Original Article

Epidemiology of Viral Hepatitis in Pregnant Patients

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Abstract

Objective: To determine the prevalence and epidemiology of viral hepatitis in pregnant patients undergoing cesarean section.
Methodology: It is a prospective cross-sectional study conducted in Obstetrics & Gynae Unit I of Sir Ganga Ram Hospital, Lahore from January 2014 to December 2014. Patients who underwent caesarean delivery having positive viral serology were included in the study. Data was entered and analyzed in SPSS 23. Mean and standard deviation was calculated for quantitative variables like age and qualitative variables were measured in percent and frequency.
Results: Total number of patients underwent caesarean sections during the study period were 2157 and serology for viral hepatitis was positive in 69 patients. The overall prevalence of viral hepatitis in patients undergoing caesarean section was 3.1%; hepatitis C being most common in 2.17% followed by hepatitis B in 0.50%, hepatitis A in 0.23%, hepatitis E in 0.23% of patients and one (0.05%) patient has hepatitis ABCE. Mean age of the patients was 29.6± 4.9 years. Viral hepatitis was most common in 26-30 years of age group and in multipara. Common risk factors accounts; unfiltered drinking water in (81.1%), nose and ear piercing (71%), blood transfusion (49.2%), previous surgeries (40.5%) hepatitis in the family (36.2%) and hepatitis in husband (5.7%). None of the patients or their family member received available vaccination against viral hepatitis.
Conclusion: Prevalence of viral hepatitis especially hepatitis B and C is high in pregnant patients who underwent caesarean delivery.
Keywords: Epidemiology, Hepatitis, Prevalence, Viral.

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Introduction

Hepatitis is a serious public health problem worldwide. Viral hepatitis is caused by hepatitis A virus (HAV), Hepatitis B virus (HBV), hepatitis C virus (HCV), Hepatitis D virus (HDV) and hepatitis E virus (HEV).[1]

Hepatitis A is caused by Hepatitis A virus that is a single stranded RNA virus. It is transmitted by feco-oral route. Peak infectivity period is two weeks before the onset of jaundice when viral concentration is highest in the stool. Patients become noninfectious one week after the appearance of jaundice. It may affect all age groups. Presentation varies from asymptomatic to acute hepatitis like other viral hepatitis. Infection is detected by Anti HAV IgM and IgG serology. Vaccination against hepatitis A is available. [2,3]

Hepatitis B is caused by a double standard DNA virus. Almost 240 million people throughout the world are affected by hepatitis B virus.[4] It is associated with chronic liver disease. Most common transmission is through large or repeated percutaneous exposure to the blood via blood

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transfusion, injectable drug users. Rate of perinatal transmission is 4-7% in each pregnancy.[5] Hepatitis D is relatively uncommon, caused by Hepatitis D Virus that is a DNA virus. It usually co-exists in patients infected with the hepatitis B virus. The risk of developing chronic disease with HDV is 5%, almost the same with HBV alone. Vaccination against hepatitis B is available and included in national immunization programme.[4,6]

Hepatitis C is caused by the hepatitis C virus (HCV) that is a DNA virus. The majority of the patients develop chronic disease. Almost 20% of patients with chronic disease develop liver cirrhosis. The incubation period is 8 weeks.[7] Common route of transmission is parenteral and sexual.[6] Hepatitis C is associated with vertical transmission. No vaccination is yet available for hepatitis C virus infection.[8, 9]

Hepatitis E is caused by the hepatitis E virus (HEV). It is caused by single stranded RNA virus. Its incubation period is two to nine weeks. It is an acute disease that is common in the third trimester of pregnancy. In pregnancy, it may have a fulminant course leading to maternal mortality up to 25% cases. Similar to hepatitis A, it is also transmitted via feco-oral route.[10] Vaccination for hepatitis E is commercially available in China.[11]

Clinical presentation of viral hepatitis varies from asymptomatic to jaundice, nausea, vomiting, fever and even fulminant hepatic disease that is associated with high morbidity and mortality.[12,13]

The objective of the study was to determine the epidemiology of viral hepatitis including its prevalence and risk factors among pregnant patients who underwent caesarean delivery. The rationale was to find out likely causative factors in pregnant patients attending a tertiary care hospital so we would be able to address them to control disease burden.

Methodology

It is a prospective cross-sectional study. It was conducted from January 2014 to December 2014 after approval from the Ethical Review Board of Sir Ganga Ram hospital affiliated with Fatima Jinnah Medical University. A sample size of 61 patients was calculated using WinPepi; the assumed proportion was taken as 0.06, an acceptable difference of 0.06 and a confidence level of 95%. Non probability purposive sampling technique was used. The pregnant patients who had positive serology for viral hepatitis and underwent either elective or emergency caesarean section were included in the study. Pregnant patients who had vaginal delivery were excluded because of lack of follow up. Viral hepatitis serology was done on venous blood samples using rapid kit test.

A questionnaire comprised in Urdu language based on patient's demographic characteristics including age, parity, education status, and occupation were asked. Patients were also enquired about the disease symptomatology, their exposure to risk factors, previous investigations if any, treatment and vaccination status for hepatitis were asked. Patients were asked whether they were satisfied with the information provided to them at health care facilities regarding their disease. All the information was collected with due consideration of the privacy and comfort of patients after their consent.

Data was entered and analyzed in SPSS 23. Mean and standard deviation was calculated for quantitative variables like age and qualitative variables were measured in percent and frequency.

Results

A total number of patients who underwent caesarean sections during the study period were 2157 and 69 were affected with viral hepatitis. The prevalence of hepatitis in patients undergoing caesarean section was 3.1%. Hepatitis serology is shown in figure 1. Hepatitis C is most common in 68.1% followed by hepatitis B in 16% of patients.

Mean age of the patients was 29.6 ± 4.9 ranging from 21-40 year. Hepatitis was most common in 26-30 year of age group. Mean parity of patients was 3 ±1.5 with a range from para 1 to 9. Its prevalence was highest in multipara. One fourth of the patients were illiterate as shown in table I.

Most patients (77.3%) were provided with verbal information. None of the patients or their family members received hepatitis vaccination. The disease was asymptomatic in 88.4% and it was an incidental finding during their antenatal screening for viral hepatitis serology as shown in table I.

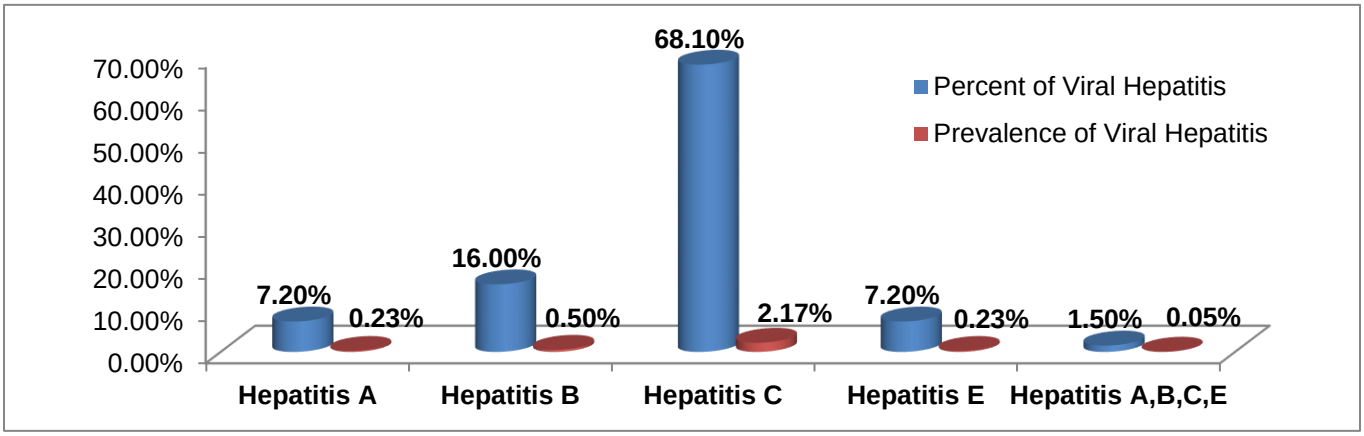


Figure 1. Viral Hepatitis Serology in pregnant patient undergoing caesarean section.

Table No I: Study Variables in Pregnant patients with Positive viral Serology

Variables		No.	%age
Age	21-25	17	24.6%
	26-30	29	42.0%
	31-35	12	17.4%
	36-40	11	16.0%
Parity	Para 1	12	17.4%
	Para 2-4	48	69.6%
	Para 5-9	09	13.0%
Education	Illiterate	18	26.1%
	Primary	09	13%
	Middle	15	21.8%
	Matriculation	16	23.2%
	Higher secondary	07	10.1%
	Graduation	03	4.3%
	Masters	01	1.4%
Occupation	House wife	66	95.7%
	Teacher	02	2.9%
	Tailor	01	1.4%
Symptomatology	Asymptomatic	61	88.4%
	Jaundice/fever	07	10.1%
	Hepatic encephalopathy	01	1.5%
Patient Information about the disease	Didn't received any info	25	36%
	Received Info	44	64%
Mode of patient's Information	Verbal	34	77.3%
	Written/leaflet	09	20.5%
	Combined	01	2.2%
Patient satisfaction with Information	Satisfied	39	88.6%
	Not satisfied	05	11.4%
Faced difficulty in receiving Information	Yes	36	52.2%
	No	33	47.8%
Patient who took treatment	Yes	05	07.2%
	No	64	92.8%
Liver Function test	Normal	62	89.8%
	Deranged	07	10.2%
Clotting Profile	Normal	63	91.3%
	Prolonged	06	08.7%

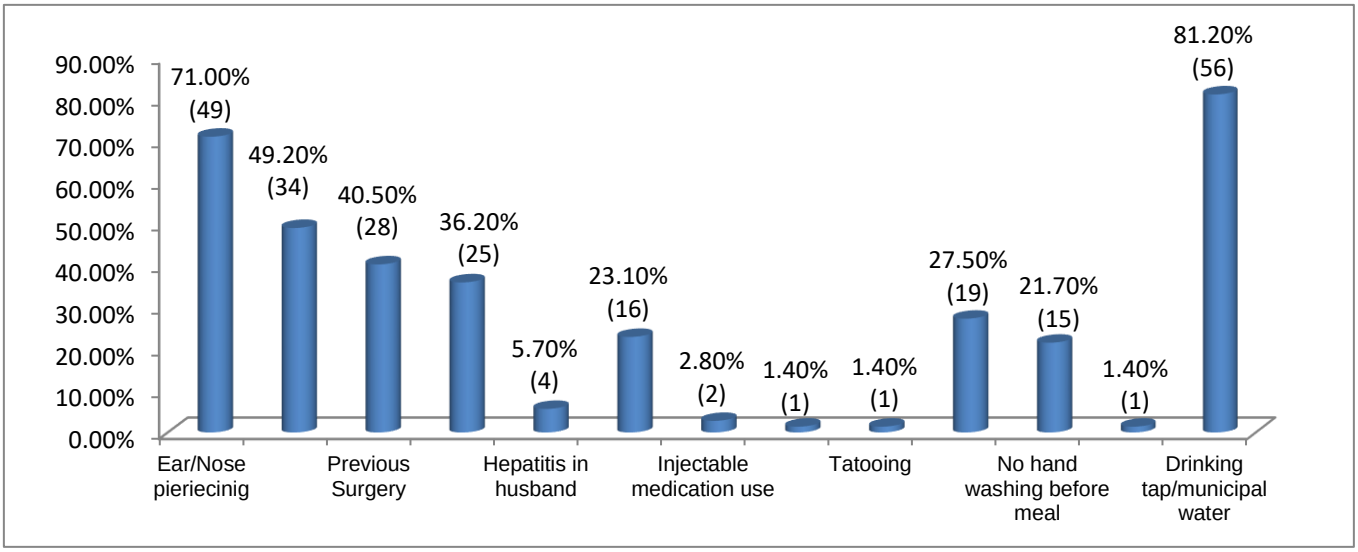
None of the patient or their family member received vaccination for hepatitis B or C. All the patients were discharged and referred to a physician for follow up of their disease in the future. Risk factors are shown in figure 2.

Discussion

Viral hepatitis affects 400 million people globally; every year 6-10 million people are newly affected.[14] Burden of viral hepatitis in developing countries is notably high. The prevalence of viral hepatitis was 3.1% in pregnant patients delivered through caesarean section. Hepatitis C is most prevalent in 2.17% followed by hepatitis B virus infection in 0.5%. According to a study conducted in Peshawar, Pakistan, the prevalence of hepatitis B was 1.16% and 1.42% respectively.[15] The prevalence of hepatitis C is up to 6.8% in Pakistani population.[16]

In 88.4% cases, women were asymptomatic and it was an incidental finding identified during baseline workup during the antenatal period. The spread of hepatitis A and E is mainly through feco-oral route. Most of the study participants drink tap/municipal water and only 18.9% had access to filtered water. A significant proportion (88.1%) of people had no access to filtered water and was practicing poor hygienic practice. Consumption of unfiltered water and poor hygienic practices are major promotors of feco-oral transmission of hepatitis. The provision of clean drinking water, hygienic practices and proper disposal of human waste can play an effective role in disease control. [17]

Ear and nose piercing is another factor identified in 71% cases. It is a cultural tradition in South East Asia. Tahir et al found that ear and nose piercing in



**Percentage is more than hundred because of multiple responses*

Figure 2: Risk Factors for Viral Hepatitis

women is a significant source of transmission of the disease if needles are used repeatedly and is infected.[18] Women should be educated about cultural practices of ear and nose piercing using single use disposable needles to prevent the risk of hepatitis transmission.

Blood transfusion is a risk factor in 49.2%. It was found a major risk factor in the transmission of hepatitis infection in literature.[18] Anemia in pregnancy is common in our country that ultimately increases the requirement of blood transfusions, especially in un-booked patients. Most of them are uneducated and belong to poor socioeconomic class. They have repeated births and short inter-pregnancy interval.[15,19] Blood transfusion screening protocols should be strictly monitored to minimize the risk of disease transmission.[18]

Previous surgery is a factor in 40.5% of the study participants. Repeated surgeries were found a remarkable risk factor in hepatitis spread in pregnant patients attending Military hospital Rawalpindi.[18] It may be due to poor sterilization practice and the need for blood transfusion in patients undergoing repeated surgery. Adequate sterilization of reusable surgical instruments should be ensured. Infected linen and human waste should be disposed of appropriately. Screening in antenatal period using hepatitis serology should be ensured.[20]

Hepatitis in the family was found in 36.2% patients. Hepatitis serology was positive in husband in 5.7% cases of study participants. It may be due to household sharing, sexual transmission and feco-oral transmission, especially in hepatitis A and E. Literature, revealed that family contacts of hepatitis make a high risk group and they should be screened and vaccinated on a priority basis.[21] Hepatitis serology of all family members of affected patients should be carried out and those who have negative serology should be facilitated to get a vaccination for hepatitis A and B.[22] All the affected family members should be in regular liaison with a physician for follow up of their disease especially for chronic hepatitis. Awareness about preventive strategies should spread through electronic and social media. The government should implement effective strategies to control and eliminate the root cause of disease spread.[23]

Only 26.1% were illiterate but the majority (52.2%) of the women faced difficulty in getting information about risk factors of viral hepatitis, its transmission, control, and prevention. A significant number of patients did not receive any information about their disease and those who did receive were mostly in verbal form. Information leaflets were handed over to 20.5% women and who were provided with both written and verbal communication was only 2.2%. More than half of them were not satisfied so it is very important to use multiple modes of information transfer to make information more catchy and absorbable for general population.[14]

Prevention is better than cure. Hepatitis immunoglobulins should be given to newborns of affected mothers. Awareness should be created to enroll all newborns for Extended Programme of Immunization. Vaccination for hepatitis A and B is available worldwide. Hecolin is the vaccination against Hepatitis E infection prepared by China and is commercially available there. It is also effective in healthy patients who are seropositive for HBeAg; however, safety data for Hecolin is not available below sixteen and over sixty five years of age group.[11, 24] None of the patients or their family members had received vaccination for viral hepatitis. It may be due to lack of awareness and cost of the vaccine. Policy makers should ensure the free of cost availability of hepatitis vaccination to prevent the disease in low resource countries.

Limitations of the study: Limitations of this study are that the prevalence and epidemiology of viral hepatitis was only observed in patients who underwent caesarean delivery. It was due to the bitter reality of poor antenatal booking, loss of follow up, low income status. It was an observational study so the risk factors were not compared between the group infected with hepatitis and non-infected.

Conclusion

Prevalence of viral hepatitis especially hepatitis B and C is high in pregnant patients who underwent caesarean delivery. The common risk factors were ear and nose piercing, blood transfusions, previous surgeries and family contacts. Lack of access to filtered water is another risk factor.

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