

HIV sero-prevalance in general population of Warangal, A.P., South India

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Abstract: HIV/AIDS pandemic has devastated many countries reversing national development; HIV was not seen in Asia and India till 1980. Now India has become epicenter of AIDS pandemic. During April 2002 to March 2003 the HIV +ve pregnant women and their husbands were encouraged to enroll in the prospective study with informed consent. The study results consist of most of the females who are in the age group between 16-25 years who were affected by HIV. High infection is observed in people with lower socio-economic and education background. High infection rate is observed in house wives (26.7%), laborers (23%) and agricultural workers (12.1%) followed by toddy tapers (5%), drivers (5.96%) and others (6.47%). HIV +ve subjects at Mother To Child Transmission (MTCT) centers are surprisingly clinically very healthy. No disease manifestation was noticed.

Key words: HIV/AIDS pandemic, Warangal, Age group, Sero-positivity test, Clinical manifestation
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Introduction

Globally an estimated 65 million people have been found infected with HIV, 25 million died and 40 million living with HIV/AIDS (Joint United Nations Programme on HIV/AIDS and World Health Organisation - AIDS Epidemic Update-December-2005). Every day 14000 people are infected world wide (AIDS Epidemic update-Dec. 2005) out of which 3-4 million people are infected with HIV/AIDS in India. In Maharashtra, Tamilnadu, Karnataka, Andhra Pradesh, Nagaland and Manipur infection rate is over 1% in Ante-natal clinics (AIDS Epidemic India, 2004). In Andhra Pradesh 0.4 million people are infected with HIV. The most prevalent district in A.P. is Warangal. According to 2002 Ante-natal clinics (ANC) cases with highest positive infection rate is 6.75%. In sexually transmitted diseases (STD) clinic 40.40% is found (Andhra Pradesh AIDS Control Society Bulletin-2003). Now it is spreading from high risk population to general population and urban population to rural population. First AIDS case was detected in Chennai in 1986, but today we trace HIV+ve subjects even in a tribal hamlet. HIV/AIDS mortality is increasing day by day. New opportunistic infections are rapidly spreading. Ante-natal clinic sero-positivity has increased above 1% and prevalence in STD clinic is above 10-20%. People who are in the age group 15-49 years are infected without any discrimination of gender, occupation, financial status-rural and urban. The discrimination towards the victims is often seen in clinics. They are not treating AIDS patients. A rational approach to the study of HIV/AIDS is an urgent need to contain its rapid spreading. Everyone needs awareness regarding HIV/AIDS.

Materials and Methods

Pregnant women from rural and urban areas visit maternity hospital for regular checkup from 3rd month till delivery. They would be screened for HIV antibody in the hospital settings during their visits following informed consent. The present study was undertaken

during April 2002 to March 2003. The HIV +ve pregnant women were encouraged to enroll in the prospective study. The research monitoring committee of Department of Zoology, Kakatiya University approved this study. The study protocol consisted of informed consent, questionnaire elaborating age, marital status, educational qualification, gender, occupation, high-risk behavior, geographical location, and clinical manifestation. The study centers included: CKM Maternity Hospital, Hanamkonda Maternity Hospital, selected private maternity nursing homes and Mother To Child Transmission (MTCT) centers. These centers are provided with a gynecologist, a pediatrician, a general medicine doctor and a counselor. HIV/AIDS testing lab and counseling room are also well established. Pre test counseling and post test counseling were performed. The authors stayed at the above said hospitals and with the help of the counselor, interacted with HIV+ve patients with established questionnaires. Peripheral blood (4-5 ml) was collected from each patients and screened for Human Immuno deficiency virus antibody 1 and 2 (HIV-1/2). In the given sample the sero-positivity was confirmed by three individual tests. 1) HIV Tridot test, 2) NEVA test, and 3) COMB AIDS test.

HIV Tridot test: HIV tridot is a rapid test developed and designed using gp41, Constant terminal region (C-terminal) of gp120 and gp36 representing the immuno-dominant region of HIV-1 and HIV-2 envelop gene structures respectively. The HIV tridot test is a visual, rapid, sensitive and accurate immuno-assay for the differential detection of HIV-1 and HIV-2 antibodies in human serum (or) plasma using HIV-1 and HIV-2 antigens, immobilized on an immuno-filtration membrane. The test is a screening test for anti HIV -1 and HIV-2 and *in vitro* lab use (Roland, 2003).

NEVA (Naked eye visible agglutination) test: In NEVA test kit comprises of a set of several recombinant molecules. All these molecules have RBC binding sites. Such universal RBC – protein – binding sites have been selected. RBC binding molecules



with different immuno-dominant HIV antigenic regions fused and at the other end these fusion proteins capture one arm of the anti HIV antibodies (Constantine *et al.*, 1994).

COMB AIDS-test: It is an *in vitro* visually read DOT immunoassay, intended for the qualitative detection of Ig-G/Ig-M antibodies to the HIV type 1 and 2 in human serum (or) plasma. A COMB AIDS employs the principle of enzyme immuno-assay (EIA). In the test a positive result is indicated by the presence of magenta red colored DOT on the surface of the COMB where peptides have been spotted (Meda, 1999). Finally sero-positivity was confirmed by Western Blot.

Results and Discussion

The HIV sero-positivity as determined at maternity hospitals is in general considered as a reliable indicator for HIV incidence. In this study 10,001 individuals were counseled and 8900 were screened for HIV status. Out of 287 subjects, 121 males and 166 females were recorded HIV +ve .

Sero-positivity was 3.22% in Warangal, of which 57.83% consists of females and 42.16% of males. The reasons for higher sero-positivity in females could be due to 1) better attendance at the Mother To Child Transmission (MTCT) centers for sero-diagnosis, and 2) host genetic factor related susceptibility. It can be noted that most of the females (who are in the age group between 16-25 years were affected by HIV. But it can also be noted that most of the males who were HIV+ve are between the age group 26-30 years. So it is clear from the data that the HIV infection occurs in both males and females in the age group of 16 to 30 years. HIV infection is very high (27.6%) in those who have completed their secondary education, HIV sero-positive is very less (0.84%), (0.56) in professionals and graduates. Higher infection rate is observed in house wives (26.7%), laborers (23%), and few agricultural workers (12.1%) followed by toddy tapers (5%), drivers (5.96%) and others 6.47.

Few HIV+ve subjects at MTCT centers are surprisingly clinically very healthy. No disease manifestation was noticed. As per World Health Organization classification system of clinical staging of HIV positive subjects, most of these subjects were in clinical stage 1 *i.e.* asymptomatic and normal activity (Lifson *et al.*, 1995). It is observed that the prevalence among women who attended Ante-natal clinics is close to one percent or above. According to 2002 sentinel of Africa in Barundi Bajhumbura, the infection rate is 7.72 to 25.6% (Sokal *et al.*, 1993). In Lindi Tanzania HIV infection rate is 8.7%, in Zimbabwe HIV infection rate is 14% and in Malawi the infection rate is 38% (Taha *et al.*, 1998). According to National AIDS Control Organisation (NACO) the infection rate in India is between 0.5% to 1% (AIDS epidemic India 2004). In Andhra Pradesh the infection rate is 1.50%, where as in a few cities like Mumbai it is 4% and in Pondicherry 3% (Gupta, 2002). In Andhra Pradesh seven districts have recorded above 1%. They are Hyderabad, Vishakapatnam, Guntur, Chittoor, Kurnool, Warangal and East Godavari. In Warangal according to 2002 sentinel

servillance report the infection rate is recorded as 6.75% (Andhra Pradesh state AIDS control Society Bulletin, 2003). This is very alarming when compared with national and state wise values. In our study, conducted during this period (2002-2003), we observed that the sero-prevalence has been recorded to be 3.22% in general population of Warangal. This is very high when compared with state surveillance as well as national surveillance.

The overall HIV sero-prevalence rate in adults of age 15-40 years in sub-Saharan Africa is estimated to be 7.4% (Kamali *et al.*, 1996). In our setting AIDS related mortality is also related to the age group 16-30 years, where the infected parents die early and the children become orphans. Most of the women are prone to HIV infection through multiple partners. Early exposure to sexual activity and male to female transmission during vaginal intercourse are responsible for higher incidence in females. The greater vaginal mucosal surface area exposed to the semen was also stated to be a contributory factor. As tradition goes, in Indian society the women are as a rule younger than their life partners and hence most of the women are prone to higher infection risk at an early age *i.e.*, between 16-25 years, whereas in men highest rate of infection is found in the age range of 21-35 years. In some areas of central Africa, over 10% of children have lost one or both parents (Kamali *et al.*, 1996). In our study we observed that 5% of the children have lost one or both parents during the period of investigation.

It is found in our studies that most of the illiterate women are prone to HIV infection due to lack of awareness. As their education improved the infection rate has gradually come down. So it is very clear that there is an urgent need to strengthen awareness among rural and urban illiterate women. In early years of 1990, HIV virus was commonly found in sex workers. The virus entered into general population. Interestingly of late, the sex workers have become well aware of AIDS and are sufficiently protected with condoms provided by NGO's and hence we find very few cases of HIV in sex workers. These sex workers don't allow their clients with out condoms. It is, however, not like this in general population. In a legalized courtship a female partner does not demand the husband to use condom all the time. Hence a large number of housewives are more prone to HIV infection, infected by husbands. 5-10% of the pregnant woman turned away from health care centers, shunned by their friends and colleagues, discriminated by their in-laws and their husbands and even their maternal relatives. 2-3% of the HIV infected individuals divorced their spouses and suffered physical violence. 2% educated women took legal action against their husbands, 10% of the women were evicted from home by their families. These women and their children's move towards orphanage homes and rehabilitation centers. 1% of the couples committed suicide by hanging and 3% of the couples committed suicidal attempt. Due to severe poverty, rural people migrating to nearby cities for employment and settling down in slum areas, becoming construction and labour workers. In our studies we noticed that male and female laborers are very much prone to HIV infections. As this group of people is from low economic

strata, they are liable to sexual exploitation by their superiors at work place. Most of the male laborers are infected by HIV because of their high risk behavior.

Agricultural workers and farmers, toddy tappers and drivers are also highly infected by HIV. In case of heavy vehicle drivers who go on inter-state trips on duty visit regularly the sex workers who are on national highways.

The virus spreads through the drivers to the areas adjacent to state and district highways. Now a day we even find HIV infection in remote villages and tribal hamlets. From this it can be inferred that the virus is spreading very rapidly among different people of different occupations. The awareness programmes and community based programmes should be targeted to housewives, labourers, agricultural workers, farmers, toddy tappers and drivers.

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