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 outpatient 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 primigravida 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 multigravidas 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.

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. 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. 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 carcinoma.

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. 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 people have chronic HCV infection. 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, IV drug abusers, organ transplants and sexual transmission which is >3% and secondly by the vertical transmission which is <5%.

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. Blood transfusions are still the major cause of HCV transmission in the country; as a survey of blood banks in the 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. 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 drugs, driven by cultural beliefs in the power of parenteral therapy. 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.

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

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**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).
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 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).

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. The 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 expensive13,14 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