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Original Research Article

Seroprevalence of Human Immunodeficiency Virus in Pregnant Woman: A Hospital Based Study

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ABSTRACT

Context: The estimation of the seroprevalence of human immunodeficiency virus in the pregnant women provides insight into the effectiveness of the planning strategy and the implementation of AIDS control programme. The women are exposed to HIV infection primarily in their reproductive age; hence the focused approach to screen for HIV infection in the antenatal mothers once during this period will be instrumental in curbing the overall AIDS epidemic.
Aim: To study the seroprevalence of human immunodeficiency virus among pregnant woman.
Settings and Design: Six years retrospective study.
Materials and Method: The study was conducted retrospectively among antenatal women attending antenatal clinic and Integrated Counseling and Testing Centre in District Solan, Himachal Pradesh from January 2010 to December 2015. The data was collected from the laboratory log books reports of the antenatal HIV testing from the five ICTC which were tested for HIV antibodies.
Results: Of 33271 antenatal women who were screened for HIV antibodies and 13 were found seropositive for HIV antibodies (0.03%). The majority of antenatal women screened (51.2%) were in the age group of 18-24 years followed by 25-34 years (41.59%) and (7.19%) in more than 35 years.
Conclusions: Seroprevalence of HIV infection was found to be decreasing over the period of six years in the antenatal mothers.

Keywords: Seroprevalence, human immunodeficiency virus, HIV, AIDS, pregnant women.

INRTODUCTION

The AIDS is the one of the leading cause of morbidity and mortality in developing nations and prevalence of HIV infection is 0.48 % in the pregnant women in India as per NACO annual report. The first case of HIV infection in India was reported in 1986 from Chennai. [1] The perinatal transmission of HIV was first reveled in 1982 [2] and transmission through breast milk was proposed in 1985. [3] The transmission risk is 15-25% in developed nations and 20-45% in the South East Asian in the absence of any intervention. [4] India is a low prevalence nation for HIV with less than 1% seroprevalence among adult population. Six Indian states Manipur, Nagaland, Andhra Pradesh, Tamil Nadu, Karnataka and Maharashtra have high HIV-AIDS prevalence. The antenatal mothers comprise a low risk population and the seroprevalence in this group considered as an indicator of HIV infection in general population and to predict seroprevalence in young children. [5,6]

The most of children acquire infection from mother during pregnancy, child birth and breast feeding, so screening of pregnant women at early stage or first antenatal visit with pre and post test counseling will definitely reduce the burden of HIV disease. HIV screening in pregnancy can be done as opt-in and opt-out approaches [7] but opt-out approach encourages higher screening rates. [8] The routine opt-out approach in countries with high prevalence was introduced by The World Health Organization and UNAID (The Joint United Nations Program on HIV/AIDS. [9] The significant impact of first antenatal screening of both pregnant mother and partner will also detect unrecognized cases of HIV infections to formulate treatment and reduce the morbidity, mortality and transmission of infection in future.

A very few studies on HIV prevalence in antenatal woman are available from Himachal Pradesh and none indicating trends from this area. Hence we under took six years retrospective study from year 2010 to 2015 to determine HIV seroprevalence among antenatal mothers who had HIV screening at five Integrated Counseling and Testing Centre at District Solan, Himachal Pradesh.

MATERIALS AND METHODS

Study design and subjects

The study was conducted among antenatal women attending antenatal clinic and five Integrated Counseling and Testing Centre located at different areas of district Solan Himachal Pradesh from January 2010 to December 2015. Laboratory log books and antenatal HIV testing reports were reviewed and data was collected and analyzed. Antenatal care services provided includes routine blood test, serological test for syphilis and HIV testing. All the pregnant mothers were eligible for study that were registered in the antenatal clinics and ICTC and had undergone HIV screening. The HIV screening and diagnosis was done as per the guidelines of National AIDS Control Organization (NACO), India.

Data collection

The data was collected from five Integrated Testing and Counseling Center from district Solan from year 2010 to 2015 which provides monthly report to Regional Hospital Solan.

Statistical Analysis

The data were analyzed using Chi-square tests.

RESULTS

The data were collected and analyzed from a total of 33271 antenatal women who were screened for HIV antibodies and 13 were found seropositive for HIV antibodies during six years from January 2010 to December 2015 (Table 1). The mean age was found to be 26 years (coefficient of variation = 11.52: Standard variation = 3.03 years). The youngest HIV positive female was of 22 years while the oldest was 28 years. The majority of antenatal women screened (51.2%) were in the age group of 18-24 years followed by 25-34 years (41.59%) and (7.19%) in more than 35 years.

Of the total seropositive antenatal women, 54% were primigravida and 46% were multigravida.

8 females were seropositive in first trimester, 4 in second trimester and one in the last trimester.

The spouse positivity was noted in 61% of the seropositive antenatal women. The pregnancy outcome of seropositive women, ten delivered live birth, one MTP or still birth, two were not traceable on the records. None was found positive for HIV 2 antibodies. The seroprevalence of HIV reactive women in the study was 0.15%, 0.04%, 0.01%, 0.03%, 0.01%, 0.03% in the year 2010 to 2015 respectively.

Table 1: Year- wise HIV prevalence in antenatal women

Year	Total tested (n =33271)	Seropositive (n= 13)	% positivity
2010	2588	4	0.15
2011	4183	2	0.04
2012	5257	1	0.01
2013	6283	2	0.03
2014	7247	1	0.01
2015	7713	3	0.03

Table 2: HIV seropositivity among the age groups

Age group (Years)	Total tested (n= 33271)	Seropositive (n=13)	% positivity
15-24	17038 (51.20%)	7	0.04
25-34	13840 (41.59%)	6	0.04
> 34	2393 (7.19%)	0	

$X^2 = 1.017$, p = 0.6012, df= 2

Table 3: HIV seropositivity and period of gestation

Period of gestation	Total tested (n= 33271)	Seropositive (n= 13)	% positivity
1st trimester	17038 (51.2%)	8	0.04
2nd trimester	13840(41.59%)	4	0.02
3rd trimester	2393 (7.19%)	1	0.04

$X^2 = 0.6416$, p = 0.7256, df = 2

Table 4: Serpositivity and gestation

Gestation	Total tested (n= 33271)	Seropositive (n= 13)	% positivity
Primigravida	17825 (53.57%)	7	0.03
Multigravida	15446 (46.42%)	6	0.03

$X^2 = 0.0003836$, p = 0.9844, df = 1

DISCUSSION

The health and well being of women is the key to the healthy societies, so early intervention is preventive step to curtail the HIV epidemic. As women are biological more susceptible to HIV infection owing to larger mucosal surface exposed during sexual intercourse and much higher concentration HIV in semen than vaginal fluids. HIV has spread from high risk group to the general population and from urban to rural areas. [10] Thus, screening during pregnancy is instrumental tool for implementing preventive approach against HIV infection.

India has the third largest number of people living with HIV/AIDS around 2.3 million. A slight increase in the incidence of newly acquired infection will ultimately turns into an epidemic, also slight decrease will make a favorable outcome. The seroprevalence of HIV reactive pregnant women in this study was 0.15%, 0.04%, 0.01%, 0.03%, 0.01%, 0.03% in the year 2010 to 2015 respectively and on an average 0.03%. The present study from a although highly vulnerable low prevalence area with less than 1% prevalence in the antenatal cases showed the decreasing trends over the last six years. This study not representing the whole population, still provides the insight of trends and effectiveness of the control strategy which was being implemented since the first case was detected in 1982.

Sinha and Roy study on prevention of parent to child transmission service delivery in India showed 0.74% (5/669) of HIV positive women in the year 2008. [11] Similar results of low prevalence 0.1% (1/1563) were found in the study by Ray et al. [12] Low prevalence of 0.03% (13/ 33271) over a period of six years was being reported from our study. In present study prevalence of HIV seropositivity was 0.04% in the newly sexually active pregnant female in the age group of 18-24 years and 0.04% in 25-34 years age group. Our findings differ from the study done by Ukey et which showed that most affected age group was 18-24 years (newly sexually active pregnant female) among antenatal women in western India. [13] The HIV awareness among North Indian married women was higher in the 15-24 years age group as compared to older women was reported from study conducted by Pallikadavath et al. [14]

The decreasing trends in the HIV prevalence may be due to effective awareness programmes, education, target oriented approach especially high risk group, early detection and management according to uniform guidelines by NACO. The focus of NACP 2 (1999-2006) was to raising awareness, changing behavior through intervention in the high risk groups. The decreasing trend from 1.7% to 1.1% over a period of four years of HIV prevalence was reported by Kumar et al on study conducted on the pregnant women in the age group 15-24 years. [15]

In our study we found that 8 females were seropositive in first trimester, 4 in second trimester and one in the last trimester which implies that mandatory antenatal check up in first trimester may not be feasible in some areas, so more active participation of health provider is required.

The spouse positivity was noted in 61% of the seropositive antenatal women. Most of the women in reproductive years in the general population acquire HIV infection from their infected partners

through the heterosexual route and risk increases due to long duration of contact. [10] The main limitation of population based surveys is feasibility factor and advantage of antenatal seroprevalence include large sample sizes, lower level of biases at the facility and participant level, routine data collection and low additional cost for data collection.

CONCLUSION

Our study indicates decreasing trends of HIV seropositivity in antenatal women, although our study population is not representative of whole India as it is a hospital based study covering a single district with five integrated counseling and testing centers. The screening of antenatal mothers and awareness of HIV infection in the community level is strictly recommended to curtail the epidemic in the low prevalence areas.

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