer were screened for HIV infection according to NACO, 2007 guide lines by:-

1. ELISA-HIV
2. COMBAIDS-RS advantage
3. SD BIOLINE HIV ½
4. HIV TRI-DOT

1. ELISA-HIV:

Required number of Micro - HIV strips were fitted with the strip holder.100 µl sample diluents were added to A-1 well as blank. 100 µl of negative control was added in each well no. B-1 and C-1 respectively and this negative control was used. Similarly 100 µl positive controls were added in D1, E1 and F1 wells. Positive control was ready to use. 100 µl sample diluents was added in each well starting from G-1 followed by addition of 10 samples. Incubated at 37^{o} C for 30 minutes after covering it to seal, wash buffer and working centrifugate was prepared. After incubation was over the wells were washed 5 times with working wash solution in ELISA washer and 100 µl liter of working centirfugate solution was added in each well including A1 and again incubated for 30 minutes at 37 ^{o} C. Again washing was done by wash buffer and 100 µl of working substrate solution was added and absorbance was noted at 450nm within 30 minutes in ELISA READER after blanking A-1 well.

Interpretation of the Test Result:

Samples with absorbance value less than the cut off value were considered non reactive by QUALISA-HIV ELISA KIT and were considered negative for HIV whereas, samples with absorbance value equal to or greater than cut off values were considered reactive by QUALISA-HIV ELISA KIT. Tests were done in duplicate. The samples which were not reactive in either of duplicate were considered as negative for HIV and those reacted in both tests were considered positive.

2. COMBAIDS-RS Advantage:

In COMBAIDS-RS Advantage, the colo000red end point is developed by a colloidal Gold protein –A signal reagent. Each tooth of the comb is spoted with a circular spot, one near the tip with are optimally standardized blend of HIV-1 and HIV-2 recombinant antigens and/or synthetic peptides (Test spot) and the other spot, a little above the first spot is spotted with "Control Reagent"(control spot). When incubated with a specimen containing HIV-1 and/or 2 antibodies. These antibodies bind directly to the HIV antigen present in the 'Test Area' on the tooth of the comb. The immune complex is directly visualized after incubation with the colloidal Gold- protein-A Signal Reagent. Then it was incubated for 10 minutes at room temperature. After incubation, washing procedure was repeated again. The combs were placed on a clean surface with reactive (labelled) side up. The Combs were allowed to air-dry completely. Finally, the color development was noted on the spotted area on the tip of the teeth of the comb for reactivity as well as for control dot appearance.

Interpretation of the Test Result:

A positive result was indicated by the presence of pink colored spot/clot in the 'Test Area' near the tip of the tooth of the comb where antigens are spotted. Built in control was visualized separately in the upper part of the tooth (control area), where control reagent has been spotted, serving as the procedural control. A pink colored spot in the control area with recommended test specimen was irrespective of the presence or absence of HIV

antibodies in the specimen. No pink colored spots are considered as invalid. Whereas, faintly colored are considered as intermediate an intensity between 0.00 to 1.0 color index, when compared with reference color index chart for SPIA and these samples were repeated for confirmation. A positive result was indicated by the presence of pink colored spot both in test and control. The intensity of pink color in the test area were considered to be equal to or more than 1.00 color index when compared with reference color index chart for SPIA in the kit for positivity of the test.
Negative result was indicated by the presence of only one pink colored clot in the control area.

3. SD Bioline HIV ½ :
The SD BIOLINE HIV- ½ test is an immunochromatographic (rapid) test for the qualitative detection of antibodies of all isotype (IgG, IgM, IgA) specific to HIV-1and HIV-2 simultaneously in human serum, plasma or whole blood.

Interpretation of the Test Result:
The presence of two bands at a control line (C) and test bands 1 within the test result window-indicated a positive result for HIV-1. The presence of two bands as a control line (C) and test bands 2 within the test result window indicates a positive result for HIV. The presence of these lines as a control line (C) test line 1 and test line 2 within the test result window indicates a positive result for HIV-1 and HIV-2
The presence of only band at control line within the result window indicates a negative result.

4. HIV TRI – DOT:
The HIV TRI – DOT test is a visual, rapid, sensitive and accurate immunoassay for the detection of HIV-1 and HIV-2 antibodies (IgG) in human serum or plasma using HIV-1 and HIV-2 antigens immobilized on a Porous immunofiltration membrane. Sample and reagent pass through the membrane and are absorbed into underlying absorbent.
As the patient's sample passes through the membrane, HIV antibodies< if present, bind to the immobilized antigens.
Conjugate binds to the Fc portion of the antibodies to give distinct pinkish purple DOT against a white background.

Interpretation of the Test Result:
Positive result indicated by two dots, one for the control and the other for HIV-1 appeared indicating the sample is reactive for antibodies to HIV-1 and if two dots, one for the control and the other for HIV-2 appeared indicating the sample is reactive for antibodies to HIV-2. All the three dots, one each for control, HIV-1 and HIV-2 appear sample is reactive for antibodies to HIV-1 and HIV-2.
If only control dot appeared, Specimens were negative for antibodies to HIV-1 and HIV-2 and samples were considered as non-reactive.

RESULTS

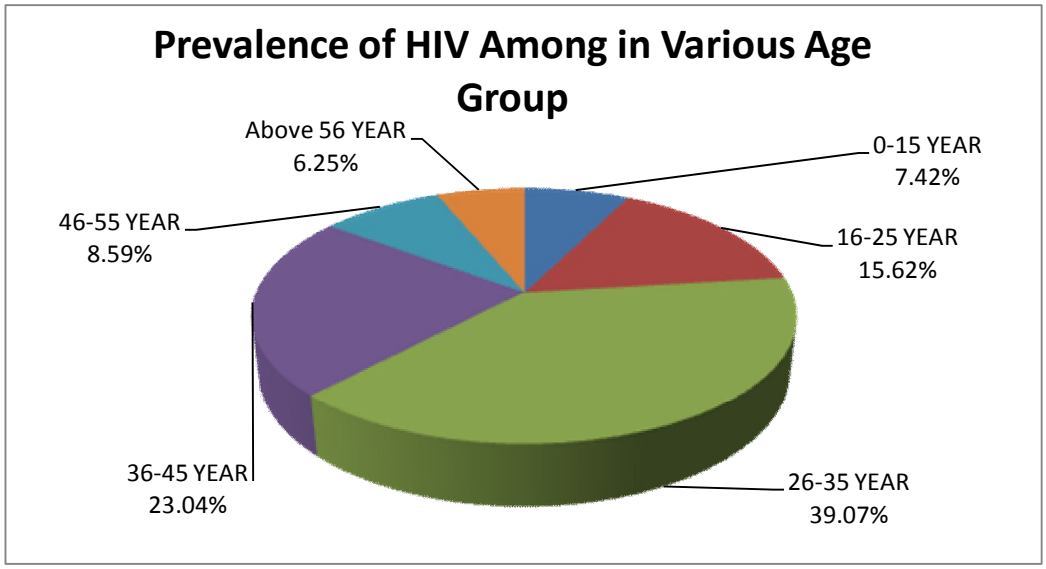
From the high-risk groups of the patients attending the HIV clinic JLN Hospital Ajmer 256 patients were identified HIV positive. Data of the HIV patients indicates that HIV prevalence

was found to be highest in age group 26-35 years i.e 39.06% (Fig.1) (Table 1 & Fig. 1) i.e sexually active age.

Table 1: Prevalence of HIV among in Various Age Group

Age group	Number	Percentage
0-15	19	7.42
16-25	40	15.62
26-35	100	39.06
36-45	59	23.04
46-55	22	8.59
Above 56	16	6.25
Total	256	

Fig. 1: Showing Prevalence of HIV among in Various Age Group

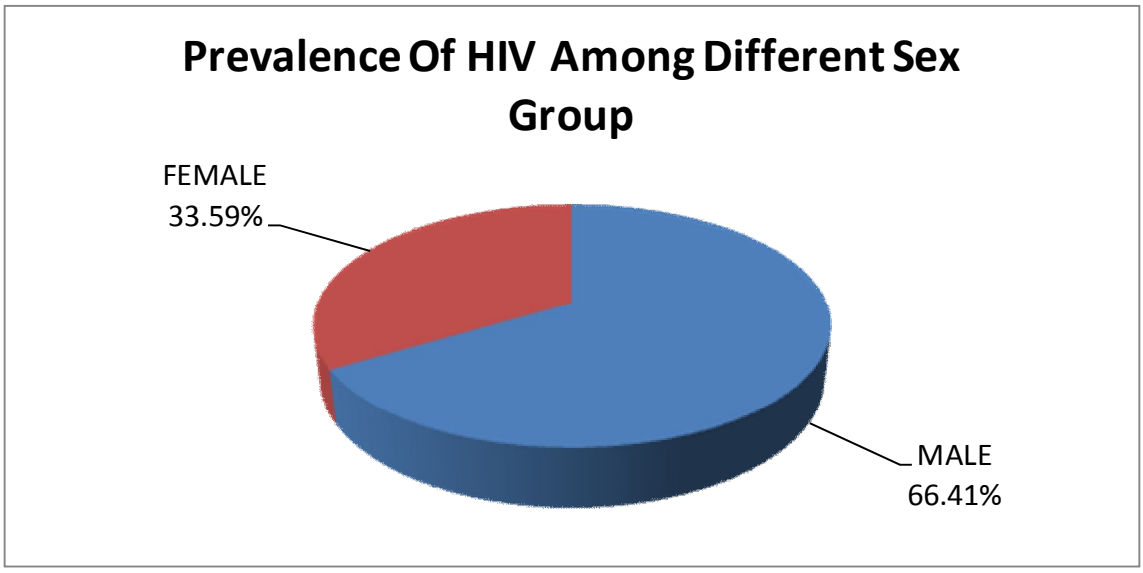


Prevalence of HIV was found to be highest in age group 26-35 years i.e. 39.06%. This prevalence occurrence was also found to be maximum in male patients in comparison to females. (Fig2) (Table2).

Table 2: Prevalence of HIV among Different Sex Group

Gender	Number	Percentage
Male	170	66.40
Female	86	33.59

Fig. 2: Showing Prevalence of HIV among Different Sex Group

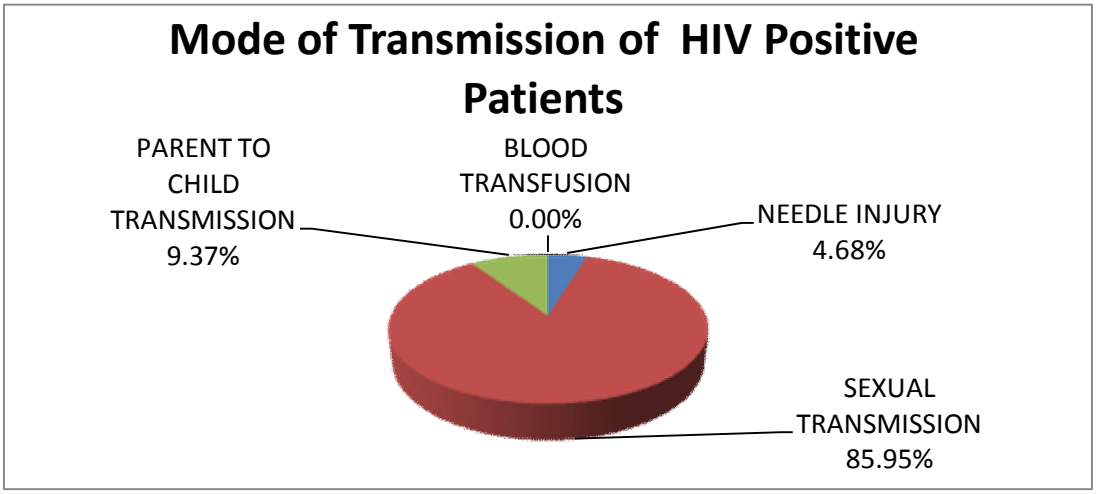


Prevalence of HIV among Male patients was found to be higher than Female patients. Looking to the mode of transmission highest was found to be by sexual transmission followed by mother to child. (Fig.3) (Table 3). Highest was found to be by sexual transmission followed by mother to child.

Table 3: Mode of Transmission of HIV Positive Patients

Mode of Transmission	Number	Percentage
Needle injury	12	4.68
Sexual Transmission	220	85.93
Parent to child Transmission	24	9.37
Blood Transfusion	0	0

Fig. 3: Showing Mode of Transmission of HIV positive patients



DISCUSSION

HIV is considered as a sexual disease and hence more prone in the sexually active age. Since it is easily transmutable through various sources their presence in children (via mother) in adolescents (due to significant involvement in sex without any precautions like condom etc.) and elders above age 50 years (via blood transfusion/sexual transmission) can also be not ruled out. Although the HIV risk factors are the same for everyone. Some gender groups are far more affected than others. The sexual transmission occurs among both homosexual as well as heterosexual individuals. The virus appears to concentrate in the seminal fluid particularly in the situation where there are increased numbers of lymphocytes and monocytes in the seminal fluid, as in genital inflammatory states associated with STDs. At present, over 40 million people are infected with the human immunodeficiency virus type-1 (HIV-1). Most HIV-1-infected men and women are of reproductive age (Joint United Nations Programme on HIV/AIDS (UNAIDS), 2005). Study on American population by CDC (Centre for Disease Control and prevention) found 26% of all Americans living with diagnosed or undiagnosed HIV infection of age group 55 years and more. Whereas study also reports youth ahead 13-24 years estimates 22% of all new HIV diagnosis in the United States. Whereas, Government of India estimates that about 2.40 million Indians are living with HIV (1.93 -3.04 million) with an adult prevalence of 0.31% (2009). Children (<15 yrs) account for 3.5% of all infections, while 83% are the in age group 15-49 years. Of all HIV infections, 39% (930,000) are among women. India's highly heterogeneous epidemic is largely concentrated in only a few states in the industrialized south and west, and in the north-east. The World Health Organization considers prevention of sexually transmitted disease to be one of the main objectives of family planning programe for adolescents. The evidence thus indicates that adolescent are at substantial risk of AIDS, their significant sexual activity and their failure to use condoms. (Cartes 1988) A study reports 14 infants with clinical and laboratory features of an acquired immunodeficiency syndrome in a single metropolitan area from Nov 80 to July 83 and becoming susceptible to various diseases leading to death. (Scott et.al.,1984) These observations suggest the likelihood of transplacental, perinatal, or postnatal transmission of an as yet unidentified infectious agent that causes this disease. A 2010 report calls attention to young people ages 10–24 within the populations considered most at risk of HIV infection: men who have sex with men, those who sell sex and those who inject drugs. Despite the growing attention that has been given to programming for these groups, little focus has been given to the needs of young people in these populations. This report is based on the 2nd annual meeting of the Interagency Youth Working Group in 2009, which focused on young people most at risk of HIV, and on additional material from literature reviews and field experiences. The report concludes with suggested actions for addressing the needs of most-at-risk young people (Explore FHI 360, 2010). Giesser et al., 2001 through studies from Western Europe have shown that the average age at HIV diagnosis throughout the1990s increased. 12.9% of newly reported cases of HIV in Western Europe in 2007 were in people aged 50 years or older. In the present study also the HIV infected patients were of reproductive age i.e.26-35. Similarly looking to the sex of the patients we found that it also varies with the mode of transmission. In the present study it was found to be higher in males in comparison to females. The World Health Organization (WHO) estimates that almost 18 million adults living with HIV are women. Although women account for approximately half of all people living with HIV worldwide, the percentage of women who are living with HIV varies widely

among countries. Estimates suggest that one in three people living with HIV in the United Kingdom are women; almost four out of ten people living with HIV in India are women; and almost six in ten people living with HIV in sub-Saharan Africa are women. The Joint United Nations Programme on HIV/AIDS (UNAIDS) reports that, in 26 of 31 countries with generalized epidemics of HIV/AIDS, fewer than half of young women in these countries have correct and thorough knowledge about HIV. Age and Sex-specific HIV prevalence survey of Tanzania 2003-2004 found that women are mostly affected at lower ages compared to men who are highly affected at the older ages, although at the reproductive age both women and men have the same HIV prevalence. The prevalence then starts to decrease more slowly for women than for men (Age and Sex-specific HIV prevalence survey, Tanzania 2003-2004).

The Indian epidemic is concentrated among vulnerable populations at high risk for HIV. The concentrated epidemics are driven by unprotected sex between sex workers and their clients and by injecting drug use with contaminated injecting equipment. Several of the most at risk groups have high and still rising HIV prevalence rates. According to India's National AIDS Control Organization (NACO), the bulk of HIV infections in India occur during unprotected heterosexual intercourse. Consequently, as the epidemic has matured, women account for a growing proportion of people living with HIV, especially in rural areas Injecting drugs with contaminated injecting equipment is the main risk factor for HIV infection in the north-east India and features increasingly in the epidemics of major cities elsewhere, including migration and mobility**.** Migration for work takes people away from the social environment of their families and community. This can lead to an increased likelihood to engage in risky behavioral (MAP, 2005; NACO, 2007). National institute of drug reports (2010) highest cause of HIV transmission is through male to male sexual contact i.e. 61%, 28% by heterosexual contact, 8% infection drug use and around 3% drug use and male to male contact. In the present study data reports its maximum through sex followed by mother to child.

CONCLUSION

The study infer that the disease is more prominent in males and in sexually active age and more prominent cause of transmission is sexual and mother to fetus. Though this can vary with these causes.

REFERENCES

1. Joint United Nations Programme on HIV/AIDS (UNAIDS) (2005) AIDS Epidemic Update 2005, Geneva, Switzerland.
2. Molina Cartes R. Is there risk of AIDS among adolescents? Boletn Asociacin Chilena de Proteccin de la Familia. 1988 Jan-Jun; 24(1-6):6-9.
3. Scott GB, Buck BE, Leterman JG, Bloom FL, Parks WP. Acquired immunodeficiency syndrome in infants. New England Journal of Medicine. 1984 Jan 12;310 (2):76-81.
4. Explore Fhi 360.2010. The Science of improving lives Publication suggested that 2010- Young people are most risk if HIV.
5. Giesser IL, Doerr HW, Rabenau HF. An epidemiological study of HIV-infection in Frankfurt/Main and other major cities in Germany. Int J Hyg Environ Health 2001; 203: 393–399.
6. Age and Sex-specific HIV prevalence survey, Tanzania 2003-2004.
7. CDC (Centre for Disease Control and prevention)
8. NACO: National AIDS Control Organization, Ministry of Health and Family Welfare, 2007.
9. National institute of drug reports, 2010
10. NIH (National Institute on Drug Abuse) Advancing addiction Science, 2010