

Seroprevalence of Hepatitis B and C among Pregnant Women

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ABSTRACT

Introduction: Infections due to Hepatitis B and C are important health issues all over the world. Hepatitis B and C prevalence is increasing among pregnant women in developing countries. It is serious problem because of maternal mortality and transmission of virus from mother to child. This study was designed to determine the frequency of Hepatitis B and C among the pregnant women in Sheikh Zayed Hospital, Rahim Yar Khan, Pakistan.

Material and method: This descriptive /cross sectional study was carried out at Sheikh Zayed Hospital Rahim Yar Khan, Pakistan. Blood samples were collected from pregnant women aseptically in the Department of Gynecology Sheikh Zayed Hospital Rahim Yar Khan. HBsAg and anti HCV antibodies were detected using ICT and ELISA technique according to standard operating procedure of the kit manual.

Results: Out of 110 pregnant women prevalence of HCV and HBV was 8.2% and 13.6% respectively using ELISA technique. While using ICT, 13.6% of blood samples were positive for HBsAg and 9% for anti HCV antibodies. Hepatitis B positive women had history of ear nose piercing (100%), history of visit to non-qualified health care provider (46.6%), visit to Dai (Non-qualified midwives) (33.3%), history of cesarean surgery (26.6%), blood transfusion (20%), dental surgery (13.3%), abortions (13.3%) and dilatation and curettage (6.6%). In case of HCV, positive individuals had history of ear nose piercing (100%), visit to Dai (Non-qualified midwives) (44.4%), cesarean surgery (44.4%), visit to non-qualified health care provider (33.3%), blood transfusion (11.1%), dental surgery (11.1%), dilatation and curettage and abortions (11.1%).

Conclusion: There is high prevalence of hepatitis B and C among pregnant women. So screening of pregnant women at mass level should be started to control the disease.

Keywords: HBV, HCV, Pregnancy.

INTRODUCTION

Hepatitis B and C viruses have emerged as major health problem all over the world. These viruses are often associated with chronic hepatitis, cirrhosis and hepatocellular carcinoma.¹ Hepatitis C virus reveals high genomic diversity, characterized by regional dissimilarities in genotype prevalence. This poses a great challenge to the development of vaccines and treatment. This requires the consideration of worldwide tendencies in HCV genotype prevalence.² Hepatitis B virus is a member of hepadnaviruses family. It contains an enzyme called reverse transcriptase which impart significant role in pathogenesis of disease.³ Both HBV and HCV are the important cause of morbidity and mortality in developing countries like Pakistan¹ Hepatitis B virus (HBV) affects about 350 million people globally and nearly 1 million die every year.⁴ Whereas in Pakistan prevalence of HBV

and HCV is nine million and ten million respectively.^{5,6} In Pakistan, the prevalence of Hepatitis B and Hepatitis C virus in pregnant women is alarmingly high.⁷ Viral hepatitis during pregnancy is often associated with hepatocellular carcinoma (HCC) which results in increased maternal mortality. It is proposed that estrogen enhances the development of hepatocellular carcinoma. Moreover, generalized immune suppression during pregnancy also contribute in development of malignancy.⁸ The transmission routes for both viruses are a great concern particularly vertical transmission from mother to child. During the birth almost 90% of infants infected with HBV have risk of becoming a chronic carrier. There are 15% to 25% chances of developing hepatocellular carcinoma during adult hood which eventually lead to death.^{9,10} HBV and HCV perinatal transmission rate is about 10% and 5% respectively.^{6,9} Hepatitis B vaccine and hepatitis B immune globulins are given in combination to the neonate which reduces 85 to 95 percent maternal transmission of HBV infection.¹¹ The prevalence of Hepatitis infections in a population can be estimated by the risk factors associated with spread of infection. These risk factors includes, blood transfusion, trauma, surgery, injections and vertical transmission.^{5,12} Due to higher prevalence of HCV and HBV among pregnant women and vertical transmission of these infectious agents to the infants, this study was therefore carried out to find out the sero-prevalence of hepatitis B and C infections among apparently health pregnant women of under developed district of Punjab, Pakistan, where people are not well educated and find less medical facilities.

MATERIAL AND METHOD

For this descriptive, cross sectional study blood samples of 110 pregnant women were collected after getting informed consent from Gynecology Department of Sheikh Zayed Medical College/Hospital Rahim Yar Khan. Samples were then processed in Department of Pathology.

Determination of HBsAg and Anti-HCV Antibodies by immuno-chromatography technique (ICT): HBsAg and

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Anti-HCV antibodies in the serum were determined by commercially available ICT kit from Acon's Laboratories (USA) and test was performed according to the instructions of manufacturer.

Determination of HBsAg and Anti-HCV Antibodies by ELISA: HBsAg and Anti-HCV antibodies were reconfirmed by ELISA technique using quantitative immunoassay kit from Bio-Tech Co., Ltd (USA). Reading of the results was taken by Thermo Scientific Multiskan® EX ELISA (USA) instrument.

STATISTICAL ANALYSIS

The data was entered and analyzed using statistical package for social sciences 20.0 (SPSS-20.0). Mean ±SD was given for quantitative variables. Frequencies percentages and graphs were given for qualitative variables.

RESULTS

One hundred and ten (n=110) pregnant women were included in this study with mean age 25.8±3.349. Using Immuno-chromatography technique, 15 (13.6%) patients were found to be positive for HBsAg and 10 (9.1%) were positive for anti-HCV antibodies (Table 1). While using to ELISA technique, HBsAg was detected in 15 (13.6%) and Anti-HCV antibodies were detected in 9 (8.2%) pregnant women (Table 2).

Total sero-prevalence rate for both HBV and HCV was 21.8% by ELISA technique in pregnant women. Hepatitis B positive women had history of ear nose piercing (100%), visit to quake (Non-qualified health care provider) (46.6%), visit to Dai (Non-qualified midwives) (33.3%), history of cesarean surgery (26.6%), blood transfusion (20%), dental surgery (13.3%), abortions (13.3%) and dilatation and curettage (6.6%). In case of HCV, positive individuals had history of ear nose piercing (100%), visit to Dai (44.4%) cesarean surgery (44.4%), visit to quake (33.3%), blood transfusion (11.1%), dental surgery (11.1%), dilatation and curettage and abortions (11.1%) (Table 3).

DISCUSSION

Hepatitis is a worldwide problem that is associated with a significant economic burden. Hepatitis B virus and hepatitis C virus infections are the main causes of liver cirrhosis.¹³ In Pakistan, hepatitis B and C are important cause of mortality and morbidity.¹ In current study prevalence of HBV and HCV was 13.6% and 8.2% respectively. Hepatitis B and C prevalence varies globally. A study conducted by Haider *et al.* on pregnant women in Pakistan, they reported 8% frequency of hepatitis C in study among pregnant women, which is very close to our results (8.2%).¹² Batoool *et al.* reported 7.3% and Shamas *et al.* reported 7.4% of their study subjects were positive for HCV. The findings of these studies are in agreement with our study results.^{5,14}

A study was conducted by Ahmad *et al.* they observed very high prevalence of Hepatitis B in pregnant women (12.3%).¹⁵ In another study, Ugbebor *et al.* reported similar results.¹⁶ The Results of aforesaid studies are in agreement to our study results. Sheikh *et al.* reported 0.34% HBV and 0.69% HCV prevalence among pregnant women.¹⁷ Kumar *et al.* reported 1% HCV and 4 % HBV among pregnant women in India.¹⁸

HBsAg	Anti HCV antibodies	ICT Results
15 (13.6%)	10 (9.1%)	Positive
95 (86.3%)	100 (90%)	Negative

Table-1: Frequency of HBV and HCV by ICT in study population (n=110)

HBsAg	Anti HCV antibodies	ELISA Results
15 (13.6%)	9 (8.2%)	Positive
95 (86.3%)	101 (91.8%)	Negative

Table-2: Frequency of HBV and HCV by ELISA in study population (n=110)

Risk Factor	HBV (%)	HCV (%)
Blood Transfusion	20	11.1
Ear Nose Piercing	100	100
Abortions	13.3	11.1
Dental Surgery	13.3	11.1
Surgery	26.66	44.4
Visit to Dai	33.33	44.4
Visit To Quake (injections)	46.6	33.3
Dilatation and curettage	6.66	11.1
Total	110	110

Table-3: Frequency of risk factors among pregnant women infected with HBV and HCV

Disparity in results is due to use of different techniques which include ELISA, PCR, RIA and recombinant immunoblot assay (RIBA). In our current study, there was no difference found between ICT and ELISA results for HBsAg (13.6%) whereas in case of anti HCV antibodies were 9.1% positive using ICT and 8.2% positive by ELISA technique. Therefore ELISA technique is more sensitive and specific as compare to ICT. Alike findings have been reported earlier in many studies.^{1,19,20}

A study conducted by Haider *et al.* they reported a number of risk factors among HCV positive patients which include previous history of surgery (44.4%), blood transfusion (60.9%), dental surgery. Our study results match with this study. History of previous surgery is reported in 43.4% positive HCV patients which articulate with our results (44.4%).¹² Yousfani *et al.* reported that ear nose piercing is present in all HBV and HCV positive cases.²¹ Spread of HCV and HBV among pregnant women is attributed to number of factors which include contaminated syringes, unsterilized surgery instruments, visits to quakes, unsafe blood transfusions, low socioeconomic status and awareness.^{1,6}

CONCLUSION

It is concluded that seroprevalence of HBV and HCV is relatively high among pregnant women in our region. Therefore surveillance studies at mass level are required to estimate the actual severity of this problem.

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