International Journal of Medical and Pharmaceutical Research
Website: https://ijmpr.in/ | Print ISSN: 2958-3675 | Online ISSN: 2958-3683
NLM ID: 9918523075206676
Volume: 4 Issue:5 (Sept-Oct 2023); Page No: 93-97

Original Article

IJMPR

Seroprevalence of HIV, HBV, HCV and Syphilis Infection among Pregnant Women Attending Antenatal Clinic

Dr. K.Lavanya[1]; Dr. P.Suseela Kumari[2]

[1] Assistant professor, Department of Microbiology, Andhra medical college, Visakhapatnam
[2] Associate professor, Department of Microbiology, GMC, Rajamahendravaram, AP, India.

ABSTRACT

Human immuno deficiency virus is RNA retro virus. HIV infection can be transmitted by four ways, It can be transmitted from infected mother to her fetus during pregnancy, during delivery and through breastfeeding.
Transmission of Treponema pallidum infection from syphilitic mother to her fetus through Placenta occurs at any stage of pregnancy. Transmission of Hepatitis B virus by vertical transmission to fetus occurs mostly in first trimester. Transmission of Hepatitis C infection occurs mainly by post transfusion in prenatal period. AIM: the aim of the study is to assess the sero prevalence of HIV, HBV, HCV and Syphilis among pregnant women attending antenatal OP and Labor ward in GGH, Rajamahendravaram. Methods: This study was conducted by using standard guidelines of NACO And CLSI. The data was statistically analysed. Results: A total number of 2400 antenatal women are screened for HIV, HBV, HCV and Syphilis infection. Among those second gravida was higher with 50%, Most of the women from rural area, Seroprevalence of HIV is 0.66% HBV is 1.75% HCV is 0.041% and Syphilis is 0.04%.

Key Words: *HIV syphilis HIV HCV pregnant women*

***Corresponding Author**
Dr. K.Lavanya
Assistant professor, Department of Microbiology, Andhra medical college, Visakhapatnam

INTRODUCTION

Human immune deficiency virus is an RNA retrovirus. HIV infection is usually transmitted through unprotected sexual intercourse, heterosexual or homosexual; through blood or blood products or from an infected mother to her child (vertical transmission) and needle stick injury. More than 70% of infections are as a result of heterosexual transmission and over 90% of infections in children result from mother-to-children transmission.

WHO stated that global HIV prevalence rate was 39million in 2022.
Around 1.5 million HIV infected children below 15 years of age[1].

HIV infection can be transmitted from an infected mother to her fetus during pregnancy, during delivery or by breast feeding. This is highly potent form of HIV transmission in developing countries. HIV can be transmitted to the foetus as early as first and second trimesters of pregnancy[2].

Sexual mode of transmission is most common and account for 75% of total cases in the world. However, the risk of transmission through sexual route is minimal 0.1 -1%.

In perinatal mode the risk of transmission from mother to fetus is about 20-40%. Risk is maximum if mother is recently infected or has already developed AIDS[3].

Transmission of Treponema pallidum from a syphilitic woman to her fetus through placenta may occur at any stage of pregnancy, but the lesions of congenital syphilis generally begin after the fourth month of gestation. Fetus develops immunological competence by this time. This timing suggests that the pathogenesis of congenital syphilis depends on host immune response rather than on a direct toxic effect of T.pallidum. Risk of infection of untreated early maternal syphilis is about 75-95%, decreasing to approximately 35% for maternalsyphilis of two years duration.[2]

Regarding Hepatitis B viral infection causes hepatitis. Hepatitis is a double stranded DNA virus in Hepadnaviridae family that affects primarily liver. The average incubation period is 90 days from the exposure of the onset of symptoms, but it may vary from 6 weeks to 6 months [4,5,6,7].

In infected persons HBV is found in higher concentration in blood and lower concentration in saliva, semen, vaginal secretions and wound exudates.

In patients with acute Hepatitis B vertical transmission occur in up to 10% of neonates when infection occurs in first trimester and 80-90% of neonates when acute infection occurs in third trimester[5.]

Maternal HBV DNA level has been demonstrated to be the strongest prediction of neonatal immune-prophylaxis failure, with a lower prophylaxis effective rate directly related to a high maternal viral load. Pregnancy is not a contraindication to vaccination to HBV. Co-infection with hepatitis among people with HIV is emerging as a growing problem.

Hepatitis C virus is the common cause of post transfusion hepatitis in developing countries. There are three modes of transmission of HCV mainly by prenatal to contaminated blood transfusion. About 3% of world population has been infected with HCV worldwide with more than 170 million chronic carriers[8].

The present study was carried out to estimate the distribution of Hepatitis B, Hepatitis C, HIV and Syphilis cases in antenatal women attending OPs in GGH, Rajamahendravaram.

Materials and Methods

A study was conducted at antenatal OP in Government general hospital Rajamahendravaram for a period of one year from May 2022 to June 2023.

Inclusion criteria

All antenatal women attending for antenatal check-ups were undergone screening test for HIV with informed consent.

Exclusion criteria

All antenatal women with incomplete information (especially age, HIV& Syphilis).

Along with HIV screening, HBV, HCV and RPR tests were conducted. For HIV according to NACO guidelines three rapid tests (comb AIDS, Trispot),

Screening of HCV done by Erbalisa and RPR by RPR span.

HBV screening done by SD bioline. All tests are conducted and statistical analysis was done. The interpretation of results was done through measurement of p value with statistically significant effect.

Results

A study was conducted in the department of microbiology for a period of one year. Antenatal women who are attending PPTCT centers are included in our study. Antenatal women both from rural and urban areas included for screening test.

A total number of 2400 antenatal women screened for hepatitis B virus infection, hepatitis C virus infection, HIV infection and syphilis infection. Among the total antenatal first gravida was 1200(50%), second gravida were 700(29.16%) and followed by third gravida were 500(20.83%) Table-1.

Table-1: n=2400

Distribution of AN cases according to gravida			
S. No.	**Gravida**	**No.**	**Percentage**
1	**First Gravida**	**1200**	**50.00%**
2	**Third Gravida**	**700**	**29.17%**
3	**Second Gravida**	**500**	**20.83%**
	Total	**2400**	

According to geographical distribution 1700(70.83%) were rural area, 700 were (29.16%) urban area.The seroprevalence of HBsAg among antenatal cases was maximum in 21- 25 years age group 30, there were 42 samples positive for HBsAg out of 2400 samples.

The overall prevalence for HBsAg was 1.75%. The prevalence of HBsAg in the second gravida was higher 59.5% followed by the third (23.8%) and first gravida 16.66% according to Table 2.

Table-2:

Gravida wise Distribution of seropositivity							
S. No.	ıme of the infection	First Gravida		second Gravida		Third Gravida	
		mb er	rcent age	mb er	rcent age	mb er	rcent age
1	HIV (n=16)	2	12.50%	14	87.50%	0	0.00%
2	SYPHILIS (n=1)	0	0.00%	1	100.00 %	0	0.00%
3	HCV (n=1)	0	0.00%	1	100.00 %	0	0.00%
4	HBV (n=42)	7	16.67%	25	59.52%	10	23.81%

There is only one sample positive for anti HCV out of 2400 samples. thus, the overall prevalence for anti HCV was 0.041% and this sample belongs to second gravida.

The prevalence of Treponema pallidum antibody among antenatal cases was maximum in the age group of 21-25 years (100%). This positive case belongs to second trimester. The overall prevalence of treponema pallidum antibody was 0.04%.

All samples were tested using qualitative rapid plasma reagin (RPR), reactive samples were retested with quantitative RPR to rule out biological false positive samples. The reactive qualitative RPR had a titer of >1:8.

The prevalence of HIV was highest in the age group of 26-30 years 11(68.75%) followed by 21-25 years 4(25%),17-20 years 1(6.25%).
A total number of 16 samples out of 2400 were positive/ the overall prevalence for HIV was 0.66%.

HIV seroprevalence was highest in second gravida 14 (87.5%), among study group no co-infection was found between hepatitis B, hepatitis C, syphilis or HIV.

DISCUSSION

A study conducted to know about seroprevalence of HIV, HCV, HBV and syphilis infection and their coinfection in women attending antenatal OP, Government General Hospital, Rajamahendravaram.

The study revealed that seroprevalence of HIV among pregnant women attending antenatal op is 0.66%. In Nigeria[9] 3.8%, Niger[10] 4.1%, Cameroon[11] 4.2% which is higher than our study whereas in south Ethiopia it was 1.8% near to Australia.

The variations of this finding compared to the national HIV prevalence may be as a result of difference in sample size, study area coverage and study population.

In our study women belongs to rural area are more because most of the women attending antenatal op are referrals from the rural areas.

Syphilis remains a major cause of morbidity and mortality in the world in spite of availability of effective treatment. Interventions including early antenatal checkups, massive screening and prompt treatment with antibiotics reported to reduce syphilis associated risks[12].

The seroprevalence of syphilis in the current study was 0.04% which was higher in other studies conducted Gondar 3.7 %(43b) [13], Madagaskar3%[14], Brazil[15]Bangladesh[16] each, and 2.9% in Addis Ababa, Ethiopia[17]

Syphilis has also acquired a new potential for morbidity and mortality through association with increased risk of HIV infection because of their common route of transmission as well as the fact that they are mainly blood borne infection, syphilis and HIV co-infection continues to be a public health problem especially in low-income settings.

The present study the prevalence rate of HBsAg among antenatal women is 1.75% which is lower than the Mittal et al 6.3%[18] Gill et al 5%[19] Biswas et al 2.3%[20] and Gupta et al (2.5%)[21] Table-3.

Table-3:

Comparison of percentage of positive subjects of HBsAg among antenatal cases				
Sr. No.	**Study**	**Total Sample**	**HBsAg +**	**percentage of positive subjects**
1	**Mittal et al[18]**	**850**	**54**	**6.3**
2	**Gill et al[19]**	**2000**	**100**	**5**
3	**Gupta et al[21]**	**2337**	**58**	**2.5**
4	**Biswas et al[20]**	**1000**	**23**	**2.3**
5	**Present Study**	**2400**	**42**	**1.75%**

The strong possibility of vertical transmission makes important to diagnose acute or chronic HBV infection in pregnant women and justifies mandatory antenatal serum HBsAg screening.[22]

The study also assessed the prevalence of HCV infection in antenatal women. Out of 2400 only one was positive for anti HCV antibodies with the prevalence of 0.04%, which is very low compared to the Farhana et.al 3.44% [23], Ashok et al 1.03% [24]. Similar results with Rudrapathi et.al 0.6%[25] and Ganju 0%[26].

Our study indicates a lower prevalence of HIV, HBV, HCV and syphilis in antenatal women. Most of the effected women are in second gravida who belongto rural area.

Conclusion

It is concluded that a substantial percentage of antenatal women harbor HIV, HBV, HCV and syphilis. This data helps health professionals to efficiently treat antenatal women. The data also reinforces the need for effective preventive programs which leads to a reduction in the prevalence of HIV, HBV, HCV and syphilis.

REFERENCES:

1. Essentials of Medical Microbiology by Apurba Sankar Sastry - 2nd edition page no.528, 529, 533
2. Kasper L, Braunwald E, Fauci A, Hauser S, Longo D, Jameson JL (2005) Harrison's Principles of Internal Medicine, 16th edition. New York, McGraw- Hill Medical Publishing Division, p 2607.
3. Essentials of Medical Microbiology by Apurba Sankar Sastry - 2nd edition page no.526
4. Centres for Disease Control and Prevention, Workowski KA, Berman SM(2006). Sexually transmitted diseases treatment guidelines, 2006. MMWR Recomm Rep. 2006 Aug 4;55(RR-11):1-94. Erratum in: MMWR Recomm Rep; 55(36):997. PMID: 16888612
5. American College of Obstetricians and Gynecologists. ACOG Practice Bulletin No. 86: Viral hepatitis in pregnancy. Obstet Gynecol. 2007 Oct;110(4):941-56. PMID: 17906043
6. Mast EE, et al(2005). Advisory Committee on Immunization Practices (ACIP). comprehensive immunization strategy to eliminate transmission of hepatitis B virus infection in the United States: recommendations of the Advisory Committee on Immunization Practices (ACIP) part 1: immunization of infants, children, and adolescents. MMWR Recomm Rep; 54(RR-16):1-31.PMID: 16371945
7. Workowski KA, Bolan GA(2015). Centers for Disease Control and Prevention. Sexually transmitted diseases treatment guidelines, 2015. MMWR Recomm Rep; 64(RR-03):1-137. PMID: 26042815
8. Essentials of Medical Microbiology by Apurba Sankar Sastry - 2nd edition page no.556, 559
9. Buseri F, Seiyaboh E, Jeremiah Z(2010). Surveying Infections among Pregnant Women in Niger Delta, Nigeria. J Glob Infect Dis; 2(3):203-211.
10. C. J. Uneke, D. D, Duhlinska and E. B(2008). Igbinedion. Prevalence and Public- health Significance of HIV Infection and Anaemia among Pregnant Women Attending Antenatal Clinics in South-eastern Nigeria J HEALTH POPUL NUTR, 25(3), 328-335.
11. Mbopi Kéou FX, Mbu R, Mauclère P, Andela A, Tetanye E, Léké R et al(1998). Antenatal HIV prevalence in Yaounde, Cameroon. Int J STD AIDS; 9(7):400-4002.
12. Kuznik A, Lamorde M, Nyabigambo A, Manabe YC(2013). Antenatal syphilis screening using point-of-care testing in sub- Saharan African countries: a cost- effectiveness analysis. PLoS Med; 10(11) :e1001545. doi:10.1371/journal.pmed.1001545.
13. Melku M. Kebede A, Addis Z(2015). Magnitude of HIV and syphilis Seroprevalence among pregnant women in Gondar, northwest Ethiopia: a cross-sectional study. HIV/AIDS – Research and Palliative Care: 7: 175–182
14. Frickmann H, Schwarz NG, Girmann M, et al(2013). Serological survey of HIV and syphilis in pregnant women in Madagascar. Trop Med Int Health; 18(1):35–39.
15. Angelica M, Marta CA, Regina LN, Kelly RA, Anto N(2001). Seroprevalence of HIV, HBV and Syphilis in Women

at Their First Visit to Public Antenatal Clinics, Brazil. Sex Transm Dis; 28(12):710-713.
16. Nessa A, Islam MN, Ashraf F, et al(2011). Seroprevalence of Treponema Pallidum antibody among pregnant population of Bangladesh. J Obstet Gynaecol Res; 37(11):1625–1630.
17. Kebede E and Chamiso B(2000). Prevalence of syphilis in pregnancy in Addis Ababa. East African Medical Journal; 77(4):212-215.
18. Mittal, S.K.,Rao, S.,Rastogi, A.,Aggarwal, V.,Kumari, S.(1996). HepatitisB, potential of perinatal transmission in India. Trop. Gastro enterol.,17:190-192.
19. Gill HH, Majumdar PD, Dhunjibhoy KR, Desai HG (1995) Prevalence of hepatitis B e antigen in pregnant women and patients with liver disease. J Assoc Physicians India 43: 247-248.
20. Biswas SC, Gupta I, Ganguly NK, et al(1989). Prevalence of hepatitis B surface antigen in pregnant mothers and its perinatal transmission. Trans R Soc Trop Med Hyg; 83: 698-700
21. Gupta I, Sehgal A, Sehgal R, Ganguly NK (1992) Vertical transmission of hepatitis B in North India. J Hyg Epid Microbiol Immunol 36: 263-267.
22. ACOG Technical bulletin (1992) Hepatitis in pregnancy. No. 174 - November Hepatitis in pregnancy. ACOG Technical Bulletin Number 174--November 1992 (1993) Int J Gynaecol Obstet 42: 189-98
23. Shaikh F, Syed Qaiser HN, Kousar J, Allah Dino Memon R (2009) Prevalence and risk factors for hepatitis c virus during pregnancy. Gomal Journal of Medical Sciences 2: 86-88.
24. Kumar A, Sharma KA, Gupta RK, Kar P, Chakravarti A(2007). Prevalence & risk factors for hepatitis C virus among pregnant women. Indian J Med Res; 126(3):211-5. PMID: 18037715.
25. Parthiban R, Shanmugam S, Velu V, Nandakumar S, Dhevahi E, Thangaraj K, Nayak HK, Gupte MD, Thyagarajan SP (2009) Transmission of hepatitis C virus infection from asymptomatic mother to child in southern India. Int J Infect Dis 13: 394-400.
26. Ganju SA, Goel A (2001) Hepatitis C virus activity in Shimla – A preliminary report. Indian J Med Microbiol 19: 227.