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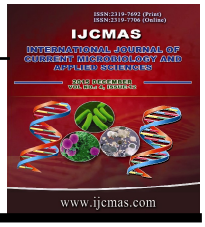

Original Research Article

Antenatal Screening for HIV, Hepatitis B and Syphilis in a Tertiary Care Hospital

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A B S T R A C T

This study was carried out to observe the frequency of Hepatitis B,Hiv,and syphilis and the value of routine prenatal screening among the pregnant women, attending antenatal clinic of Bhaskar general hospital at Ranga Reddy dist. A serological screening was carried out during the period January 2015 to October 2015. All the pregnant women who attended the clinics were screened for Syphilis using Rapid Plasma Reagin (RPR) test. All those who were positive were confirmed using *Treponema pallidum* haemagglutination (TPHA) test. Patients were screened for Hepatitis B by Immuno Chromatographic Technique (ICT) device designed for qualitative detection of HBsAg in serum. Those found positive on screening test were confirmed by ELISA. Finally, samples were tested for antibodies to HIV by three different methods as per Strategy III of the National AIDS Control Organization by using different systems of testing to establish a diagnosis of HIV. Seropositivity of hepatitis B was 0.86%, syphilis was 0%, and HIV was 0.97%. Testing for human immunodeficiency virus (HIV), syphilis, and hepatitis B surface antigen (HBsAg) was done to assess the extent of seropositivity in pregnant women and to re-evaluate the need for routine antenatal care screening.

Keywords

Antenatal women; Hepatitis B; HIV; Seropositivity; Syphilis

Introduction

Human immunodeficiency virus (HIV) infection and hepatitis are common vertically transmitted diseases. Pregnant women infected with Hepatitis B virus represent a major reservoir of the virus in the community. Transmission of HBV from carrier mothers to their babies can occur during the perinatal period, and appears to be the most important factor in determining the prevalence of infection in high endemicity areas, particularly in China and Southeast Asia. (Manisha Dwivedi et al, 2011) Before HBV vaccine was integrated into the routine immunization program, the proportion of babies that became HBV carriers was about 10% to 30% for mothers who were HBsAg positive but HBeAg negative. However, the frequency of perinatal infection was higher,i.e. 70% to 90%, when the mother was also HBeAg positive (Sevens CE, Xu Z,1979,1985). Passive immunoprophylaxis with hepatitis B

immunoglobulin (HBIG) and active immunoprophylaxis with hepatitis B vaccine in the infants of HBV carriers; gives high levels of protection against vertical transmission. However, 10% of the offspring of HBV carriers are chronic hepatitis B sufferers in their early life. Even though these carriers received routine neonatal immunoprophylaxis, it is because they were infected in uterus.(Lee C 2006) As a result of this, maternal screening is necessary for the treatment of newborns, since passive and active immunization are so important in the endemic areas. And in addition Viral hepatitis during pregnancy is associated with a high risk of maternal complications, has a high rate of vertical transmission causing fetal and neonatal hepatitis and has been reported as a leading cause of maternal mortality(Elinav E et al, Ornoy A,.Tse KY, Dafallah SE, 2006,2006,2003)

Syphilis remains a major cause of reproductive morbidity and poor pregnancy outcomes in developing countries. Syphilis in pregnant women can result in adverse outcomes of pregnancy in up to 80% of cases, such as stillbirth and spontaneous abortion (40%), perinatal death (20%), and serious neonatal infections and low-birth weight babies (20%) (WHO,2005). Syphilis has also acquired a new potential for morbidity and mortality through association with increased risk for HIV infection (Olokoba A.B et al, 2008).

Several models have been proposed to estimate adverse pregnancy outcomes in women infected with syphilis, with resulting estimates ranging from 50% to 80 % (Saloojee H, Watson-Jones D, 2004, 2002). Transmission occurs more commonly in the last two trimesters, but the spirochete can cross the placenta at any time during pregnancy.(Berman SM,2004) Fetal death and morbidity due to congenital syphilis are preventable if the infected mother is identified and treated appropriately by the middle of the second trimester. Because of the serious complications of syphilis in pregnancy, WHO has recommended universal antenatal screening. WHO further recommended screening for syphilis at the first antenatal visit, as early as possible in pregnancy, repeating in the third trimester if resources permit, to detect infection acquired during pregnancy.(WHO)

Parent to child transmission of HIV can occur during pregnancy, during delivery, or by breastfeeding. In developing countries this is a highly potent form of HIV transmission. The parent-to-child transmission occurs in approximately 25 to 35% of HIV positive women, which accounts for 4% of the total HIV infection load in India (ICMR, 2006).

Materials and Methods

This study was conducted to determine the prevalence of hepatitis B virus surface antigen (HBsAg), antibodies to *Treponema pallidum*, and antibodies against HIV virus among patients who attended the antenatal clinic of Obstetrics/Gynaecology Unit, Bhaskar Medical College and Hospital, R.R.Dst. A total of 465 pregnant women were included in the study for HBsAg.

Rapid Immuno Chromatographic Techniques (ICT), for qualitative detection of surface antigen of Hepatitis B was used to screen the pregnant women. Those found positive on screening tools were confirmed by ELISA (Erba diagnostics Mannheim, Germany).

Antibodies to HIV (anti-HIV) were determined in a total of 409 pregnant women by HIV TRI-DOT test (J. Mitra & Co Pvt Ltd, New Delhi, India), which is a visual, rapid, sensitive and accurate

immunoassay for the detection of HIV-1 and HIV-2 antibodies in human serum or plasma using HIV-1 and HIV-2 antigens immobilized on a porous immunofiltration membrane. The positive tests were confirmed by the test which employs lateral flow-immunochromatographic type assay line immunoassay (Pareekshak HIV 1/2 Triline card test, Bhat Biotech Pvt Ltd, Bangalore, India) and the dot immunoassay (CombAids HIV 1 + 2 Immunodot Test Kit, M/S Span Diagnostics Ltd, Surat, India).

All samples (409) were subjected to RPR(Rapid plasma reagin) testing(Tulip Diagnostics Pvt Ltd, Goa, India), which was carried out using standard methods, and quantitative testing was also done. *Treponema pallidum* Hemagglutination Assay (TPHA)) testing was used as a confirmatory test.(17)

Results and Discussion

During the study period, 465 pregnant women who attended the antenatal clinic were included. HBs Ag was detected in 4 out of 465(0.86%) pregnant women. Hence the overall prevalence for HBsAg was 0.86%. (Table 1). The highest prevalence was among the women aged 21 years (3 out of 4).

A total of 409 cases were screened for syphilis. The prevalence of syphilis in this study was zero.A total of four samples out of 409 were reactive for HIV; the overall prevalence for HIV was 0.97% (Table 1). The present study shows that the sero-prevalence of HBsAg was 0.86%, which is comparable to the sero-prevalence 0.9% reported by Manisha Dwivedi et al(2011) and colleagues and 0.82% by S Chatterjee et al(2009) and a seroprevalence of 1.1% reported by Pande et al(2011). Nandan et al(2008) has shown the national prevalence amongst antenatal women for Hep. B 1.65%. Lodha *et al*. (2001) in their review article on hepatitis B epidemiology have suggested the true prevalence rate in India as 1-2%.

In the present study no woman tested positive for syphilis, indicating zero seroprevalence. Similar finding(zero prevalence) was reported by Jindal et al(2012). In the previous study done by me in the year2011, the seroprevalence was (0.10%). So the prevalence of syphilis among antenatal women in this area is low. Low seroprevalence (<1%) has previously been reported in the few research studies in India like Sethi et al (0.84%)in the year 2005 and Mathai et al(0.98%) in the year 2001. In an another study by Mehta et al(2013) the antenatal group showed a seroprevalence of 0.12%. According to WHO the prevalence of maternal syphilis in India has remained at around 1.5% from 2003 to 2007. However, a limited number of studies carried out in India have shown prevalence ranging from 2.5% to 3.4%.(Rattan A et al, Vajpayee M et al1987, 2001)

Even though the seroprevalence of syphilis in pregnant women in this region is reported to be zero from this study, it is still advisable for pregnant women to be screened for syphilis because the disease is treatable, and it will help eliminate the adverse effects of untreated Syphilis.

The prevalence of HIV was 0.97%. A total of four samples out of 409 were positive for HIV. These findings are comparable to the findings of Mathur et al. (1.86%) (2008), Mustafa et al. (1.1%)(2007). Similarly a study done by Ashtagi *et al.* at KEM, Hospital Belgaum, the prevalence of HIV among pregnant women attending the ANC clinic was 0.70%, while a study by Gupta *et al.* done in North India revealed that the prevalence of HIV was found to be 0.88%.

Table.1 Seroprevalence of Hepatitis B, HIV and Syphilis among Antenatal Women

Parameters screened	Total samples	Positive samples	Percentage (%)
HBSag	465	4	0,86
HIV	409	4	0.97
Syphilis	409	nil	0

A study by Parameshwari et al (2009). conducted at Government Hospital, Namakkal district, showed that all 7866 women from the rural area accepted HIV testing after counseling and prevalence of HIV was found to be 0.77%. A lower rate of prevalence (0.38%) was reported by Mehta et al in the year 2013. In order to prevent perinatal transmission and spread of the infection within the larger community, there is a need of screening pregnant women for HIV, syphilis, and HBsAg and universal immunization of HBV high- risk infants.

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