



## Seroprevalence of HIV in antenatal women

Mehrotra Ragini, Pourush Shaily, Bhargava Anudita, Varma Manju, Ghosh UK

Department of Obstetrics and Gynaecology, Motilal Nehru Medical College, Allahabad (UP).

**OBJECTIVE(S)** : To assess seroprevalence of HIV infection in antenatal women.

**METHOD(S)** : This study was conducted on 1000 antenatal women over a period of 12 months from 1<sup>st</sup> December 2003 to 30<sup>th</sup> November, 2004. After taking informed consent and a detailed history, proper general and obstetrical examination was done. All women underwent serological testing for detection of HIV antibodies by 2 rapid tests Pareekshak and Immunocomb test, and ELISA test. ELISA positive samples were further confirmed by Western Blot test. Post-test counseling was done in all seropositive subjects.

**RESULTS** : Seroprevalence rate of HIV infection was 0.4% .

**CONCLUSION(S)** : The seroprevalence of HIV infection according to the seroprevalence rate in antenatal women is low.

**Key words** : HIV, perinatal transmission, pre- and post-test counseling, risk factors

### Introduction

In recent years, acquired immune deficiency syndrome (AIDS) has emerged as the biggest ever threat to humanity. Rapid spread of this dreaded killer viral disease has inflicted great terror in the minds of people all over the world. The causative agent of AIDS is a human retrovirus belonging to a sub-family. As the disease has incubation period of 8-10 years, testing of HIV antibodies is the only practical method to detect individuals during asymptomatic period and to take preventive measures against further transmission of the disease.

An increasing number of women of child bearing age, throughout the world are becoming infected with HIV and their children are also getting infected during delivery or breast feeding. Various studies conducted worldwide conclude that HIV testing should be universal rather than selective because selective HIV testing in antenatal clinics may fail to detect majority of cases.

This population based study was undertaken to assess the seroprevalence of HIV infection in asymptomatic antenatal women, and to provide proper antenatal, intranatal and post-natal care to seropositive women. We did not come across any pregnant woman having symptoms related to AIDS.

### Methods

All the women registered in our antenatal clinic from 1<sup>st</sup> December 2003 to 30<sup>th</sup> November, 2004 were counseled regarding testing for HIV. One thousand of them who consented for the testing and were willing to come for regular antenatal examinations were included in the study. Informed consent and detailed history including personal, social, environmental, menstrual, and obstetric history, and personal history of the husband were taken. General and obstetric examination were done. Routine investigations including hemoglobin concentration, blood group and Rh typing, and VDRL test were done.

The following were considered high risk cases –

1. Women suffering from sexually transmitted diseases.
2. Women taking immunosuppressants for a prolonged period of time.

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Correspondence :

Dr. Ragini Mehrotra

390, New Mumfordganj, Allahabad (UP).

Tel. 05322641901 Mobile 941530

3. Women having multiple sex partners.
4. Commercial sex workers.
5. Women with a history of sexual promiscuity of the husband.
6. History of HIV seropositivity and AIDS in the husband.

Three mL of blood was collected and the serum separated. It was analyzed either on the day of collection or within one week of storage at 2-8°C temperature by two rapid tests and one ELISA test. Manufacturer's, assay protocol was followed. Seropositive samples were further confirmed by Western Blot technic to detect presence of antibodies to the major HIV viral antigen P24 GP41 Gp 120-160. Those samples with reactivity to any key antigen band in two of the three viral gene products were considered positive.

Detailed post-test counseling was done in all seropositive women regarding various modes of transmission of HIV infection and prevention of further transmission to other individuals and to their offspring.

### Results

Most of the seropositive subjects (n = 3) were in age group of 26-30 years and had a parity of one or two (Table 1). Most of the seropositive subjects, belonged to low socio-economic status (n = 4), resided in urban areas (n = 3), and were literate (n = 3). Three subjects were from Hindu community while two from the Muslim community. (Table 1)

Four seropositive women were using no contraceptives. Three seropositive women were having no addiction while two were tobacco chewer (Table 2).

Risk factors were identified in 28% of total antenatal women screened for HIV. Heterosexual promiscuity of the husbands was the common risk factor in all five seropositive women and in 71.42% (200/280) of those women having a risk factors (Table 3)

The principal mode of transmission of HIV in all seropositive subjects was heterosexual behaviour of the husbands.

The seroprevalence rate of HIV infection was found to be 0.5% by only ELISA test, and 0.4% by both ELISA testing and Western Blot testing.

Seroprevalence rate was 1.78% (5/280) in high risk antenatal women.

**Table 1. Demographic characteristics.**

Characteristics	Antenatal women screened	Seropositive subjects
<b>Age (years)</b>		
15-20	75 (7.5%)	0
21-25	420 (42%)	1
26-30	310 (31%)	3
31-35	160 (16%)	1
36-44	35 (3.5%)	0
<b>Parity</b>		
0	75 (7.5%)	1
1 and 2	590 (59.0%)	2
≥ 3	335 (33.5%)	2
<b>Socio-economic status</b>		
High	10 (1%)	0
Middle	325 (32.5%)	1
Low	665 (66.5%)	4
<b>Residence</b>		
Rural	665 (66.5%)	2
Urban	335 (33.5%)	3
<b>Literacy</b>		
Illiterate	590 (59%)	2
Literate	410 (41%)	3
<b>Religion</b>		
Hindu	750 (75%)	3
Muslim	225 (22.5%)	2
Others	25 (2.5%)	0

**Table 2. Contraceptive practices and addiction.**

Contraception used	Antenatal women screened	Seropositive subjects
None	650 (65%)	4
Oral contraceptive	80 (8%)	0
Barrier method	120 (12%)	0
IUCD	150 (15%)	1
<b>Addiction</b>		
None	760 (76%)	3
Tobacco chewing	230 (23%)	2
Smoking	10 (1%)	0

**Table 3. Risk factors.**

Risk factors	Women screened n=1000	Seropositive subjects
None	720 (72%)	0
Risk factor present	280 (28%)	5
Heterosexually promiscuous husband	200 (71.42%)	2
Recipient of blood and blood products	30 (10.70%)	0
AIDS in husband	20 (7.14%)	3
Sexually transmitted disease	15 (5.35%)	0
Australia antigen positive	5 (1.78%)	0
Active tuberculosis	10 (3.57%)	0

## Discussion

HIV infection has grown into a major global public health problem during the last few decades. In this short period, whatever has surfaced is just the tip of the ice-berg. Since the perinatal transmission of HIV is very high viz., approximately 30%, one important means of early detection of disease is by estimation of seroprevalence of HIV infection among asymptomatic antenatal women. Prenatal screening for HIV infection has important clinical and public health implications. HIV seropositive women may elect to terminate their pregnancy when contraception or sterilization can be offered them. Pre- and post-test counseling may educate pregnant women about methods to prevent HIV infection, and its transmission.

In our study, the mean age of antenatal women screened was 30 years (range 15-44 years) and most of the women were of parity one or two. This is consistent with the findings of previous studies<sup>1-3</sup>. According to our study, majority of seropositive subjects were from low socio-economic status, urban areas and Hindu community, while Perry et al<sup>3</sup> state that there is no significant difference between seropositive and seronegative women regarding socio-economic status residence and religion. But our numbers are too small. The reasons for high seropositivity in low socio-economic status and urban slum areas are inadequate personal hygiene, poor nutrition, high prevalence of sexually transmitted diseases, and sexual promiscuity.

Majority of seropositive women were not using any kind of contraceptive. Barrier methods protect against transmission of HIV infection and other sexually transmitted diseases. Most of the seropositive women were having no addiction of any kind including smoking and intravenous drug abuse. Smoking is very rare in the reproductive age group in our society and intravenous drug abuse is non-existing in the antenatal population screened.

Risk factors were identified in 28% of total antenatal population screened and majority of them (71.42%, 200/280) were having heterosexually promiscuous husbands. Principal mode of transmission was heterosexual contact by the husband. This is different from the findings of the studies conducted in developed countries where intravenous drug abuse is a major route of transmission<sup>4-6</sup>.

Out of 1000 antenatal women, five were found to be seropositive by ELISA testing, but after Western Blot testing, only four were confirmed giving a seroprevalence rate of 0.4%. But since this study was conducted in a tertiary referral centre, it could not cover the large population of Allahabad

district and the actual seroprevalence rate could be much higher. In order to detect actual seroprevalence rate all booked as well as unbooked antenatal women should be screened for HIV. Our result is quite similar to a study which was conducted in West Indies in 2002<sup>7</sup>.

According to reports of NACO, Uttar Pradesh is a low prevalent state regarding seroprevalence of HIV infection (0.25%).

All seropositive women were counseled regarding various modes of transmission of HIV, signs and symptoms of AIDS, their treatment and prevention of further transmission of HIV infection including perinatal transmission. They were also counseled about proper disposal of their biowastes, safe sex practices, use of barrier contraceptives, and were discouraged from further child bearing. Petry and Kingu<sup>6</sup> advocate counseling of women attending antenatal clinic regarding prevention of HIV.

Because prenatal care is often the sole contact that women have with health services, pregnancy may be the only opportunity to diagnose HIV infection, and to institute measures to prevent perinatal transmission and disease progression. Therefore, counseling and testing for HIV infection should be offered routinely to all pregnant women, as is recommended in Brazil<sup>8</sup>.

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