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ANTENATAL SCREENING FOR HEPATITIS B AND C VIRUS INFECTION IN PREGNANT WOMEN IN A TERTIARY CARE HOSPITAL OF RAWALPINDI

Abstract

Objectives: To determine the frequency of Hepatitis B and C virus infection in pregnant women and to assess whether it is more common in multigravida as compared to primigravida.

Study Design: A Descriptive Cross Sectional study carried out in the out patient department of Gynaecology and Obstetrics department of Military Hospital, Rawalpindi from August to October 2010.

Patients and Methods: An open and close-ended questionnaire was self designed for this purpose. Data relating to medical, surgical, gynaecological and obstetric history, with particular references to hospital admissions and intravenous interventions was collected through convenience sampling. One hundred and forty pregnant women were questioned.

Results: The age of patients varied from 21 to 45 years (mean 28.66 years). Out of 140 females, 44 (31.4%) females were primigravidas while 96 (68.6%) were multigravidas. Eight (5.7%) females were found positive for HBsAg and 18 (12.8%) were found positive for HCV antibodies by third generation ELISA. It was observed that 0% primigravida and 8.3% cases of multigravida were HBsAg positive cases ($p = 0.049$). Frequency of HCV was 4.5% in primigravidas and 16.7% in multigravidas ($p = 0.047$). Various risk factors like, history of blood transfusion 27.1% ,and IV injection 91.4 % , were identified. The hepatitis B vaccination rate was only 24.3%.

Conclusion: The frequency of Hepatitis B and C infection was 5.7% and 12.8% respectively in pregnant females as compared to the general population. The multigravidas were at a higher risk of HBV and HCV exposure than primigravida.

Article

INTRODUCTION

Hepatitis B virus (HBV) and Hepatitis C virus (HCV) infections are a serious global health problem. HBV and HCV infections are endemic throughout the world, especially in tropical and developing countries and some parts of Europe. Prevalence varies from country to country depending upon the behavioral, environmental and agent factors¹.

Infection with HBV and HCV in Pakistan is now well established. Pakistan has a moderate to high prevalence of hepatitis B and hepatitis C in different areas of Pakistan.²

HBV infects 2 billion people worldwide, and 350 million are suffering from chronic HBV infection. The 10th leading cause of death worldwide, HBV infections result in 0.5 to 1.2 million deaths per year caused by chronic hepatitis, cirrhosis, and hepatocellular carcinoma³.

In western countries, the disease is relatively rare and acquired primarily in adulthood, whereas in Asia and most of Africa, chronic HBV infection is common and usually acquired parenterally or in childhood⁴.

The HBV has a well known perinatal transmission, i.e. by the vertical route, from HBsAg positive mothers to their new born, 90% of these children turn into chronic carriers of HBV if left untreated⁵.

The true prevalence of HBV and HCV infection is not known in the female populations attending antenatal clinics. Although all of them are screened for these viruses, it is still not known what happens to those found to be Hepatitis B surface antigen (HbsAg) positive, because it is only in this situation that some intervention can be done and the baby protected.

Incidence of HCV infection worldwide is not well known. WHO estimates that 3% of the world population is infected with HCV and around 170 million individuals are chronic carrier at risk of developing liver cirrhosis and hepatocellular carcinoma³.

Transmission of HBV and HCV is initially by the horizontal route, including potential transmission through transfusion of blood and blood products, surgical procedures/dental procedures, contaminated syringes/ needles/ razors/ blades and other sharp instruments, I/V drug abusers, organ transplants and sexual transmission which is >3% and secondly by the vertical transmission which is <5%⁶.

Pakistan is in the intermediate HBV prevalence area with a carrier rate of 3-4%. Chronic hepatitis B is a severe problem in Pakistan. In a community based study 31% had hepatitis B core antibodies and 4.3% had hepatitis B surface antigen. In an earlier study the frequency of HBsAg in healthy subjects was 2.9% and anti HBs 35%. Horizontal transmission, particularly in early childhood, accounts for most cases of chronic HBV infection. Zuberi et al. described HBsAg prevalence of 2.5% in pregnant women and out of these 17% were HBeAg and 61% anti HBe positive. Low frequency of HBsAg and HBeAg in pregnant women makes vertical transmission a less important cause of transmission⁷.

The burden of HCV related chronic liver disease (CLD) in Pakistan has increased. Earlier studies showed that of all patients presenting with CLD, 16.6% were anti-HCV positive⁸. Blood transfusions is still the major cause of HCV transmission in the country; as a survey of blood banks in the large urban centers of the country showed that only about 25% of them tested blood and blood product donations for HCV infection to keep the cost down². A number of studies have shown the relationship between therapeutic injections using non-sterile needles and the transmission of HCV. There is an enormous dependence on parenteral therapy for treatment, both in the form of injections and infusion of drips, driven by cultural beliefs in the power of parenteral therapy⁹.

The mean age of developing CLD in developing countries including Pakistan is much lower as compared to developed countries, suggesting that individuals are being infected at a younger age in this part of the world. A cross sectional study done in children revealed 3% were HBsAg positive. The sero-prevalence of HCV in children appears to be low in Pakistan, with 0.2% and 0.4% children infected under the age of 12 and between 12-19 years respectively⁶.

This study was conducted to find out how many pregnant women undergoing antenatal screening tests are found positive for HBV or HCV infection or both.

PATIENTS AND METHODS

This descriptive cross sectional study was carried out between August to October 2010 at the outpatient department of gynaecology and obstetrics Military Hospital, Rawalpindi

A mixed questionnaire (open ended and close ended) was self designed for this purpose. Not only did it carry questions relating to Medical and Surgical history but also Gynaecological and Obstetric history, with particular references to hospital admissions and intravenous interventions. One hundred and forty pregnant women whose Hepatitis B and Hepatitis C serology had been already done were questioned. Each subject was personally approached, briefed about the purpose of the study, taken into confidence and reassured about the confidentiality of the study. Each question was explained to the respondent in Urdu as well and the questionnaire was filled at the spot so as to get unbiased remarks.

RESULTS

A total of 140 patients were included (Fig 1).

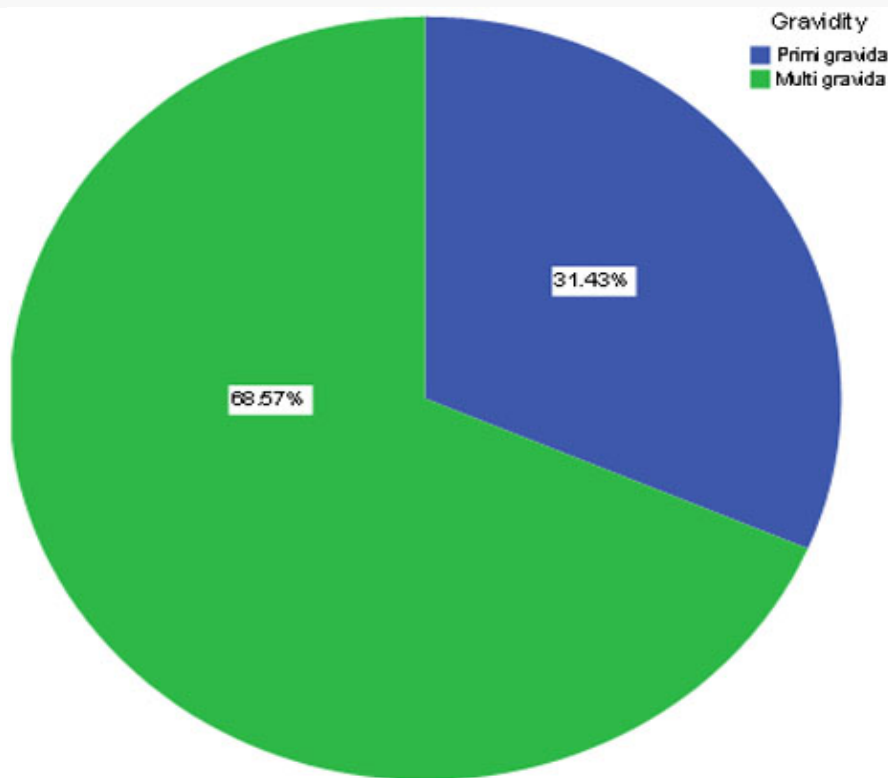


Fig. 1: Gravidity of all females (n = 140)

The age distribution ranged from 21 – 45 years (mean age was 28.66 years). Most of the females belonged to the third decade of life. Only 34 (24.3%) females had a course of vaccination against Hepatitis B while 106 (75.7%) had not been vaccinated. Thirty eight (27.1%) females had a blood transfusion while 102 (72.9%) females gave no such history. A total of 128 (91.4%) females had history of IV injection of any kind. (Fig 2).

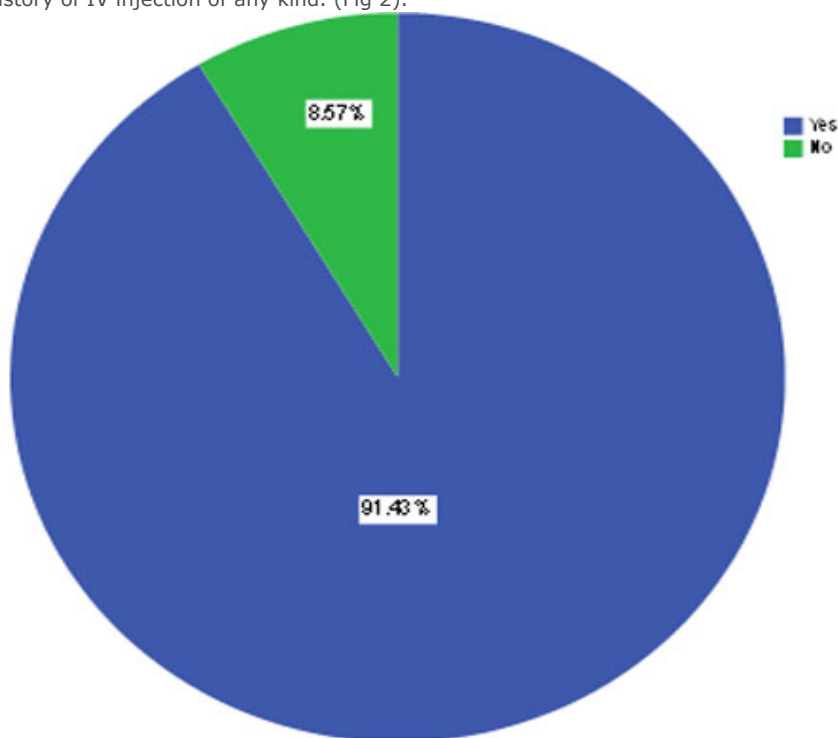


Fig. 2: History of iv injection (n = 140)

A miscarriage occurred in 38 (27.1%) females while 102 (72.9%) females gave no such history. Only 26 (18.6%) females used different contraceptive methods (Table 1).

Table-1: Contraception used (n = 140)

Contraceptive use	Frequency	Percentage
No	114	81.4
Yes	26	18.6
Condom	16	61.5
Oral pills	4	15.4
Injectable	6	23.1

History of interventional dental treatment was found in 42 (30%) females. In our study only 84 (60%) females had received tetanus toxoid immunization shots. Only 8 (5.7%) females were found positive for HBsAg. It was observed that 0% primigravida and 8.3% cases of multigravida were HBsAg positive cases (p=0.049) (Table 2).

Table-2: Gravity-wise description of HBsAg.

HBsAg	Primigravida (n = 44)	Multigravida (n = 96)
Positive	0 (0%)	8 (8.3%)
Negative	44 (100%)	88 (91.7%)

p = 0.049

Out of these 140 female, 18 (12.8%) were found positive for anti-HCV anti-bodies. It was observed that frequency of anti-HCV anti bodies was 4.5% in primigravida and 16.7% in multigravida(p=0.047) (Table 3).

Table-3: Anti HCV status according to gravity

HCV	Primigravida (n = 44)	Multigravida (n = 96)
Positive	2 (4.5%)	16 (16.7%)
Negative	42 (95.5%)	80 (83.3%)

p = 0.047

None of the patients were positive for both HBV and HCV.

DISCUSSION

Hepatitis B and C are common infections in developing countries. In our population various studies have shown a prevalence of 4-8 % of Hepatitis B infection and 8-10% of Hepatitis C infection². Various risk factors like blood transfusions, IV injections, surgical procedures, reuse of syringes etc have been implicated.⁶ Pregnant ladies are considered at a higher risk due to increased exposure to these risk factors. Various international and local studies have shown increase prevalence among antenatal and gynecological patients⁵.

In our study, out of 140 pregnant ladies 8 (5.7%) were positive for HbsAg and 18 (12.8%) were positive for anti HCV. This frequency is higher from the general population of this region. Similar findings have been noted by different researchers in this region and in the rest of the country¹⁰. Whereas in Asia and most of Africa, chronic HBV and HCV infection are common and usually acquired parenterally or in childhood. Frequency as high as 15 percent has been reported⁴. None of the patients were positive for both HBV and HCV. Multigravidas showed a higher frequency which is understandable because with each pregnancy and child birth chances of exposure to hepatitis B and C infection become greater. Another important factor is horizontal transmission, which is increased due to sexual transmission associated with multigravidas. Majority (84%) of our patients did not use any contraceptives. These pregnant ladies are not only exposed to the same risk factors as those of the general population but are also at an additional risk of IV injections and obstetrical procedures.

The increased frequency of hepatitis B and C not only causes increased morbidity and mortality in the pregnant females, it also has far greater implications that it may pass HBV and HCV infection to their infants through vertical transmission i.e. through placenta or passage through the birth canal. If the mother is a chronic carrier of HBV and HBeAg negative, there is a low transmission risk. However, if she has an acute HBV infection in the third trimester, there is a high vertical transmission risk.¹¹

Additionally, mother-to-child transmission of HBV infection predisposes to chronicity, liver cirrhosis and hepatocellular carcinoma in young adults¹². The prevalence of Hepatitis B was less as compared to Hepatitis C. This is probably due to increased awareness and availability of Hepatitis B vaccination. Furthermore, Hepatitis C is more likely to lead to chronicity as compared to hepatitis B⁷.

This study was quite reliable as all the relevant history and information about the risk factors like blood transfusion, IV injections, previous abortions and vaccination was available. However, the sample size was small due to time limitation. But in the near future this study will be expanded by adding more cases to it. Furthermore, follow up of these cases by confirmation of Hepatitis B and C by PCR could have given more reliability to this study. It can take six months for HbsAg to disappear, whereas anti HCV antibodies persist for a quite long time and only PCR can confirm active HCV infection.

The treatment of Hepatitis B and C infection is difficult and expensive^{13,14} therefore, it is more important to prevent these infections. This requires increased awareness and early vaccination in high risk groups like pregnant ladies.

CONCLUSION

The multigravidas were at a higher risk of HBV and HCV exposure than primigravida. Although various risk factors like history of blood transfusion, IV injection, previous miscarriage and tetanus vaccination were identified but it was not possible to implicate the underlying cause for this increased frequency. It is recommended that level of awareness should be raised among the pregnant ladies and early vaccination against HBV should be done.

Reference

1. Zhihua Liu and Jinlin Hou . Hepatitis B Virus (HBV) and Hepatitis C Virus (HCV) Dual Infection. *Int J Med Sci.* 2006; 3(2): 57-62. Published online 2006 April 1.
2. Syed Asad Ali, a* Rafe M.J. Donahue, b Huma Qureshi, c and Sten H. Vermunda. . Hepatitis B and hepatitis C in Pakistan: prevalence and risk factors. *Int J Infect Dis.* Author manuscript; available in PMC 2010 January 1.
3. Park JE. *Viral Hepatitis: Park's Text Book of Preventive and Social Medicine* 28th ed. Jabalpur (India): M/s Banarsidas Bhanot: 2005-2006:161-165
4. Ali SA, Donahue RM, Qureshi H, Vermund SH. Hepatitis B and C in Pakistan: prevalence and risk factors. *Int J Infect Dis.* 2009 Jan;13(1):9-19.
5. Beasley RP, Hwang LY, Lee GC, Lan CC, Roan CH, Huang FY. Prevention of perinatally transmitted hepatitis B virus infections with hepatitis B immune globulin and hepatitis B vaccine. *Lancet* 1983; 2: 1099-1102.
6. Khokhar N, Niazi SA. Chronic liver disease related mortality pattern in Northern Pakistan. *J Coll Phy Surg Pak.* 2003; 13 (9) 495-7.
7. Zuberi SJ. An overview of HBV/HCV in Pakistan. *J Med Res* 1998; 37 (4): 12
8. Asif N, Khokhar N, Ilahi F, Seroprevalence of HBV, HCV and HIV infection among voluntary non remunerated and replacement donors in northern Pakistan, *Pak J Med Sci* 2004; 20: 1.
9. Janjua NZ, Nizamy MA. Knowledge and practices of barbers about hepatitis B&C transmission in Rawalpindi and Islamabad. *J Pak Med Assoc.* 2004; 54:3: 116-9.
10. Hakeem K, Khan MS, Abdullah M, Rehman MA, Hashmi MI. Prevalence of HbsAg and AntiHCV in pregnant ladies attending antenatal clinic at Sheikh Zayed Medical Complex, Rahim Yar Khan. *Esculapio J Services Inst Med Sci* Oct - Dec 2006; 2(3):6-8.
11. Webster RG and Granoff A. Editors. *Encyclopedia of Virology.* London, Harvourt Brace and Company Publishers, 1994; 555-560.
12. Tohme RA, Holmberg SD. Is sexual contact a major mode of hepatitis C virus transmission? *Hepatology* 2010;10:1002.
13. Friedman L. *Liver, Biliary Tract and Pancreas.* In: *Current medical diagnosis and treatment: 40th ed.* Newyork: Lange Medical Books / Mcgraw - Hill 2001; 671-75.
14. Dusheiko G. Side effects of alpha interferon in chronic hepatitis C. *J Hepatol* 1997; 26: 112S.