

Seroprevalence of HIV, HBsAg, HCV & Syphilis in pregnant women: Re-addressing the need for antenatal screening



Microbiology

KEYWORDS : Antenatal women, Seropositivity, HIV, HBsAg, HCV, Syphilis.

Dr Harshita, JR

Department of Microbiology, GMC, Amritsar

Dr Sita Malhotra

Associate Professor, Department of Microbiology, GMC, Amritsar

Dr Pushpa Devi

Professor & Head, Department of Microbiology, GMC, Amritsar

Dr Shailpreet Kaur

Assistant professor, Department of Microbiology, GMC, Amritsar

Dr Kamalpreet Kaur ,JR

Department of Microbiology, GMC, Amritsar

ABSTRACT

Introduction: The increasing incidence of transfusion associated infections and their impendence to affect the offspring through vertical transmission is of paramount importance.

Aims & objectives: 1.Seroprevalence of HBV, HCV, HIV and Syphilis in pregnant women

2.To readdress the need for antenatal screening.

Material and methods: All samples were tested to detect HBsAg by enzyme linked immunosorbent assay (ELISA). Samples were tested to detect anti-HCV by ELISA. Samples were also tested for antibodies to Treponema Pallidum by qualitative rapid plasma reagine (RPR). Finally, samples were tested for antibodies to HIV by three different methods as per Strategy III of the National AIDS Control Organization (NACO).

Results: out of 3408 samples tested for HBV and HCV, the seropositivity of HBV was 1.17% and 1.26% for HCV , out of 570 samples tested for sphyllis the infection rate was found out to be 1.05% ,while infection rate of HIV from out of 715 samples tested was 4.6% .There was no co-infection of HBV and HCV, Syphilis and HIV, HBV, HCV.

Conclusion: Our study showed that it is very crucial for all pregnant women to be demanded to test for HBV, HCV alongside the conventional syphilis and HIV infections to foil them from infecting their unborn babies.

Introduction:

Transfusion of blood and blood products is a life saving measure which benefits patients worldwide and is also considered the most common source of transfusion transmissible infections (TTIs) especially caused by bacteria or viruses. Transfusion-associated infections mainly Hepatitis B virus (HBV), Hepatitis C virus (HCV), Human Immunodeficiency Virus (HIV) and Syphilis among blood donors are of public health concern.⁽¹⁾

Hepatitis B virus is the most important virus associated with transfusion induced hepatitis and is known to be the most common virus transmitted vertically during pregnancy. 80%-90% of neonates are found to be positive at birth to HBsAg mother.⁽²⁾ According to a study 85% of neonatal HBV are caused by intra-partum exposure to blood and body fluids and rest 15% caused by hematogenous route.⁽³⁾ Acute stage leading to premature labour, high risk of maternal and fetal complications.⁽⁴⁾

Hepatitis C virus is also known to be the most common chronic blood borne infection Available data show that about 3% of the world population is infected with HCV⁽⁵⁾. Mainly this infection is acquired by contaminated blood, sexual activity and perinatal transmission in pregnancy. Perinatal transmission is one of the leading cause of transfusion associated HCV infection . Viral hepatitis in pregnancy is associated with high risk of maternal, fetal and neonatal complications where maternal infection leads to cholestasis.⁽⁶⁾

Syphilis is a systemic disease caused by *Treponema pallidum*, which can be spread by sexual contact, blood transfusion and through vertical transmission.⁽⁷⁾ Syphilis can critically complicate pregnancy and consequently cause spontaneous abortion, prematurity, low birth weight, still birth as well serious results in live born infected children.⁽⁸⁾ This frequency of this infection found mostly in developing countries due to non conformity of women to antenatal checkups and regular antenatal screening of sphyllis.

HIV is the most common transfusion associated viral infection

and is considered to be the major global health problem occurring in human population. It is liable to cause fetal and maternal morbidities.⁽⁹⁾

Most common route of transmission of this infection is blood transfusion and sexual contact. Pregnant women are at greater risk of transmitting HIV infection to the fetus by vertical route or by breast feeding. Due to the similarity in the routes of transmission, many individuals have been exposed to HIV, HBV, HCV and Syphilis infection in various combinations.⁽¹⁰⁾ There are worldwide variations in seroprevalence of these infections depending on geographic area, risk groups and the type of exposure involved.

This study aimed at estimating the seroprevalence of HIV, HBV, HCV and Syphilis and coinfections among antenatal women. The outcome will help in framing intervention policies aimed at cutting back the spread of these infections.

Material and methods:

This was a retrospective study, which covered the antenatal cases in the hospital between Jan 2011 to Dec 2014. A total of 3408 pregnant women were examined who attended the antenatal clinic within the study period. All the antenatal records with complete sociodemographic variables HIV, HBV, HCV and Syphilis screening results were used for the study. All antenatal women whose mothers were HBV or HIV carriers were excluded. This study was approved by the Ethical Committee of the Govt. Medical College and Hospital, Amritsar. This study was conducted to determine the prevalence of hepatitis B virus surface antigen (HBsAg), antibodies to Hepatitis C virus, antibodies to *Treponema pallidum*, and antibodies against HIV virus. Serum samples from cases were collected and were tested for hepatitis B (HbsAg) by Crystal HbsAG- immunochromatographic one step rapid visual test, hepatitis C by signal HCV -flow through anti HCV spot/ immunodot test kit, Syphilis by rapid plasma reagin test and HIV as per Strategy III of the National AIDS Control Organization (NACO) by using different test systems to establish diagnosis of HIV.

Results:

A total of 37 (51%) out of the 715 pregnant women studied were infected with HIV. The prevalence of HIV was significantly higher among pregnant women with no formal education and those with multiple marriages

The prevalence of HBV and HCV were 1.19 % and 1.2%, respectively. Maternal age, gravidity, parity, history of blood transfusion, marital and educational status did not significantly affect the prevalence of HBV and HCV infection among pregnant women.

As compared to the other viral infections, the rate of Syphilis was found out to be 1.06%.

No co infection between HIV, HBV, syphilis and HCV was observed.

Table 1: Screening pattern of the antenatal women

Screening pattern of women	Frequency	Percentage
HIV screening pattern		
Positive	37	5.17%
Negative	678	94.83%
HBsAg screening pattern		
Positive	40	1.19%
Negative	3368	98.81%
HCV screening pattern		
Positive	43	1.2%
Negative	3365	98.8%
Syphilis screening pattern		
Positive	6	1.06%
Negative	564	98.94%

Table 2 : HBV and HCV positive cases in different age group

Age group	HBsAG Positive	HCV Positive	Total tested
15-25 years	15(0.92%)	17(1.04%)	1625
26-35 years	18(1.7%)	18(1.7%)	1050
36-45 years	7(0.95%)	8(1.09%)	733
TOTAL	40(1.19%)	43(1.2%)	3408

Table 3: HIV positivity in different age group

Age group	HIV positive	Total tested
15-25 years	10(4.8%)	210
26-35 years	12(4.61%)	260
36-45 years	15(6.1%)	245
Total	37(5.17%)	715

Table 4: Syphilis positive cases in different age group

Age group	Sphyllis positive	Total tested
15-25 years	2(1.14%)	175
26-35 years	3(1.53%)	195
36-45 years	1(0.5%)	200
Total	6(1.05%)	570

Discussion :

This study showed an HBsAg prevalence rate of 1.19% among antenatal women. The likelihood of vertical transmission lends importance to diagnosing acute or chronic HBV infection in pregnant women and rationalize compulsory antepartum serum HBsAg screening. Screening of HBsAg will divulge previously unsuspected chronic HBV infection in young, otherwise healthy individuals. This screening has the added advantage of making it possible to refer such patients for appropriate antiviral therapy before significant liver damage and associated functional death develops.

Large scale studies on the estimates of the occurrences of HCV infection and risk behavior of HCV infection in the Indian population are yet to undertaken. This study weigh up the prevalence of HCV infection within antenatal women in GNDH Amritsar.

Of the 3408 samples included in this study, 43 samples were positive for anti-HCV antibodies with a prevalence of 1.12% which is very low compared to the rates reported by Farhana et al. (3.44%)⁽¹¹⁾ but was similar to Ashok et al. (1.03%).⁽¹²⁾

The component based on discerning screening for high risk factor analysis will fall short to recognize over half of infected patients. Therefore, targeted screening is not pleasing and combined screening would present cost restriction, especially in source poor countries.

The prevalence rate of syphilis in the present study (1.05%) was very low compared to the rate reported by Kebede et al. (2.9%)⁽¹³⁾ and the rate reported by Gupta et al (1.47%)⁽¹⁴⁾. In India, available information indicates that the prevalence of maternal syphilis has remained at around 1.5% between 2003 and 2007.⁽¹⁵⁾

During the study period, 715 pregnant women were screened for HIV out of which 37 (5.17%) tested positive for HIV which is pretty much higher than the prevalence in antenatal women in India between 2009 and 2010 (0.49%).⁽¹⁶⁾

Our study indicates a higher drift towards HIV prevalence. This will directly lead to high perinatal transmission and a joint increase in pediatric AIDS cases. Hence, it may be suggested that even though the restorative treatment for HIV is not available at present, we can minimize paediatric HIV infection by early screening of pregnant mothers for HIV followed by perinatal short-term anti-retroviral therapy, safe delivery practices, and modified infant feeding.

Conclusion

This data can help health professionals to resourcefully treat antenatal patients. The data also strengthen the need for effective prevention programs, which could lead to decline in the prevalence of HBV, HCV, Syphilis and HIV.

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