

Prevalence of HIV, Hepatitis B, Hepatitis C in Pregnancy at Tertiary Care Center of Northern India

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Abstract

Background & Objectives: Information on hepatitis C virus (HCV) infection, Hepatitis B Virus (HBV) and Human immunodeficiency virus in pregnant women in India is not much. This study was carried out to investigate the prevalence of HIV, HBV and HCV infection within an obstetric population in north India.

Methods: It was a retrospective study which was conducted by analyzing the data of pregnant patients who delivered at Labour room of Obstetrics & Gynecology department of PGIMS, Rohtak over one year period i.e. 01.01.2015 to 31.12.2015. All the pregnant patients who delivered were screened for HBsAg, Anti HIV antibodies and Anti HCV antibodies. A total number of 10,000 pregnant patients delivered in this one year time.

Results: It was observed that 84 tested positive for HIV (0.84%), 36 were positive for HBsAg (0.36%), 30 were positive for HCV (0.30%). The mean age and parity of these delivered patients was 22.50±8.8 yrs.

Conclusion: With a prevalence of the HCV infection equivalent to elsewhere in the world but with no significantly associated risk factor, identification of HCV infection here poses a greater public health problem. In this situation, the modules based on selective screening for high risk factor analysis will fail to identify over half of the infected patients. Therefore, targeted screening is not appropriate and universal screening would present cost constraints especially in resource-poor countries. Further research is necessary to understand the causes and implications of this observation and to give future directions.

Keywords: Anti-HIV antibody; Anti HCV antibody; HBsAg; Pregnancy

Abbreviations: HCV: Hepatitis C Virus; HBV: Hepatitis B Virus; RT-PCR: Reverse Transcriptase Polymerase Chain Reaction

Introduction

Hepatitis C virus (HCV), HIV and Hepatitis B, all can be of parenterally acquired hepatitis. HCV infection is asymptomatic in a large proportion of cases (65-75%) and revealed only accidentally by abnormal liver function tests and /or anti-HCV positivity. The long-term morbidity and mortality is far greater than its counterpart hepatitis B in terms of chronic active hepatitis (70%), cirrhosis (20-30%), hepatocellular carcinoma and liver failure [1]. Anti-HCV, Anti-HIV and HBsAg screening of blood products introduced during the early 1990s has minimized this mode of HCV acquisition, leaving vertical transmission from infected mothers as the predominant mode of infection in children. Approximately 7-8 per cent of hepatitis C virus-positive women transmit hepatitis C virus to their offspring with a higher rate of transmission seen in women co-infected with HIV [2].

The worldwide literature on this viral prevalence has increased considerably over the past decade, yet few surveys have been conducted on national level. Several studies of pregnant women in Europe reported relatively low anti-HCV prevalence when second or third generation ELISAs were used. In an antenatal survey from England, the prevalence of anti-HCV in antenatal clinic attenders in Greater London area and Northern and Yorkshire region was found to be 0.43 per cent (of 25938 women) and 0.21 per cent (of 16675 women) respectively [3]. The HCV prevalence of 0.38 and 0.20 per cent were seen in inner and outer districts of London respectively [4]. Another UK study of an antenatal population in the West Midlands found an overall HCV prevalence of 0.14 per cent [5]. In a national survey among 30,259 childbearing women throughout Scotland, the HCV seroprevalence was found to be 0.29-0.40 per cent [6].

Little is known about hepatitis C virus infection in pregnant women in India. The seroprevalence of anti HCV antibody in the healthy general population of India was found to be 1.5 per cent each in 234 voluntary blood donors and 65 pregnant women [7]. HCV infection was not detected in 250 randomly selected antenatal women in Shimla (Himachal Pradesh) [8,9]. There are no large scale studies on the estimates of the prevalence and risk behavior of these viral infections in Indian population. We therefore undertook this study to assess the prevalence of HIV, HCV and HBV infection within an obstetric population attending a tertiary care hospital of Northern India.

Material & Methods

It was retrospective study which was conducted by analyzing the data of pregnant patients who delivered at Labour room of Obstetrics & Gynecology department of PGIMS, Rohtak over one year period i.e.01.01.2015 to 31.12.2015. All the pregnant patients who delivered were screened for HBsAg, Anti HIV antibodies and Anti HCV antibodies. A total number of 10,000 pregnant patients delivered in this one year time. Assuming the average prevalence of HCV, HIV and HBsAg infection in our country, it was estimated that 10,000 pregnant women will reflect truthful and genuine results. Anti-HCV & Anti HIV antibodies were detected by commercially available third generation ELISA diagnostic kits. The initially reactive samples were re-tested in duplicate and considered ELISA positive if at least two of three results were reactive. All anti-HCV antibody positive samples were tested for HCV-RNA by a reverse transcriptase polymerase chain reaction (RT-PCR).

Results

Eighty four (0.84%) of the 10,000 delivered pregnant women tested positive for anti-HIV antibodies, 36 were HBsAg positive (0.36%) and 30 (0.30%) were found to be Anti HCV antibodies positive. Of these, 30, 26 were positive for HCV-RNA by RT-PCR. Among these 26 cases confirmed on HCV-RNA testing, only one tested positive for HBsAg, while none of these tested positive for HIV. The mean age of the study group was 22.50 ± 8.8 yrs. The mean parity of the study was 1.1 ± 0.9 [10].

Discussion

This study represents a large-scale, single hospital based report to define the seroprevalence of hepatitis C, B and HIV virus in an urban population of pregnant women. The seroprevalence of hepatitis C antibodies of 0.3 per cent in an antenatal population was less than findings of other epidemiologic studies (1-5%) [1,11-14]. The highest greatest prevalence of infection occurs among individuals of reproductive age [15,16]. Age is a known risk factor for these viral infections, including hepatitis C infection; seropositivity of which has been reported to increase until the age 40 and then declines over time [17]. This can be explained by the greater probability of exposure of these women

to risk factors. In our study of predominantly young pregnant women, the prevalence was found to increase up to the age of 26 but decrease after that. But the lack of association may be due to less number of subjects in the older age group. Leikin et al. [18] have reported a higher mean parity of HCV positive patients in their study. Although the mean parity of both the groups was similar, the prevalence of anti-HCV among the multiparous females was more than nulliparous females in our study. It was found that 54.8 per cent of the anti-HCV antibody positive pregnant women had detectable HCV-RNA in their blood, a figure that is slightly lower than that found in most of the studies (64-75%) on asymptomatic pregnant women [3,19-22]. The prevalence of HCV-RNA is important for mother to child transmission.

Earlier studies have found an association between the prevalence of HCV infection and the known risk factors of this infection i.e., blood transfusion, intravenous drug abuse, multiple sexual partners, and homosexuality [12-14]. In a study from northern Italy, the principal risk factors were history of intravenous drug abuse (32%) and exposure to blood products (24%). In the same study, 4 and 2.1 per cent of the patients were found to be anti-HIV and HBsAg positive respectively [22].

In a study from Pakistan [23] when previous vaginal deliveries with episiotomy, previous surgeries, blood transfusions, and D&C for abortion or dysfunctional uterine bleeding were taken as independent variables, only past history of surgical procedures was found to be the most important factor for transmission of hepatitis C virus infection. It has been reported that in resource poor countries, the risk of iatrogenic HCV infection is high [24]. Sexual transmission of hepatitis C virus also probably occurs, although the importance of spread by this route remains unclear. The presence of cosmetic alterations in the form of body piercing or tattooing should be taken into consideration whenever assessing the risk of an individual having HCV antibodies.

The present study showed that a substantial proportion (up to 62%) of women with HCV had no evidence of exposure to any known risk factors in their history. This compares well with the observation that 40 to 73 per cent of the women had no obvious risk factors for HCV infection at the time of booking [19,22,25,26]. It has been found that selective antenatal screening policy based on risk factors, failed to identify over half of infected patients [19]. Moreover, screening of asymptomatic pregnant women for hepatitis C virus infection is not cost-effective [27]. Routine screening is not recommended currently during pregnancy for asymptomatic women without risk factors for HCV infection [2,25].

Conclusion

With a prevalence of the HCV infection equivalent to elsewhere in the world but with no significantly associated risk

factor, identification of HCV infection here poses a greater public health problem. In this situation, the modules based on selective screening for high risk factor analysis will fail to identify over half of the infected patients. Therefore, targeted screening is not appropriate and universal screening would present cost constraints especially in resource-poor countries. Further research is necessary to understand the causes and implications of this observation and to give future directions.

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