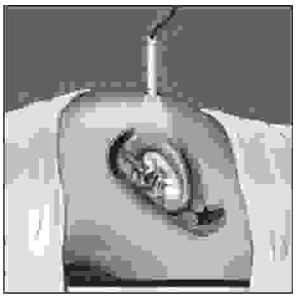
ORIGINAL **PROF-1057**

OBSTETRICS AND PERINATAL OUTCOME;

RISK FACTORS FOR HEPATITIS B AND C TRANSMISSION



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ABSTRACT ... Objectives: To identify and assess the risk factor for transmission of HBV and HCV in pregnant ladies and perinatal outcome, presenting to obstetric OPD at CMH Lahore. **Design:** Case control study. **Setting:** Combined Military Hospital Lahore. **Period:** From May 2003 to April 2004. **Patients and Methods:** All the patients presenting to obstetrical OPD during one year were randomly screened for both hepatitis B and C using ELISA. Perinatal outcome was compared with control group. The risk factors for HBV and HCV were studied in 30 patients, who were positive for either HBV or HCV. A detailed history was taken followed by a questionnaire and screening for HBV and HCV. The results were compared with control group who were negative for hepatitis B and C but had same socioeconomic back ground and similar living conditions (wives and soldiers). **Results:** In the study group 20 patients gave history of surgical operation or dental procedure. These surgical operations included major or minor operations. In control group positive history of surgical or dental procedure was obtained in 12 patients. The odds ratio was found to be 3.00 with a P value of 0.038. History of blood transfusion was found in 12 patients in study group and 4 patients in control group with 0.019. Positive history of jaundice was found in 3 patients of study group and 1 patient in control group with p value of P>0.05. History of drug abuse or multiple sexual partners was negative in both groups. **Conclusion:** The study concludes that HCV infection is three times more common than HBV infection. Surgical procedures are the leading risk factors for acquisition of these infections.

Key words: Hepatitis B, Hepatitis C, Pregnancy.

INTRODUCTION

Viral hepatitis is a disease with multiple causes that was described in the fifth century BC, when Hippocrates first described epidemic jaundice. Epidemic of jaundice have been described throughout history and were particularly common during various wars in the 19th and 20th centuries[1]. Studies of human volunteers in the 1930s and 1940s provided convincing evidence of a viral causes

with at least two etiologic agents[2].

Acute viral hepatitis (AVH) is a systemic infection infecting liver predominantly. Almost all cases of AVH are caused by one of the five viral agents hepatitis A viral (HAV), hepatitis B (HBV), hepatitis C virus (HCV), HDV associated with B virus and hepatitis E virus (HEV). Sixth agent HGV has also been discovered. All these hepatitis viruses are RNA viruses except for HBV, which is a DNA virus. These viruses produce similar clinical illness ranging from asymptomatic to acute fatal infection, common to all type, on the one hand, and from sub clinical persistent infection to rapidly progressive chronic liver disease (CLD) with cirrhosis and even hepato-cellular carcinoma (HCC), common to blood borne type (HBV, HCV, HDV) on the other hand[3]. Viral hepatitis is the most common cause of hepatic dysfunction in pregnancy, world wide.

The infection by the hepatitis viruses when appearing during the pregnancy can result in damage to the infant. Risk consists of vertical transmission to the foetus, neonate, and contamination during the labor. The neonate can become a chronic carrier for HCV in 80-90% of cases[4].

The risk of perinatal infection from asymptomatic mothers is high and is greatest for mother who are hepatitis B surface antigen (HBsAg) positive. Maternal neonate transmission generally occurs at delivery, but may also be transplacental (5%)[5].

PATIENTS AND METHODS

A case control study was conducted at department of obstetrics and gynaecology, Combined Military Hospital Lahore from may 2003 to April 2004. Essentially all the patients presenting for antenatal checkup were screened for presence of HBV or HCV infection. Thirty patients were randomly selected from the group positive for either HBV or HCV infection. A control group was selected from the same population but negative for both HBV and HCV. Risk factors for transmission of both HBV and HCV were independently evaluated in patient group after taking a detailed history, including surgical or dental procedures, IV drug abuse, blood or blood products transfusion, multiple sex partners and jaundice in the past. These patients were followed up to the delivery of the fetus and risk factors and perinatal outcome were compared with control group.

Descriptive statistics like percentages, mean and range were obtained. SPSS and Windows software were used to analyze the data.

RESULTS

The risk factors of hepatitis B & C were studied in 30 patients attending the outdoor clinic who were found to be positive for hepatitis B or C and results were compared with control group who were negative for hepatitis B & C.

Maximum number of patients were found to be between the age group of 30-34 years which was 17(56.67%) out of a total of 30 patients in the study group and 12 patients (40%) in the control group. Patients between 25-29 years were 9(30%) in study group while control group revealed 10 patients (33.33%). These were few patients in the age group of 19-24 i.e. 3 patients (10%) in study group and 7 patients (23.33%) in control group. There was only one patient (3.3%) found between the age of 35-39 years in each group.

In study group 27 patients (90%) out of 30 were found to be multi-gravida with risk actors for hepatitis B or C compared to 25 patients (83.3%) of control group while the number of primigravida in study group was 3 (10%) and in control group was 5(16.7%). Frequency of low birth weight (LBW) was studies and it was found that only 4 patients (13.3%) had low birth weight babies in study group, however, 26 patients (86.7%) had normal perinatal outcome. Amongst the control group the results showed no change.

The study revealed that 5 patients (16.7%) had preterm perinatal outcome in the study group while in control group only 3 patients (10%) had so. However, 25 patients (83.3%) and normal full term outcome amongst the study group and 27 patients (90%) and had so in the

control group. There was only 1IUD (3.3%) among the study group and 29 patients (96.67%) out of 30 had normal perinatal outcome. Comparison with the control group, the results were found to be the same. Frequency of hepatitis B & C amongst those 30 patients who were found to be positive for either hepatitis B or C, or both, on routine antenatal screening showed that 7 patients (23.33%) were hepatitis B positive & 23 patients (76.67%) were anti-HCV positive.

Detailed history for the risk factors was obtained in both groups. It showed that in study group 20 patients gave history of any surgical operation or dental procedure. These surgical operations included all major or minor operations. In control group positive history of surgical or dental procedure was obtained in 12 patients. The odds ratio (OR) was found to be 3.00 with p value 0.038. Similarly, history of blood transfusion was found to be positive in 12 patients in study group and only in 4 patients in other group.

Table-I. Age Distribution

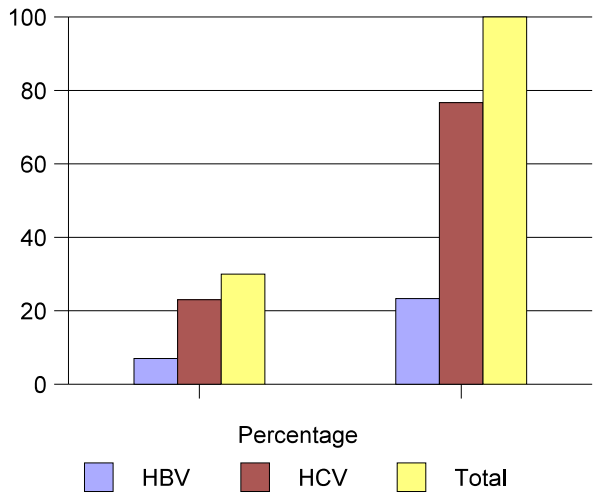
Age	Study Group		Control Group	
	Number	% Age	Number	% Age
19-24	03	10.00	07	23.33
25-29	09	30.00	10	33.33
30-34	17	56.57	12	40.00
35-39	01	3.3	01	3.33
Mean±SD	29.40±3.98		28.13±4.01	

Table-II. Frequency of Hepatitis B & C

Hepatitis	No.	% Age
Hepatitis B	07	23.33
Hepatitis C	23	76.67
Total	30	100.0

Positive history of jaundice was found in 3 patients in study group and only in 1 patient in control group which applies to P value of more than 0.05 (non significant). History of foreign travel was obtained in only 2 patients in study group and again in only 1 patient in control group (P>0.05). History of drug abuse and injections and multiple sexual partners was not given by any of the patients in either group.

Fig-1. Comparative percentage distribution of hepatitis B & C



DISCUSSION

World wide viral hepatitis is the commonest cause of hepatic dysfunction in pregnancy. The infection by the hepatitis viruses, when appearing during the pregnancy. Could result in damage for the infant. However, risks differ according to the implicated virus. Hepatitis B virus infection, for which prevalence varies according to areas, is injurious when the mother is chronic HbsAg carrier. Risk consists of neonates contamination during labor, and if contaminated, the neonate becomes a chronic carrier himself in 80 to 90% of cases[6]. Hepatitis C is the primary cause of non-A, non-B hepatitis and the most common cause of post transfusion hepatitis (about 85% of patients contracting post transfusion non-B and non-A hepatitis prior to 1991 are HCV antibody positive).

The current study was conducted at Combined Military Hospital, Lahore over a period of 12 months, all women attending clinic were screened for hepatitis B and C

irrespective of the risk factors, in routine on their first antenatal visit. Those patients who were found to be positive for hepatitis B or C or both were then further evaluated on basis of a performa which highlights the presence or absence of certain risk factors in each case. The cases were followed up till delivery and their perinatal outcomes were evaluated that whether it was LWB, preterm, IUD, IUGR or normal full term. The results were then compared with control group. The prevalence of hepatitis B and C viral infections are rising very quickly and more so in the reproductive age group, many studies are conducted world-wide to detect the prevalence, risk factors and need for routine screening of screening of hepatitis B and C infections in pregnant women.

The prevalence of HBV in developed countries is about 0.2%. Carriage among pregnant women in the UK is 0.1-0.5% but up to 1% in inner city areas[7]. Th prevalence of HCV infection is found to be 0.68% in multi centric study in Japan[8]. 0.9% in Taiwan[9], 0.7% in Italy[10] and 0.8% in London[11]. Another multi centric study in Japan shows sero-prevalence of 0.98[12].

Results of some other studies which are found to be higher include study conducted at Italy 1.2%[13]. USA 2.3%[14], Brazil 1.5%[15] and North East Italy 1.9%[16]. As HCV infection is found to be progressively rising in our country. Various studies are conducted at national level in Lahore, Karachi, Rawalpindi, Sialkot and Peshawar on blood donors, health workers and students to determine the prevalence and risk factors of HCV infection in Pakistan. These studies show prevalence between 4.1% to 5%[17].

In the current study first the age distribution was studies between the study and control groups and it was found that most of the patients fell in between 30-34 years of age in both groups because this was the majority age group attending antenatal clinics. Only few patients were found between the ages of 19-24 years in both groups. Then the patients were studied on the basis of their gravidity and parity. In the infected group most of the patients were found to be multigravida patients might be at increased risk because of their past pregnancies, hospital admissions, blood transfusions or any operations, if performed.

In this study total 30 patients were found to be hepatitis B or C viral infected. Out of which 23 were anti-HCV positive and 7 were HbsAg positive. Approximately 170 million people world-wide have chronic HBV infection and that 1 million persons die each year from HBV related chronic liver disease[18]. Since 1992, the Global advisory group to the world health organization recommended that all countries integrate. Hepatitis B vaccine into national immunization programmes by 1997. Since then many countries have reported dramatic reductions in the prevalence of chronic HBV infection as compared to HCV infection.

It is estimated that there are 300 million carries of HCV, out of which only about 2.5 million are in Europe. WHO estimates that about 3-4 million people are infected each year[20]. In Pakistan, the prevalence of HCV in blood donors is found to be between 4-5%[17,21,22]. Among pregnant women the reported rates of detection of anti-HCV antibody by enzyme linked immunosobrant assay (ELISA) vary from 0.1% to 4.5%[23].

Since the introduction of anti-HCV testing of all blood donations in 1990, the risk of post-transfusion HCV transmission has fallen significantly.

None of our patients gave history of any drug abuse, drug injections and multiple sexual partners while in other parts of the world intravenous drug abuse and multiple sexual partners are known to be vary important source of hepatitis B and C. In United States intravenous drug abuse is the major risk factor for hepatitis infection[24]. It has been found that hepatitis C is the primary cause of non-A non-B hepatitis and the most common cause of past-transfusion hepatitis. In an epidemiologic study done in Europe and United States, antibody to hepatitis C was positive in one to four percent of pregnant women. Although close to 50%of infected women had no known risk factors for infection[25].

The incidences of preterm birth, pre-mature pre-labour

rupture of membranes, small for gestational age, neonatal jaundice, birth asphyxia, congenital abnormality perinatal mortality were similar in both groups. Presence of HBsAg in pregnant women does not pose additional risk to the pregnancy. If a mother is HBsAg positive and HbeAg positive, 70 to 90% of her infants will become infected if not given immune prophylaxis[26].

Regarding HCV infection, pregnancy does not induce deterioration in liver disease, there is no evidence of increased risk of adverse pregnancy outcome, however these women are at increased risk of obstetric cholestasis. In the neonate, HCV infection can only be reliably detected using the polymerase chain reaction to detect HCV RNA, as all infants of HCV antibody positive mothers will have detectable levels of maternal HCV antibody for the first few months of life. Similarly, in another study it is revealed that the clinical course of pregnancy and the mode of delivery and perinatal outcome have not been changed by HCV infecction[27].

CONCLUSION

The study concludes that hepatitis C viral infection is there times more common than hepatitis B viral infection. Surgical operations, dental procedures, blood transfusions, and reuse of disposable syringes are the major risk factors for transmission of HBV and HCV.

Although both infection do not affect outcome of pregnancy but they have vary serious long term effects on the health of both mother and child. Preventive measures including total avoidance of reuse of syringes, adequate sterilization of surgical equipments, proper screening of blood an awareness of risk factors in health workers and masses can reduce the incidence of these deadly diseases.

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