

Seroprevalence of HIV, HBV and Syphilis in Pregnant Women

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Human Immunodeficiency Virus (HIV), Hepatitis B Virus (HBV) and syphilis in pregnancy are associated with adverse pregnancy outcomes including spontaneous abortion, preterm birth, still birth, low birth weight, congenital infections etc. The present study was undertaken to know the seroprevalence of HIV, HBV and syphilis in and around Davangere. The study was conducted in Davangere from May 2008 to April 2009. The study included 300 blood samples from antenatal women attending outpatient and inpatient department of various hospitals in Davangere . All the test sera were tested for anti-HIV IgG antibodies by a DOT immunoassay, if reactive ,was confirmed by TRIDOT and ELISA test. They were also tested for HBV by HBsAg ELISA and syphilis by Venereal disease research laboratory(VDRL) test, if reactive, was confirmed by Treponema pallidum hemagglutination (TPHA) test. Out of 300 antenatal cases, three were positive for HIV i.e. prevalence of 1%, five were positive for HBsAg i.e. prevalence of 1.7%, one was positive for anti-treponemal antibodies i.e. prevalence of syphilis was 0.3%. Prevalence of HIV, HBV are high from this study, so it is important to screen all the antenatal mothers for both, so as to provide proper antenatal, intranatal and post natal care to seropositive women and prevent mother to child transmission. Eventhough the seroprevalence of syphilis is low from the present study, it is advisable to screen for syphilis also, as the disease is treatable and thus helps to eliminate the adverse effect of untreated syphilis both in mother and foetus.

Key Words: HIV; HBV; Syphilis; Seroprevalence.

The worldwide burden of Sexually Transmitted Infections (STI) is estimated at over 350 million cases yearly, most of which occurs in less developed countries^{1,2}. As women and their off springs carry the major burden of complications and serious sequelae the development of STI control measure for pregnant women is of particular importance². Prevalence assessment and monitoring are important components of STI surveillance. With such testing, pregnant women are screened to obtain data for purpose of programme planning³. Antenatal screening for HIV was added to the antenatal screening package in June 2003 by the Gujarat State AIDs control society⁴. In India, about 28 million deliveries occur

annually of which 84,000 deliveries would occur in HIV Positive women⁵. World wide,WHO estimates that maternal syphilis is responsible for 4,60,000 stillbirths or abortions, 2,70,000 cases of congenital syphilis and 2,70,000 low birth weight or premature babies⁶. Spread of infection from HBV carrier mothers to their babies is the major mode of transmission of hepatitis B.If pregnant women who are HBsAg positive are identified before delivery, it is possible to prevent HBV infection in their neonates by passive or active immunization or both⁷.

METHODS

The present study was conducted in Davangere from May 2008 to April 2009. Antenatal cases attending outpatient and inpatient departments of various hospitals in Davangere.

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All the women after taking informed consent were systematically interviewed regarding demographics, obstetric and clinical information, patterns of risk behaviour, social and behavioural characteristics. About five ml blood was collected by venepuncture with all aseptic precautions, sera was separated and all test sera were tested for:

1. Anti-HIV IgG antibodies by a Dot immunoassay (COMBAIDS-RS ADVANTAGE, span diagnostics, Gujarat), if reactive was confirmed by TRIDOT test (biomed industries, Himachalpradesh) and ELISA test (HIVASE 1+2, general

biologicals corporation, Taiwan)

2. HBV by HBs Ag ELISA (SURASE B- 96, general biologicals corporation, Taiwan)
3. Syphilis by VDRL test (Institute of Serology, Calcutta), if reactive was confirmed by Treponema Pallidum Hemagglutination Test (TPHA).

Standard descriptive statistical analysis was performed. Prevalence rates were calculated with corresponding 95% Confidence Interval (CI). Prevalence rates of each disease were calculated in relation to age, place, occupation, marital status, parity, risk factors.

Table 1. Prevalence of STI

Characteristics	Total No (N)	HIV +ve n(%)	HBsAg+ve n(%)	Syphilis n(%)
D. Age. (Yrs)				
17-20	77	-	1(1.3)	-
21-25	182	2(1.1)	4 (2.2)	1(0.5)
26-32	41	1(2.4)	-	-
II) Place				
Davangere	205	2(1)	3(1.5)	-
Harihara	28	1(3.6)	1(3.6)	-
Ranibennur	24	-	-	-
Haveri	14	-	1(7.1)	-
Others	29	-	-	1(3.4)
III) Marital status				
Unmarried	9	1(11.1)	-	-
Married	289	2(0.7)	5(1.7)	1(0.3)
Divorced	2	-	-	-
IV) Occupation				
Housewife	227	2(0.9)	3(1.3)	1(0.4)
Professional workers	14	-	-	-
Agriculture	16	-	-	-
Unskilled worker	35	-	1(2.9)	-
Teacher	4	-	1(25)	-
Commercial sexworker	2	1(50)	-	-
Student	2	-	-	-
V) Parity				
Primi	145	2(1.4)	5(3.4)	-
Multi	155	1(0.6)	-	1(0.6)
VI) Risk Factors				
Blood Tranfusion	60	-	2(3.3)	-
Husband HIV +ve	2	2(100)	-	-
Multiple Sex partners	3	1(33.3)	-	1(33.3)
Occupational exposure	1	-	-	-
No known risk factors	234	-	3(1.3)	-

Table 2. Prevalence studies on HIV, HBV and Syphilis among pregnant women in various parts of the world

Author	Year	Place	HIV (%)	HBV (%)	Syphilis (%)
Datey <i>et al</i> 2	1997	Mumbai	4.5	6	2.8
Datey <i>et al</i> 2	1997	Calcutta	0.5	4.3	0.3
Miranda <i>et al</i> 3	1999	Brazil	0.8	1.1	3.0
Aggarwal <i>et al</i> 8	2000	Amritsar	0.6	*	*
Martinez <i>et al</i> 9	2000	Mexico	*	1.65	*
Shymala <i>et al</i> 10	2001	Manipal, Karnataka	1.1	*	*
Chen <i>et al</i> 11	2002	China	*	*	0.2
Awole <i>et al</i> 12	2003	Ethiopia	*	3.7	*
Ukey <i>et al</i> 13	2004	Nagpur	1.38	*	*
Cheng <i>et al</i> 14	2004	China	*	*	0.5
Liu <i>et al</i> 15	2006	Indonesia	*	3.5	*
Tohon <i>et al</i> 16	2006	Nigeria	1.3	*	*
Taiwo <i>et al</i> 17	2006	Nigeria	*	*	2.9
Singla <i>et al</i> 18	2007	North India	*	1.73	*
Olokoba AB <i>et al</i> 19	2008	NorthEastern Nigeria	*	*	0.4
Present study	2009	Davanagere	1.0	1.7	0.3

* infection was not tested in the study

RESULTS

A total of 300 serum samples from antenatal women were tested. All were within the age group of 17-32 yrs, out of which 289 were married, nine were unmarried and two were divorced. The prevalence rates were as follows: HIV infection -1% (95% CI: 0-2.2%), HBV- 1.7% (95% CI: 0.1-3.1%), syphilis - 0.3% (95% CI: 0-0.6%). None of the women showed co- infection. Table 1 shows the prevalence of STI in relation to various demographic and obstetric factors

DISCUSSION

Prenatal identification of STD infected women is crucial to the delivery of optimal care to both mother & fetus. Therefore several studies have been carried out all over the world to know the seroprevalence of STD in antenatal women.

In our study, out of 300 serum samples, three tested positive for anti-HIV antibodies, accounting for seroprevalence of 1%. All three cases are associated with high-risk factors, so screening people with high-risk factors becomes important. The results of the present study are comparable with the studies conducted by Miranda *et al* 3 & Shymala *et al*.¹⁰ high prevalence of 4.5%

has been reported by Datey *et al* 2 from Mumbai. Mumbai is the industrial, commercial & financial capital of India & over last 20 years urbanization and industrialization has led to higher number of women with high-risk behaviour. Hence urgent & priority targeted intervention measures to be taken for these high prevalence areas.

Spread of infection from HBV carrier mothers to their babies is a major mode of transmission of HBV. Hence, several studies have been reported from different areas to know seropositivity. In our study, seropositivity reported to be 1.7% with high prevalence of 7.1% in Haveri. This is comparable with the studies conducted by Singla *et al*.¹⁸ & Martinez *et al*.⁹

Singla *et al*¹⁸ has stated seropositivity to be in the range of 2.2 to 7% in India. Presence of HBs Ag in pregnant women does not pose an additional risk for the pregnancy but the infected infants are a reservoir of infection throughout their lives.

Syphilis is a serious cause of maternal & infant morbidity & mortality. Maternal Syphilis is associated with stillbirths, abortion, prematurity, low-birthweight & intrauterine growth retardation. Hence screening for syphilis during pregnancy is important. In our study, prevalence was 0.3% (only one case) & was associated with high risk

behaviour & it can be compared with the studies conducted by Datey *et al.*² from Calcutta & Olokoba *et al.*¹⁹ from Nigeria. High prevalence of 6.6% reported by Potter *et al* 20 in Africa may be because of inefficient & ineffective antenatal Syphilis screening programs. This high prevalence rates suggests the need to improve syphilis screening & treatment.

In Conclusion, highest prevalence of HIV, HBV & Syphilis was found to be associated with high-risk behaviour. There was no any co-infection. It is important to screen all the antenatal mothers, so as to provide proper antenatal, intranatal & postnatal care to seropositive women & prevent mother to child transmission. Eventhough the seroprevalence of Syphilis in pregnant women is low from the present study, it is advisable to screen for Syphilis because the disease is treatable & thus helps to eliminate the adverse effects of untreated Syphilis in both mother & fetus.

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