

FREQUENCY AND RISK FACTORS ASSOCIATED WITH THE TRANSMISSION OF HEPATITIS B AND HEPATITIS C VIRUS INFECTION IN PREGNANT WOMEN OF SOUTH PUNJAB.

DR. MARIA SAFDAR, MBBS
BAHAWAL VICTORIA HOSPITAL, BAHAWALPUR, PAKISTAN.

DR. FATIMA NAHEED MEO, MBBS
BAHAWAL VICTORIA HOSPITAL, BAHAWALPUR, PAKISTAN.

DR. RIDA ARSHAD, MBBS
NISHTAR HOSPITAL, MULTAN, PAKISTAN.

ABSTRACT

Objective:- To see the frequency of Hepatitis B and Hepatitis C virus infection and associated risk factors in pregnant women. **Study design:-** Cross-sectional study. **Setting:-** Outpatient departments of Gynaecology and obstetrics, Nishtar hospital Multan and Bahawal Victoria Hospital (BVH) Bahawalpur. **Patients and methods:-** A total of 500 pregnant women attending outpatient departments of Gynaecology and Obstetrics were included in this study. Informed consent was taken. A specially designed proforma was filled in. HBsAg and Anti-HCV were tested by device method. Data were analyzed on SPSS-20. **Results:-** Out of 500 pregnant women 35(7.00%) were found to have Anti-HCV positive and 23(4.60%) were positive for HBsAg. Mean age of the study cases was 26.7± 4.8 years. Majority of the patients 263(52.60%) were from age group 26-35 years. In this study 138 (27.60%) of women were nulliparous and 282 (56.40%) were para 1-4 and Hepatitis B and C were common in this parity group. Only 80 (16.00%) women were para 5 or more. All Hepatitis B and C positive women were house-wives. Most of them were belonging to rural areas and with poor socio-economic status. Among 35 anti-HCV positive women, 20 (57.14%) had history of previous surgery while 13 (37.14%) had history of multiple injections, 5 (14.28%) received blood transfusion, 4 (11.42%) had ear/nose piercing while tattooing was seen in only 2 (5.71%). Among 23 HBsAg positive women, 10 (43.47%) had history of previous surgery. History of Multiple injections was present in 6 (26.08%) patients, 4 (17.39%) patients had history of blood transfusion, Tattooing, Ear/nose piercing, history of dental procedure, history of sharing needles was observed in 1 each. **Conclusion:-** HCV infection is more common than HBV infection in our study population. Previous History of surgery, multiple injection therapy and blood transfusion are major risk factors. **Keywords:-** Hepatitis B, Hepatitis C, Risk factors, Pregnancy.

Introduction

Viral hepatitis is a global issue. In Pakistan the situation is not different from rest of the world. Among the hepatitis viruses, hepatitis B and C are the viruses which need extensive studies. Various studies conducted in various groups in health care settings have reported variable results regarding prevalence of Hepatitis B and C. Pakistan Medical Research Council (PMRC) has conducted a recent study on prevalence of Hepatitis B and Hepatitis C in general population but the results are still awaited. However the study conducted by Khokhar et al has reported prevalence of HBsAg to be 2.56% and anti-HCV prevalence to be 5.31%¹. It is evident from epidemiological studies that both these viruses are mainly transmitted through parenteral route. The transmission risk of these viruses increases among persons who are given un-sterilized therapeutic injections, sharing of infected needles among IV drug abusers, having transfusion of contaminated blood, patients on haemodialysis, having unsafe sex, sharing of items like toothbrushes/ Miswaks, razors and infected combs, having dental procedure with infected instruments, having endoscopies with un-sterilized instruments, performing matum with infected chains and persons who have their faces or armpits shaved by street barbers^{2,3}. The cosmetic alterations like body piercing or tattooing done by un-sterilized needles and use of infected tweezers are becoming major threats for transmission of hepatitis viruses.

Sexual transmission of hepatitis-B and C has also been described. Sexual transmission of hepatitis B virus is more pronounced. In USA the heterosexual transmission of hepatitis B virus accounts almost to 39% among the new HBV infections in adults⁴ and hepatitis C virus has also been transmitted sexually however prevalence is much less as compared to hepatitis-B⁵. Anti-HCV screening and hepatitis B virus screening for blood products introduced in various countries has minimized the risk of transmission through blood transfusion. Vertical

transmission of HBV is again more common than HCV. It has been described if mother is positive for HBV then transmission of HBV to infant is 85-90% if the mother is in replicative status (HBe Ag positive) and transmission is 30% if the mother is HBeAg negative ⁶. The risk also increases if mother develops HBV infection in 3rd trimester of pregnancy^{7, 8}. The risk of transmission of HCV from viremic (HCV RNA positive) mothers to their infants is 3.2% and transmission risk further increases if the mother is co-infected with HIV to 7.9%⁶. Both these virus can lead to chronic hepatitis, cirrhosis and hepato-cellular carcinoma ⁹.

The possibility of vertical transmission highlights the importance to diagnose the acute and chronic hepatic viral infections in pregnant women and justifies mandatory antepartum screening for HBV and HCV. This has benefits making it possible to refer these infected women for appropriate antiviral therapy at appropriate time and before the development of significant liver damage. The present study was designed to see the frequency of HBsAg and anti- HCV in pregnant women at Nishtar Hospital, Multan.

Material and method

This cross sectional study was carried out at Outpatient departments of Gynaecology and obstetrics, Nishtar hospital Multan and Bahawal Victoria Hospital (BVH) Bahawalpur. A total of 500 pregnant women attending Gynaecology and Obstetrics outpatient department were included in this study. Informed consent was taken. A specially designed proforma was filled in to collect the data. HBsAg and anti-HCV were tested by device method and data was analysed using SPSS-20.

Results

Out of 500 pregnant women 35 (7.00%) were found to have anti-HCV positive and 23 (4.60%) were found to have HBs Ag positive (Table-1 & 2). Mean age of the study cases was 26.7 ± 4.8 years. Majority of the patients 263 (52.60%) were from age group 26-35 years. (Table-3). In this study, 138 (27.60%) women were nulliparous and 282 (56.40%) were para 1 to para 4. Hepatitis B and C were also common in this parity group. Only 80 (16.00%) women were para 5 or more. (Table-4). All the Hepatitis B and C positive women were house-wives; most of them were belonging to the rural areas and poor socio-economic status (table-5). Among 35 anti-HCV positive women, 20 (57.14%) had history of previous surgery. Out of these 20 patients, 14 had obstetrical while 6 had gynaecological surgery. 13 (37.14%) women had history of multiple injections. 5 (14.28%) women received blood transfusion, out of which 4 had single while 1 had multiple blood transfusions. 4 (11.42%) had ear/nose piercing while tattooing was seen in only 2 (5.71%) anti-HCV positive women (Table-6).

Among 23 HBsAg positive women, 10 (43.47%) had history of previous surgery. Out of these 10 patients, 6 had Obstetrical while 4 had Gynaecological surgery. History of Multiple injections was present in 6 (26.08%) patients. 4 (17.39%) patients had history of blood transfusion, out of which 3 had single while 1 had multiple blood transfusions. Tattooing, Ear/nose piercing, history of dental procedure, history of sharing needles was observed in 1 each HBsAg positive patient. (Table-6).

Table-1 Frequency of Anti-HCV positivity (n=500)

Anti HCV	No. of Patients	Percentage
Positive	35	7.00 %
Negative	465	93.00 %

Table-2 Frequency of HBs Ag positivity (n=500)

HBsAg	No. of patients	Percentage
Positive	23	4.60%
Negative	477	95.40%

Table-3 Age distribution of the study cases. (n=500)

Age (in years)	No. of study cases	HBsAg Positive	Anti-HCV Positive
16-25	208 (41.60 %)	7 (3.36 %)	11 (5.28 %)
26-35	263 (52.60 %)	14 (5.32 %)	18 (6.84 %)
> 35	29 (5.80 %)	2 (6.89 %)	6 (20.68 %)

Table-4 Parity wise distribution of study cases (n=500)

Parity	No. of study cases	HBsAg Positive	Anti-HCV positive
Nullipara	138 (27.60%)	3 (2.17%)	7 (5.07%)
Para 1-4	282 (56.40%)	14 (4.96%)	20 (7.09%)

Para 5 or more	80 (16.00%)	6 (7.50%)	8 (10.00%)
----------------	-------------	-----------	------------

Table-5 Distribution of Hepatitis B and C positive cases according to Occupation, Residential status and socio-economic status. (n=500)

Features	No. of study cases	HBs Ag Positive cases	Anti-HCV positive cases
Occupation			
House wife	495 (99.00%)	23 (4.64%)	35 (7.07%)
Working ladies	05 (1.00%)	NIL	NIL
Residential Status			
Rural	218 (43.60%)	14 (6.42%)	19 (8.71%)
Urban	282 (56.40%)	09 (3.19%)	16 (5.67%)
Socio-economics			
Poor	340 (68.00%)	17 (5.00%)	26 (7.64%)
Middle Income	149 (29.80%)	06(4.02%)	09 (6.04%)
Rich	11 (2.20 %)	NIL	NIL

Table-6 Distribution of Hepatitis B and C positive patients according to risk factors

Features	HBs Ag Positive cases(23)	Anti-HCV positive cases(35)
Previous Surgery		
Obstetrical	6 (26.08%)	14 (40.00%)
Gynaecological	4 (17.39%)	06 (17.14%)
Multiple injections	06 (26.08%)	13 (37.14%)
Blood transfusion		
Single	03 (13.04%)	04 (11.42%)
Multiple	01 (4.34%)	01 (2.85%)
Tattooing	01 (4.34%)	02 (5.71%)
Ear/Nose piercing	01 (4.34%)	04 (11.42%)
Dental Procedure	01 (4.34%)	NIL
Sharing needles	01 (4.34%)	NIL

Discussion;

Viral hepatitis B and C are the major concern throughout the world. More and more studies are coming up on this issue. Worldwide many studies have been conducted to see the prevalence of Hepatitis B and C in general population, in healthy blood donors and in different age groups. The studies have also been conducted on Hepatitis B and C in pregnant ladies. A study conducted by Zafar et al ¹⁰ from Lady Aitchison Hospital Lahore in 300 pregnant ladies revealed anti-HCV prevalence to be 6% while a study from Shifa International Hospital Islamabad revealed Anti-HCV prevalence to be 3.7% ¹¹. A study conducted at Sir Ganga Ram Hospital Lahore in pregnant ladies, reported Anti-HCV positivity to be 7.3% and HBsAg positivity to be 2.2% ¹². Kazmi from Pakistan has also reported incidence of HBsAg in child bearing age to be 4% ⁸. A study conducted in Egyptian pregnant ladies, revealed high prevalence of anti-HCV 19% ¹³. In another study conducted in the pregnant ladies of London revealed 0.8 % positivity for anti-HCV¹⁴.

The present study conducted in pregnant ladies revealed Anti-HCV positivity as 7.00% and HBsAg positivity as 4.60%. Our study results regarding Anti-HCV and HBsAg positivity are comparable with the studies conducted by Batool et al ¹² and Zafar et al ¹⁰. The low prevalence reported by Jaffery et al ¹¹ may be due to the fact that this study was conducted in well to do area and educated people who are health conscious and are more aware about hepatitis and its spread. Higher prevalence of Anti-HCV in Egyptian pregnant ladies may be due to higher prevalence of Anti-HCV in general population of Egypt.

The mean age of the study cases was 26.7 ± 4.8 years. Majority of the patients (52.60%), in present study, were from age group of 26-35 years. In our study, the positivity of HBsAg and anti-HCV was more related to parity. Para1-4 ladies showed maximum positivity. These findings related to the parity are supportive with the findings of Kumar ⁹. All the Hepatitis positive women were house wives mostly from rural areas with poor socio-economic status.

Among 35 anti-HCV positive women, 20 (57.14%) had history of previous surgery. Out of these 20 patients, 14 had obstetrical while 6 had gynaecological surgery. 13 (37.14%) women had history of multiple injections. 5

(14.28%) women received blood transfusion, out of which 4 had single while 1 had multiple blood transfusions. 4 (11.42%) had ear/nose piercing while tattooing was seen in only 2 (5.71%) anti-HCV positive women.

Among 23 HBsAg positive women, 10 (43.47%) had history of previous surgery. Out of these 10 patients, 6 had Obstetrical while 4 had Gynaecological surgery. History of Multiple injections was present in 6 (26.08%) patients. 4 (17.39%) patients had history of blood transfusion, out of which 3 had single while 1 had multiple blood transfusions. Tattooing, Ear/nose piercing, history of dental procedure, history of sharing needles was observed in 1 each HBsAg positive patient.

Previous history of surgery is a major risk factor for the transmission of Hepatitis B and Hepatitis C in our study and the same has been reported by Jaffery¹¹ and Batool as 42.2%¹². Multiple Injection therapy was observed as 2nd important risk factor in our study and it has also been supported by Idrees et al¹⁵. Blood transfusion was important risk factor as reported by Batool¹² and Idrees et al¹⁵ and it supports our observation where blood transfusion is also an important risk factor.

In a study published from Italy, the principal risk factor was IV drug abuse however in our study it was not the case because in our county IV drug abuse among ladies is negligible¹⁶.

CONCLUSION.

HCV infection is more common than HBV infection in our study population. Previous History of surgery, multiple injection therapy and blood transfusion are major risk factors.

Recommendations;

1. Pregnant ladies must be screened for HBsAg and Anti-HCV.
2. Babies born to HBsAg positive mothers must be properly Immunized.
3. Close contacts of the family must be tested for HBsAg, if negative, must be vaccinated.
4. Anti-HCV positive mothers and negative for HBsAg must be protected against HBV infection through vaccination.
5. Doctors should counsel and discuss the risk of transmission of these viruses with patients, other family members and especially spouses.

References.

1. Khokhar N, Gill ML and Malik GJ. General seroprevalence of Hepatitis C and Hepatitis B virus infection in population. *J Coll Physicians Surg Pak* 2004; 14(9): 534-36
2. Sherlock S and Dooley J. Eds. *Diseases of the liver and biliary system*. 11th edition 2002. Chapter 17: p 290.
3. Sherlock S and Dooley J. Eds. *Diseases of the liver and biliary system*. 11th edition 2002. Chapter 18: p 307-08.
4. Mast EE; Weinbaum CM; Fiore AE; Alter MJ; Bell BP; Finelli L. et al. A 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 II: immunization of adults. *MMWR Recomm Rep* 2006; 55:1.
5. Vandelli, C, Renzo, F, Romano, L, Tisminetzky S; De Palma M; Stroffolini T e al. Lack of evidence of sexual transmission of hepatitis C among monogamous couples: results of a 10-year prospective follow-up study. *Am J Gastroenterol* 2004; 99: 855.
6. Davis GL. Hepatitis C. In: Schiff's *Diseases of the liver*. 10th ed. Philadelphia: Lippincott Williams and Wilkins; 2007. 807-863.
7. Bohidar NP. Hepatitis B virus infection in pregnancy. *Hep B Annual* 2004; 1: 199-209
8. Kazmi K, Ghafoor A and Qureshi AW. Mother infant transmission of Hepatitis B in Pakistan. *Pak J Med Res* 2003; 42(4):152-56.
9. Kumar A, Sharma KA, Gupta RK and Chakaravati A. Prevalence and risk factors for Hepatitis C virus among pregnant women. *Indian J Med Res* 2007; 126: 211-15.
10. Zafar MA, Mohsin A, Hussain I and Shah AA. Prevalence of Hepatitis C among pregnant women. *J Surg Pak* 2001; 6(2); 32-33.
11. Jaffery T, Tariq N, Ayub R and Yawar A. Frequency of Hepatitis C and Pregnancy outcome. *J Coll Physicians Surg Pak* 2005; 15(11): 716-19.
12. Batool A, Bano KA, Khan MI and Hussain R. Antenatal screening of women for Hepatitis B and C in an out-patient department. *J Dow Uni Health Sci* 2008; 2(1); 32-35.

13. Kassem AS, Nawawy AA, Massoud MN, Nazzar SY, Sobhi EM. Prevalence of Hepatitis C virus (HCV) infection and its vertical transmission in Egyptian pregnant women and their new borns. *J Trop Pediatr* 2000; 46: 231-33.
14. Ward C, Williams GT, Cotzias T, Hargreaves S, Regan L and Foster GR. Prevalence of Hepatitis C among pregnant women attending an inner London Obstetric department: Uptake and acceptability of named antenatal testing. *Gut* 2000; 47: 277-80.
15. Idrees M, Lal A, Naseem M and Khalid M. High prevalence of Hepatitis C virus infection in larger province of Pakistan. *J Digestive Dis* 2008; 9(2); 95-103.
16. Conte D, Fraquelli M, Prati D, Colucci A, Minola E. Prevalence and clinical course of Hepatitis C virus (HCV) infection and rate of HCV vertical transmission in a cohort of 15, 250 pregnant women. *Hepatology* 2000; 31: 751-55.