HEPATITIS B, HIV AND SYPHILIS INFECTION IN ASYMPTOMATIC PREGNANT WOMEN

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ABSTRACT

BACKGROUND

This study to determine the prevalence of and identify factors associated with Hepatitis b, HIV and Syphilis positivity among asymptomatic pregnant women. We also assessed maternal and fetal outcome in HBsAg, HIV and Syphilis pregnant women.

MATERIALS AND METHODS

This is a prospective study of 1000 consecutive apparently healthy asymptomatic pregnant women, who are attending the antenatal clinic of AVBRH Hospital Sawangi (Meghe) during September 2014 To August 2016. The blood samples was collected after obtaining their informed written consent from those who were tested for HIV antibodies (NACO guidelines), HBsAg (ELISA test), and Syphilis (RPR SPANCARD latex kit).

RESULTS

The prevalence of HBsAg (1.7%), HIV (1.0%), Syphilis (0.1%). All the infection was more common in illiterate, multigravida, monogamous women of low socio-economic status, History of blood transfusion, IV/IM drug users and common in multiple sexual partner.

CONCLUSION

This present study clearly documented a relatively declined prevalence of HBsAg, HIV and Syphilis in pregnant women. The data reinforces the need for establishing effective preventive programs, which could lead to reduction in the prevalence of these infections.

KEYWORDS

Asymptomatic pregnant women, HBsAg, HIV and Syphilis.

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BACKGROUND

The prevalence of sexually transmitted infections (STIs) in India is estimated to be 6%, and about 40% of women have STIs at any given point of time. Among pregnant women, STIs are associated with a number of adverse pregnancy outcomes including spontaneous abortions, stillbirth, prematurity, low birth weight, and various squeals in surviving neonates.[1] The management of a significant proportion of these infections is difficult and complicated because they run a long, latent, and insidious course, remain in apparent or asymptomatic, and cannot be initially detected clinically. There are no screening programs for the detection of STIs in asymptomatic pregnant women even in our tertiary level hospitals.[2] Hepatitis B virus is the most important causative agent of transfusion-associated hepatitis.

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Humans are the only reservoir of Hepatitis B virus (HBV). The significance of HBV infection during pregnancy derives through its potential to be transmitted vertically. Ten percent of infants born to women with acute HBV infection during the first trimester of pregnancy are HBsAg-positive at birth and 80 to 90% of neonates become HBsAg-positive without prophylactic therapy if acute maternal infection develops during the third trimester of pregnancy.[1] According to Okada et al. 85% of neonatal HBV infections are caused due to intrapartum exposure to infectious blood and vaginal secretion, and the remaining 15% are caused by haematogenous trans placental viral spread.[1]

Transmission of T. pallidum from a syphilitic woman to her foetus through the placenta may occur at any stage of pregnancy, but the lesions of congenital syphilis generally have their onset after the fourth month of gestation, when foetal immunologic competence begins to develop. This timing suggests that the pathogenesis of congenital syphilis depends on the immune response of the host rather than on a direct toxic effect of T. pallidum. The risk of infection of the foetus during untreated early maternal syphilis is estimated to be 75 to 95%, decreasing to approximately 35% for maternal syphilis of two years' duration.[5] HIV infection can be transmitted from an infected mother to her

foetus during pregnancy, during delivery, or by breastfeeding.

This is a highly potent form of HIV transmission in developing countries, where the proportion of infected women to infected men is 1:1. Virology analysis of aborted foetuses indicates that HIV can be transmitted to the foetus as early as the first and second trimesters of pregnancy.[1]

AIMS

To determine the seroprevalence of Hepatitis b, HIV and Syphilis infection in asymptomatic pregnant women.

OBJECTIVES

To identify the potential risk factor associated with transmission of above disease and Maternal & fetal outcome.

MATERIALS AND METHODS

1000 apparently healthy pregnant women, who attended the antenatal clinic at AVBRH, Sawangi (Meghe) between September 2014 and august 2016 were screened for HBsAg, HIV and VDRL, in clinical obstetrics and Gynaecology department, JNMC Sawangi (Meghe). An ethical clearance for this study was obtained from ethical and research committee. 4 ml of venous blood was collected by venepuncture into a plain bottle and allowed to clot. Screening for HIV antibodies was performed as per NACO guidelines; by using tridot- HIV card test.

HBV infection was diagnosed by detecting Hepatitis B surface antigen (HbsAg) by ELISA and syphilis antibodies were identified by RPR SPANCARD latex kit.

Inclusion Criteria

All pregnant women attending antenatal clinic and willing to give informed written consent.

Exclusion Criteria

All non-pregnant women and who are unable to give consent.

RESULTS AND DISCUSSION

In our study, out of 1000 apparently healthy, asymptomatic pregnant women, who had history of normal obstetric performance were attending antenatal clinic were screened for HIV, Hepatitis B and syphilis infections where prevalence rate was 2.8%. Jindal Neerja et al (2012).[7] conducted a study of 500 consecutive apparently healthy pregnant women, who had history of normal obstetrics performance and were attending the antenatal clinic of obstetrics and gynaecology, Govt. medical college Amritsar from October 2004 to February 2006 were screened for Hepatitis B, HIV, syphilis infections where prevalence rate was 4.8%, higher than our study.

Infectious Disease Markers	Number	Percentage
HBSAG +VE	17	1.7%
HIV+VE	11	1.0%
VDRL+VE	1	0.1%

Table 1. Prevalence of HbsAg, HIV and Syphilis Positivity in Pregnant Women (n=1000)

Age Group	Number (N-1000)	HBsAg (N-17)	HIV (N-11)	SYPHILIS (N-1)
<19 yrs.	18	0	0	0
20-24 yrs.	513 (51.3%)	8 (1.56%)	6 (1.16%)	1 (0.19%)
25-29 yrs.	343 (34.3%)	7 (2.04%)	4 (1.16%)	0
30-34 yrs.	95 (9.5%)	1 (1.05%)	0	0
>34 yrs.	31 (3.1%)	1 (3.23%)	1 (3.23%)	0
Mean	**1000**	**26.05±3.43**	**25.45±3.32**	**24±0**

Table 2. Showing Age Wise Distribution of Study Group

Gravid Status	Number (N-1000)	HBsAg (17)	HIV (11)	Syphilis (1)	x^2-value
Primigravida	460 (46%)	6 (35.29%)	5 (45.45%)		0.75 p-value=0.68, NS, p>0.05
Multigravida	540 (54%)	11 (64.70%)	6 (54.54%)	1 (100%)	

Table 3. Showing the Gravid Status of Asymptomatic Pregnant Women in This Study

Risk Factor	HBsAg (n=17)		HIV (n=11)		Syphilis (n=1)		P Value
	n	%	n	%	n	%	
Blood Transfusion	11	64.71	5	45.45	0	0	95.45 p=0.0001, S
I.V/I.M	14	82.35	6	54.55	1	100	61.84 p=0.0001, S
Drug	0	0.00	0	0.00	0	0	
Multiple Sex Partner	3	17.65	3	27.27	0	0	29.65 p=0.0001, S

Homosexual	0	0.00	0	0.00	0	0	
Unprotected Sex	1	5.88	1	9.09	0	0	8.84 p=0.012, S
Caesarean Section	4	23.53	2	18.18	0	0	25.91 p=0.0001, S
No Risk Factors	3	17.65	0	0.00	0	0	38.30 p=0.0001, S

Table 4. Showing the Risk Factors for the Probable Transmission in Hepatitis B, HIV, and Syphilis Pregnant Women

Maternal Outcome	HBsAg (n=17)	HIV (n=11)	Syphilis (n=1)	x^2-value
Spontaneous Abortion	1 (5.88%)	4 (36.36%)	1 (100%)	195.60 p=0.0001, S
Preterm	1 (5.88%)	1 (9.09%)	-	8.84 p=0.012, S
IUGR	1 (5.88%)	1 (9.09%)	-	8.84 p=0.012, S
Term	14 (82.35%)	5 (45.45%)	-	29.53 P=0.0001, S

Table 5: Maternal Outcome of HBsAg, HIV, and Syphilis Positivity Pregnant Women

Mode of Delivery	HBsAg (n=17)	HIV (n=11)	Syphilis (n=1)	x^2-value
Caesarean section	5 (29.41%)	3 (27.27%)	-	34.56 p=0.0001, S
Vaginal Delivery	12 (70.59%)	8 (72.72%)	-	34.56 p=0.0001, S

Table 6. Mode of Delivery of HBsAg, HIV and Syphilis Positivity Pregnant Women

Fetal Outcome	HBsAg Positivity Pregnant Women (n-17)		Hiv Positivity Pregnant Women (n-11)		x^2-value	p-value
	n	%	n	%		
Average Gestational Age	15	88.23	10	90.90	0.47	0.48, NS
Small for Gestational Age	0	0.00	0	0.00		
Prematurity Baby	1	5.88	1	9.09	0.64	0.42, NS
Intrauterine Death	0	0.00	0	0.00		
Congenital Anomalies	0	0.00	0	0.00		
Still Birth	0	0.00	0	0.00		
1 min APGAR score <7	1	5.88	1	9.09	0.64	0.42, NS
5 min APGAR score < 7	1	5.88	0	0.00	6.44	0.011, S
NICU Admission	2	11.76	1	9.09	0.47	0.48, NS
RDS	1	5.88	0	0.00	6.44	0.011, S

Table 7. Foetal Outcome of HBsAg, HIV and Syphilis Positivity Pregnant Women

Table 1: Showing the prevalence rate of HBsAg (1.7%) which is less than the contemporary study by Neeta Khokhar.[8] at al 2015, the prevalence was 3.03% among antenatal women. Other study reported by, Gupta et al (2.5%) 1992.[9] Panda et al (2.6%) 1991.[10] and Biswas et al (2.3%) 1989.[11] In our study the prevalence rate of HIV 1.0%. This is less than the contemporary study by Neeta et al 2015.[8] The prevalence for HIV was 0.39%. among the screened patients, 4 (0.38%) patients were positive for HIV which is slightly lower than the cases between 2009 and 2010 (0.49%) (NACO) Annual Report (2009-2010). Other study were Mathur et al 2008.[12] (1.86%), Mustaka et al 2007.[13] (1.17%). In our study, the prevalence rate of syphilis 0.1% out of 1000 asymptomatic pregnant women was low compared to the rate reported. Neeta et al 2015.[8] the prevalence rate of syphilis (0.49%).

Table 2: Showing maximum HBsAg positivity pregnant women in age group 20-24 years (47.05%) followed by 25-29 years (41.17%). This suggests early marriage and early conception of women in this region.

Minimum number of subject in our study group was in age group <34 years (mean±sd =24.05±3.43). This suggest that carrying capacity of women decreases with age and greater awareness among women for family planning. Neeta Khokhar et al 2015.[8] conducted a study of 1020 women were tested antenatal women for Hepatitis B Virus, HIV, syphilis infections. among the antenatal cases prevalence of HBsAg was maximum in the 22-26 year of age group (58.06%). HBsAg positivity was found 31 patients out of 1020 samples. Our study HIV positivity was found maximum in age group 20-24 year, 6 pregnant women (54.54%) followed by age group 25-29 years 4 (36.36%) pregnant women. The study of Neeta et al 2015.[8] total of 4 sample out of 1020 were positive for HIV among which highest prevalence of age group was found in age group 27-31 years (75%) followed by 21-25 years (25%).

Table 3: Out of 17 HBsAg positivity pregnant women, multigravida was more 11(64.70%) than primigravida 6(35.29%). Out of 11 HIV positivity pregnant women, Multigravida was more 6 (54.54%) than primigravida 5 (45.45%).

Only 1 Syphilis was positive, which was found in multigravida. Most of the subject were multigravida than primigravida (P value – 0.68), which was not significant, p>0.05. This suggests that there was no significant difference between primigravida and multigravida regarding importance of routine antenatal checkup during pregnancy. Although multiparity is considered as a risk for transmission of hepatitis b surface antigen as repeated pregnancy would lead to repeated exposure of risk factors such as i.v/i.m drug use, blood transfusion etc. other study which was similar to a study conducted by Apparao p et al 2016[14] 4500 asymptomatic pregnant women were studied and 8 samples were found positive for HIV (0.17%), 8 HBV (0.17%), and in Syphilis were 10 (0.22%). Among them, majority were multigravida, HIV (75%), HBsAg (75%), Syphilis (80%).

Table 4: Showing, In our study, out of 17 HBsAg positivity pregnant women, 14 (82.35%) had history of iv/im drug use, 11 (64.71%) had a history of blood transfusion in previous pregnancy, 4 (23.53%) patient had Caesarean Section and 1 (5.88%) pregnant woman, who gave history of Unprotected Sex. No risk factors were found 3 (17.65%) in HbsAg positive Pregnant Women, who had not given any history of sexual behaviour, blood transfusion and intravenous drug user. In our study, out of 11 HIV positivity pregnant women, history of Intravenous drug users 6 (54.55%) and history of Blood Transfusion 5 (45.45%), who received in previous pregnancy, 2 (18.18%) patient had Caesarean Section, 1 (9.09%) pregnant women, who gave history of Unprotected Sex. In our study, only one woman was positive for Syphilis. Who was multigravida and had history of received intravenous drug user. None was immunized against HBV infection. Some woman had not given history of sexual behaviour or intravenous drug abuse. Which was statically significant (p=0.0001). This suggests common route of infection in pregnancy is IV/IM. This finding was similar to study conducted by Miranda AE et al 2001.[15]

In Indian study by Jindal Neerja et al 2012[7] conducted multicentric study in India. Low literacy status, high-risk sexual behaviour, history of STIs in husbands, and blood transfusions were found to be associated with increased prevalence of STIs. In the present study, STIs including HIV were more common among married monogamous women. This is similar to another report from North India (Punjab). Women in monogamous relationship are placed at the risk for infection when their husbands engage in high-risk sexual activity. The vulnerability of women is also due to inadequate knowledge about STIs, insufficient access to prevention services, inability to negotiate safer sex, and lack of female-controlled prevention method.

Table 5: Showing, in our study out of 17 HBsAg positivity pregnant women were 1(5.88%) had spontaneous abortion, 1 (5.88%) had preterm and 1 (5.88%) had IUGR. Out of 11 HIV positivity, 4(36.36%) had spontaneous abortion, 1 (9.09%) had preterm and 1 (9.09%) had IUGR. Only one woman was Syphilis positive, there had 1 Spontaneous abortion. In HBsAg 14 had term delivery and 5 had term delivery in HIV positivity pregnant women. Our study did not suggest a higher rate of preterm delivery. Furthermore, symptomatic women had a more than a three-fold increased risk of stillbirth compared to asymptomatic women, suggesting that maternal disease progression may play an important role in perinatal outcomes. Our finding was similar to Rajshree katke et al 2015.[16] study 51% (24) cases were second gravida while 38.3% (18) cases were pregnant for the first time, 4.4% (2) patients had preterm delivery, and 6.6% (3) had abortion, out of which 4.44% (2) were induced. Our study did not suggest a higher rate of preterm delivery. This is in contrast to a study of Tse KY et al 2005.[17] which suggests an increased risk of preterm delivery with HBsAg carrier state.

Table 6: Showing, In HBsAg (70.59%) had delivered vaginally, (29.41%) had caesarean section and in HIV (72.72%) had delivered vaginally and (27.27%) had caesarean section. p=0.0001, S (significant) this was statistically significant. This signifies that transmission can occur when the infant is exposed to infectious blood and body fluids during delivery. Rajshreekatke et al 2015.[16] were (71.1%) of total number of HBV positive pregnant women. elective LSCS in HBsAg carrier does not improve the vertical transmission rate. Caesarean section has not been shown to eliminate the risk of perinatal acquired HBV infection and should not be routinely recommended for carrier mothers.

Table 7: Showing, in our study out of 17 HBsAg positivity mother, 15 babies were average gestational age and 2 baby shifted to NICU, 1 baby for respiratory distress and 1 min APGAR <7 and 1 baby for prematurity and 5 min APGAR score <7. In our study out of 11 HIV positivity mother, 10 baby were average gestational age and 1 baby shifted to NICU for prematurity and 1 min APGAR SCORE <7. Only one syphilis was positive, which had spontaneous abortion. The babies who were admitted to NICU, were later shifted to mother side and discharged healthy and they received immunoglobulin. STDs can cause significant maternal and foetal complications. Adverse pregnancy outcomes directly and indirectly attributable to STDs include ectopic pregnancy, spontaneous abortion, fetal demise, perinatal infections, intrauterine growth restriction, congenital abnormalities, premature rupture of membranes, preterm birth, chorioamnionitis, puerperal infections, low-birth-weight infants, and neonatal infections. This study was similar to Rajshree et al 2015.[16] out of 45 deliveries, 38 (90.5%) neonates were shifted to mother after delivery.

Out of 7.1% (3) NICU admissions, all for respiratory distress, were later shifted to mother and discharged healthy. Passive immunization with immunoglobulin in

simultaneously active immunization with 3 doses of hepatitis B vaccine in all newborn of HBsAg carrier mother with HBsAg negative status give excellent protection and it is to be stressed upon the health care professionals.

CONCLUSION

This present study showed gradual declined in seroprevalence of HBsAg, HIV and Syphilis within the community. This is due to the fact that all pregnant women are screened for HBsAg, HIV and syphilis in the 1st antenatal visit in the 1st trimester and also in the 3rd trimester. The present study also concluded that along with antenatal screening of HBsAg, HIV and Syphilis, there is urgent need for suitable screening strategy for asymptomatic pregnant women and universal immunization of HBV high-risk infants. In addition greater emphasis should be laid on targeted Intervention of preventive services through information, education and promotion of women's right. This would go long way in reducing the spread of STIs in pregnant women and its associated perinatal mortality and morbidity. This study may also help professionals to analyse data and reinforce the need for effective prevention and efficiently treating the mother. More emphasis to be focused on efficiently screening the blood collection technology to reduce transmission of STIs.

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