SEROPREVALENCE OF HEPATITIS C IN PREGNANT WOMEN IN GOVERNMENT MEDICAL COLLEGE, HALDWANI, UTTARAKHAND - A RETROSPECTIVE STUDY

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ABSTRACT

BACKGROUND

Information on hepatitis C virus infection in pregnant women in India is scarce since there are no universal guidelines for screening of Hepatitis C infection during antenatal checkup in India. Epidemiology of Hepatitis C infection during pregnancy was important for health planners and programme managers to effectively implement preventive and curative measures. Seroprevalence of Hepatitis C in pregnant women may be a good indicator of general population prevalence. Purpose of this study was to determine prevalence and to evaluate the need for routine antenatal screening for Hepatitis C infection among obstetric patients.

MATERIALS AND METHODS

This study was conducted in Government Medical College and Hospital at Haldwani in Uttarakhand. This is a retrospective study where data of all pregnant women who delivered at this hospital from April 2015 to March 2016 were collected and compiled with respect to age, parity, education, whether from rural or urban population.

RESULTS

Seropositivity of HCV was 0.43%. One case was found positive for both Hepatitis C and Hepatitis B while another case was HIV positive along with Hepatitis C infection.

CONCLUSION

This study can be of help for obstetrician to formulate proper line of treatment and to take preventive measures to decrease vertical transmission. The data reinforces the need for establishing effective prevention programs which would lead to reduction in the prevalence of Hepatitis C infection.

KEYWORDS

Antenatal, Women, Hepatitis C, Vertical Transmission, Seroprevalence.

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BACKGROUND

Viral Hepatitis during pregnancy is associated with high risk of maternal complication and has high rate of vertical transmission. Hepatitis C virus which before its identification was labelled as non-A, non-B Hepatitis is a linear single stranded positive sense 4600 nucleotide RNA virus. It belongs to the family Flaviviridae. It is transmitted by blood transfusion and percutaneous routes such as injectable drug use.

Global prevalence of Hepatitis C virus infection is 2%-3% with 130 - 170 million HCV positive people and most of them are chronically infected. Globally, HCV is implicated in 28% of cases of liver cirrhosis and 26% of cases of hepatocellular carcinoma which accounts for almost 5 lakh deaths per year. Epidemiology of Hepatitis C is varied among countries and the reported prevalence of Hepatitis C infection in pregnant women has not been extensively studied.

Despite low to moderate prevalence (1-1.5%), India accounts for a significant global Hepatitis C infection due to large population and approximately 12 to 18 million population is infected.^[1] Information on hepatitis C virus infection in pregnant women in India is scarce.

Pregnancy may be the only clinical access point for the women of reproductive age group in limited resources countries and knowing the HCV status of pregnant women will provide scope for counselling, take measures to reduce vertical transmission and management of HCV, followup and treatment of baby.

Both interferon and ribavirin are contraindicated during pregnancy. Viral clearance prior to next pregnancy increased the likelihood that women remain non-viraemic in pregnancy with consequent reduced risk of vertical transmission.

Few studies have reported highly significant incidence of intrahepatic cholestasis of pregnancy in Hepatitis C positive pregnant women.^[2] A prospective Italian study suggested the need to investigate the HCV status in women with intrahepatic cholestasis of pregnancy.^[2] The overall rate of mother to child transmission of HCV from HCV infected mother has been estimated to be 3%-5%. If mother is known to be viraemic i.e. HCV RNA positive, rate of transmission increased. In one study from South India, perinatal transmission in HCV RNA positive women is as high as 25%.^[3]

Co-infection with HIV increased transmission to 19.4%.^[4]

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At least one third of infants acquire HCV during the intrauterine period. Perinatal transmission is estimated to be as high as 40%-50% whereas postpartum transmission is rare.^[5] Numerous risk factors for vertical transmission have been studied. In general, high viral load defined as at least 2.5×10^6 RNA copies/mL. HIV co-infection and invasive procedures are most important factors.^[6] In general, maternal peripheral blood mononuclear cells infected by HCV, membrane rupture greater than 6 hours before delivery and instrumental vaginal delivery exposing the infant to maternal blood infected with HCV during vaginal delivery are associated with an increased risk of transmission.^[7] Maternal liver dysfunction with abnormal ALT level in the year before pregnancy may reflect a more severe liver disease and may help in identifying mother with an increased risk of vertical transmission.^[8] It would be prudent to avoid amniocentesis, instrumental vaginal delivery and prolonged rupture of membranes. A recent meta-analysis including 641 mother infant pair showed that caesarean section does not decrease perinatal HCV transmission from HCV RNA positive and HIV negative mother to infants.^[9] Thus, elective caesarean delivery should not be offered. HCV and HIV co-infected women should be offered elective caesarean section to prevent HIV transmission.^[10]

After acute infection in 60-85% cases, there is persistent chronic hepatitis after 6 months. Among these, 5-20% develop cirrhosis after 20 years and among these 25% develop HCV end-stage liver disease after another 5 years.

Improved efficacy of new drug regimen requires reassessment of utility of universal screening for HCV in pregnant women.^[11]

Seroprevalence of these infection among pregnant women may be a good indicator of general population prevalence. Such data are fundamental for health planner and care giver for evidence based intervention.

United States and Europe have expert guideline for screening of pregnant women for HIV, HBsAg and HCV to help appropriate management. In developing countries like India, no such uniform guidelines are available regarding HCV screening in pregnant women.

MATERIALS AND METHODS

A retrospective study was conducted to determine the prevalence of Hepatitis C virus among patients attending antenatal clinic in Government Medical College and Hospital, Haldwani, Uttarakhand.

Total 4202 antenatal cases were studied from April 2015 to March 2016. Data analysed were age, parity and patient's rural or urban background.

Observation

Total of 4202 antenatal cases were studied for HCV infection who attended antenatal clinic from April 2015 to March 2016. Antibody against HCV were found positive in 18 cases. Thus, overall prevalence of anti-HCV antibody was 0.43%.

One woman was both HBsAg and HCV positive and in one case it was both HIV and HCV positive coinfection.

According to age, prevalence was maximum in 21 to 25 years of age group i.e. 0.64% closely following 0.49% in 26-30 year of age and 0.47% in 31 to 35 year of age as shown in table 1.

Age Group (Years)	No. of Pregnant Women	HCV Positive	Percentage (% Age)
15-20	786	3	0.38
21-25	1086	7	0.64
26-30	1020	5	0.49
31-35	632	3	0.47
>35	578	0	0

Table 1. Prevalence of HCV in Different Age Group

Prevalence was maximum in multipara (parity ≥ 3) i.e. 0.74% as shown in table 2.

Parity	No. of Pregnant Women	HCV Positive	Percentage (% Age)
1	1356	5	0.36
2	1638	4	0.24
≥ 3	1208	9	0.74

Table 2. Prevalence of HCV in Different Parities

Prevalence was maximum in rural area i.e. 0.57% rather than in urban area i.e. 0.28% as shown in table 3.

	No. of Pregnant Women	HCV Positive	Percentage (% age)
Rural	2089	12	0.57
Urban	2113	6	0.28

Table 3. Prevalence of HCV in Rural or Urban Areas

DISCUSSION

According to National Centre for Disease Control (NCDC), prevalence of HCV in India is 1% and WHO revealed that the prevalence of HCV is categorised and graded. High was greater than 3.5% while moderate was between 1.5%-3.5% and low was less than 1.5%.

Prevalence in our study is very low as compared to a report from Egypt by Zahran K M et al 6.4%^[12] and from Yemen by E.A. Murad et al 8.5%^[13] but it is more than Mehta et al 0.19%^[14] and Pyadala et al 0.21%^[15] and Ganju et al 0%.^[16] Our result is comparable to Rudrapathy et al 0.6%^[3] but less than Farhana et al 3.44%^[17] and Ashok Kumar et al 1.03%.^[18] The highest prevalence of infection occurs among individuals of reproductive age group.^[19,20] Age is a known risk factor for hepatitis C infection seropositivity, which has been reported to increase until age of 40 years and then decrease over time.^[21,9] This can be explained by greater probability of exposure of these women to risk factors. In our study, prevalence was more in age group of 21 to 25 years followed by 26 to 30 and 31 to 35 years. Our findings were corresponding with the findings of the study.^[22] where prevalence of hepatitis C increased up to age of 26 years and decreased after that. Lekin et al^[23] have reported a higher mean parity of HCV positive patients in their study. Praveen M et al^[22] also found that prevalence of anti HCV among multiparous females were more than nulliparous females.

These results were similar with the results of our study in which prevalence was found to be more in multiparous women. Since this is a retrospective study so data could not be collected regarding history of risk factors for hepatitis C infection but several studies have found an association

between prevalence of HCV infection and known risk factors i.e. blood transfusion, intravenous drug abusers, multiple sexual partners and homosexuality.^[24,25] A study from North Italy shows the principle risk factor is associated with history of intravenous drug abuse (32%) and exposure to blood products (24%).^[25] In a study from Pakistan,^[26] past history of surgical procedure was found to be most important factor for transmission of hepatitis C infection. In countries with poor resources, the risks of iatrogenic HCV infection were reported to be high.^[27] This might explain the high prevalence of Hepatitis C in multiparous women having history of previous vaginal deliveries, caesarean sections and D&E but various studies also have shown that 40 to 73% of women have no obvious risk factors for HCV infection.^[25,28,29,30] So it has been found that selective antenatal screening based on risk factors failed to identify over half of the infected persons.^[28] Also screening of asymptomatic pregnant women for hepatitis C virus infection is not cost effective.^[31] Routine screening is not recommended currently during pregnancy for asymptomatic women without risk factors.^[29,32] Hepatitis C virus infection establishes a state of chronic infection in as many as 85% of acutely infected patients.^[33] In India, anti-HCV antibodies are present in approximately 15 million people with a prevalence rate of 1.2 to 1.8%.^[34,35,36] HCV is the most infectious disease among intravenous drug users in India, so mortality and morbidity is more due to HCV than due to HIV among people who had a high risk factor such as sharing needles and syringes and also of other injecting related equipment because cost of treatment is very high and there is no government policy to screen these patients as in the case of HIV/AIDS. Universal screening for hepatitis C in pregnancy is not recommended. In our hospital, being a tertiary care centre, we have tendency to screen both for HCV and HBsAg serology.

However, routine HCV screening of antenatal patients is not done at CHC, PHC and most of the private hospitals in our region. So our habit of screening for both HCV and HBsAg in antenatal women help us to identify patients with chronic HCV infection which could have remained unidentified until they progress into severe disease. These patients after delivery were followed for treatment to save them from chronic morbidity and mortality due to hepatitis C infection. It also helps us to follow their sexual partners and neonates for further evaluation for presence of hepatitis C infection and treatment. It has been suggested that a minimum prevalence of 0.1% in general population justified screening for infection.^[37] In most of the studies including ours the prevalence of hepatitis C infection among pregnant women is more than 0.1%. So universal screening of hepatitis C infection in antenatal women may need to be done to identify hepatitis C infection in pregnancy so that treatment can be started after delivery. More so because now cheaper and more effective drugs are available. It also allows us to take the opportunity to identify other person at risk like sexual partner and non-sexual partner because non-sexual intrafamilial mode of transmission of HCV has been reported.^[38,39] Most important, it allows us to follow and treat the infants who might be infected with hepatitis C from vertical transmission. Thus, routine antenatal screening of hepatitis C infection will decrease the overall burden of chronic hepatitis C infection and its sequel related to it in general population.

CONCLUSION

Although prevalence in our study is low, it is prudent to follow universal screening of all antenatal women for HCV infection for proper followup, to take proper measures to prevent vertical transmission, followup of infants and to start proper treatment after delivery. It will prevent adverse effects of untreated Hepatitis C infection. It will also help women to become non-viraemic during her next pregnancy.

This data also reinforces the need for effective prevention programs which could lead to reduction in prevalence of Hepatitis C infection.

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