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

Tahmina Azhar, Iqbal Ahmad Khan,* Shumaila Mohsin, Javaid Usman

Army Medical College, National University of Sciences and Technology Islamabad, *Armed Forces Post Graduate Medical Institute, Rawalpindi

ABSTRACT

Objectives: To determine the frequency of Hepatitis B and Hepatitis 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 was 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 age 28.66 years). Out of 140 females, 44 (31.4%) females were primigravidas while 96 (68.6%) were multigravidas. In this study only 8 (5.7%) females were found positive for HBsAg and 18 (12.8%) females 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 Hepatitis 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.

Keywords: Pregnant Women, Antenatal Screening, Hepatitis B and, Hepatitis C Infection.

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 factors[1].

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 500,000 to 1.2 million deaths per year caused by chronic hepatitis, cirrhosis, and hepatocellular carcinoma[3].

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 childhood[4].

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 untreated[5].

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.

Correspondence: Dr Tahmina Azhar, Department of Community Medicine, Army Medical College Rawalpindi
Email: tina_azhar@hotmail.com
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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 carcinoma[3].

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].

The anti HCV antibodies do not provide much information beyond exposure; also neither a vaccine nor an immunoglobulin is available for the protection of the newborn.

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.. Children may acquire HBV infection through horizontal transmission via minor breaks in the skin or mucous membranes or close bodily contacts with other children 3. Zuberi et al. described HBsAg prevalence of 2.5% in pregnant women and out of these 17% HBeAg and 61% anti HBe positive. Low frequency of HBsAg and HBeAg in pregnant women makes vertical transmission a less important cause of transmission[7].

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 positive[8]. More recent data shows nearly 60–70% patients with CLD tend to be positive for anti-HCV. It has been demonstrated that nearly 50% patients with hepatocellular carcinoma (HCC) in Pakistan are anti-HCV positive. 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 down 2. 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 therapy. Additional risk factors that may be important modes of transmission include are excessive use of barbers for shaving, ear piercing and non-sterile surgical and dental practices of unqualified health care workers (quacks)[9].

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 respectively[6] .

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 in the study during the study period (Fig 1).The age distribution ranged from 21 – 45 years. Mean age was 28.66 years (SD=4.79). 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). 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). 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).

Out of 140 female patients, 18 (12.8%) females 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).

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

DISCUSSION

Hepatitis B and Hepatitis 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 infection.2 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 antennal and gynecological patients.5

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 quite 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 country[10]. 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 reported[4]. 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 hepatitis 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 increase 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 is 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 adults[12].

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 B[7].

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 Hepatitis 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 frequency of Hepatitis B and Hepatitis C infection was 5.7% and 12.8% respectively in pregnant females. 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 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.

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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

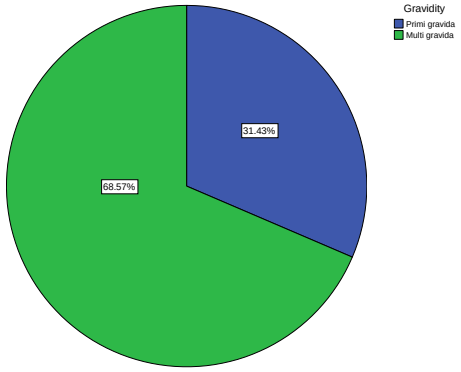

Fig. 1: Gravidity of all females (n = 140)

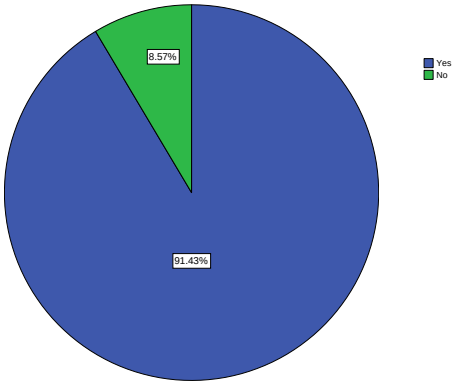

Fig. 2: History of iv injection (n = 140)

Table-2: Gravidity-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

Table-3: Anti HCV status according to gravidity

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

p = 0.047