Original Article

Acute Hepatitis A and E in Pregnancy

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Abstract

Objective: To determine fetomaternal outcome in pregnant women with acute hepatitis A and E

Study Design: Descriptive study

Place and Duration of Study: Department of Obstetrics and Gynecology, Sir Ganga Ram Hospital Lahore from 15th July 2012 to 15th March 2013.

Methodology: Serum samples of all patients who presented with jaundice in pregnancy were collected to detect Hepatitis A and E IgM antibodies. Data was collected from twenty nine patients who fulfilled the inclusion criteria. Statistical analysis was done using software SPSS version 14.

Results: The viral serology for hepatitis revealed that 83% patients had acute hepatitis E, 14% had acute hepatitis A and 3% had co- infection with acute hepatitis E and A both. In 52% cases patients were resident of Ichra, Sanda and Gulshan Ravi. Their mean age was 25 years. Mean gravidity was 2 and 41% patients were primigravida. Majority (93%) of patients presented in third trimester and in 7% pregnancy ended in second trimester missed miscarriage. Mean gestational age was 32 weeks and most of the babies (78%) were preterm. Perinatal mortality was 22% contributed by intra uterine death in 50% and early neonatal death in 50%. Mode of delivery was vaginal in 74% cases and caesarean section in 26%. Maternal Mortality was 17%, all in patients with acute hepatitis E infection. Cause of death was fulminant hepatic failure in 100% cases. Most (80%) of maternal mortalities occurred in postpartum period.

Conclusion: Hepatitis E is a major cause of acute hepatitis in pregnancy with adverse fetomaternal outcome.

Key words: Hepatitis A and E, acute hepatitis, pregnancy.

Introduction

Hepatitis A and E like other viral hepatitis pose serious public health problem worldwide. Hepatitis A and E virus cause millions of new infections each year globally. Twelve million cases of hepatitis E infection occur annually in South East Asia which contributes for more than half of the global burden.[1]Hepatitis A to E is endemic in Pakistan. Hepatitis A infection is more prevalent in low in-

come regions of the world[2] infecting almost all persons living in Pakistan by the age 15 years. Hepatitis A virus was first isolated in 1973 and Hepatitis E virus, a decade later during water born epidemic in Kashmir, India. Genome for hepatitis E was cloned in 1990 and was sequenced subsequently.[3, 4]

Hepatitis A and E are caused by small non- enveloped single stranded RNA viruses that are member of Hepatovirus and Hepevirus genus respectively. Both are primarily transmitted by fecal-oral route either through person to person contact or ingestion of contaminated food or water. Other routes of transmission are vertical, parenteral and nosocomial. The clinical presentation of both types of hepatitis is similar and varies from non-specific flu like symptoms to fatal liver failure. Incubation period of hepatitis E virus infection is longer than that of Hepatitis A. Hepatitis A and E usually resolve spontaneously. Hepatitis A virus infection and mortality rate is age dependent, being usually asymptomatic in infants and children. Both of these infections usually resolve spontaneously. Hepatitis E virus infection may be severe and life threatening especially during pregnancy but mortality of hepatitis A is almost the same in pregnant versus non pregnant patients.[5] Hepatitis E may take severe course in patients with chronic liver disease, HIV and organ transplant recipients.[6, 7]

Large outbreaks of hepatitis A and E affecting millions of people are documented. Hepatitis E is responsible for sporadic infections and outbreaks especially during rainy season and flooding. Large outbreaks of hepatitis E in developing countries are usually caused by genotype I.[8, 9] The fetomaternal morbidity and mortality of Hepatitis E virus infection in pregnancy is secondary to hormonal and immunological changes. Steroid hormones directly influence viral replication. Asian women usually have folic acid deficiency leading to immunodeficiency and increased risk and severity of viral infections during pregnancy.[10]

The objective of the study was to determine the fetomaternal morbidity and mortality associated with acute hepatitis A and E so that prompt measures can be taken for disease prevention, control and eradication from the country.

Methodology

It was a descriptive study conducted in the Department of Obstetrics and Gynecology of Sir Ganga Ram Hospital from 15th July 2012 to 15th March 2013. All patients diagnosed as case of acute viral hepatitis A or E was included in the study.

Serum samples of all patients who presented with jaundice in pregnancy were collected to detect Hepatitis A, B, C and E. Data was collected after an informed consent from 29 patients who fulfilled the inclusion criteria. Relevant information was collected on especially designed proforma. It included details such as age of patient, gravidity, residential area, gestational age at presentation, fetal and maternal outcomes. Patients were admitted for evaluation and to treat fetomaternal complications. They were kept hospitalized and treated in collaboration with the physicians. Induction of labour or caesarean section was carried out

only for obstetric indications. All patients were followed up till discharge or death.

Data analysis was computer based. Data entry sheet was designed in computer software SPSS version 14 and analyzed. Quantitative variables such as age, gravidity and gestational age, were analyzed using simple descriptive statistics like mean and standard deviation. Qualitative variables such as residential area, fetal and maternal outcome were calculated using frequency and percentage. Chi square analysis was used. P value of $\leq$ 0.05 was taken to be statistically significant.

Results

The results of viral serology for hepatitis A and E are shown in figure 1. Family history of hepatitis A was present in 2 (7%) of patients with hepatitis E. They were aged from 18 years to 30 years with a mean age of 25 years. Mean Gravidity of patients was 2 as shown in table I. Patients were primigravida in 12 (41%) cases followed by Gravida 2 in 9 (31%). Study revealed that 27 (93%) patients presented in third trimester and 2 (7%) in second trimester of pregnancy. Mean gestational age was 32 weeks.

Distribution of cases according to residential area is shown in figure 2. In 52% of the cases patients were from Sanda, Ichra and Gulshan Ravi.

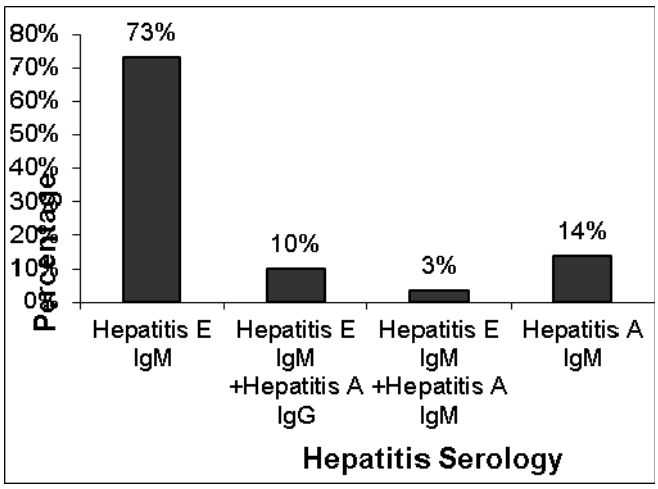

Figure1. Acute hepatitis A and E in Pregnancy

In 24 (89%) cases babies were born alive and there was intrauterine fetal death on admission in 3 (11%) patients. In majority of the cases babies were preterm 21 (78%). Perinatal mortality was 22% contributed by Intra uterine fetal death in 3 (50%) and early neonatal death in 3 (%50). In 2 (7%) cases pregnancy ended in second trimester missed miscarriage.

Mode of delivery was vaginal in 74% (20) of patients and caesarean section was carried out in 7 (26%). In 24 (83%) cases the patients recovered from acute illness. Maternal Mortality was 5 (17%), in patients with acute hepatitis E virus infection. Fulminant hepatic failure was the cause of death in 100% cases. Most i.e.(80%) of maternal deaths were in postpartum period.

Table I. Descriptive variables.

	N	Minimum	Maximum	Mean	Std. Deviation
Age (Years)	29	18.00	30.00	24.58	3.459
Gravidity (No.)	29	1.00	5.00	2.137	1.3017
Gestation(Weeks)	29	15.00	40.00	32.03	6.026

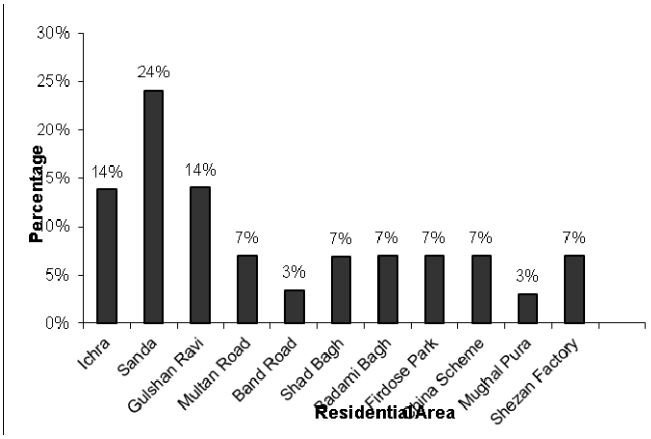

Figure 2. Distribution of cases according to residential area

Discussion

Acute viral hepatitis is the most common cause of jaundice in pregnancy. Data collected through Pakistan surveillance system from June 2010 to March 2011 reported 712 new cases of hepatitis. It revealed that all types of viral hepatitis are highly prevalent in Pakistan with acute hepatitis A in 19.8% cases and hepatitis E in 12% of the patients. Most patients reported drinking unboiled water. All cases were associated with a common water source.[11] A number of mini-epidemics have been reported in Pakistan. [12]

In this study 83% patients had acute hepatitis E, 14% acute hepatitis A and 3% had co-infection with acute hepatitis A and E virus. Hepatitis A IgG antibodies were positive in 10% of patients with acute hepatitis E infection. A significant family history of hepatitis A was present in the patients who developed acute hepatitis E. In more than half of cases the patients were resident of Ichra, Sanda and Gulshan Ravi. However cases from other residential areas like Shad Bagh, Firdose Park, Multan Road, Badami Bagh and China Scheme also contributed a significant proportion. It may be associated with contaminated water source. The results signify the common route of transmission for hepatitis A and E responsible for acute hepatitis.

Mean maternal age of the patients was 25 years. Most of the patients were in their first pregnancy (41%).The findings are consistent with the study conducted by Shrestha et al which revealed that 45% patients were primigravida and more than 75% of the cases were of age group 25 or less.[13] These findings support that it is a disease of young adults. Pregnancy ended in second trimester missed miscarriage in 7% of cases.

Majority (93%) of patients were in third trimester. Mean gestational age was 32 weeks. Similar results were shown by Mansoor et al.[14]A study conducted in Sudan revealed mean gestational age of 28 weeks in patients presented with acute hepatitis.[15] The variation in results may be due to small sample size and regional differences. Most of the babies were delivered preterm. Perinatal mortality was 22%, mainly contributed by intrauterine fetal death on admission and early neonatal death. Perinatal mortality of 38% was noted by Mansoor et al.[14] Prematurity is a significant cause of neonatal morbidity and mortality in our country. Vertical transmission of hepatitis and limited neonatal facilities with high neonatal admission rate in nurseries are other causative factors.

Acute hepatitis A and E is usually self-recovered except in third trimester of pregnancy where up to 20% maternal mortality is reported especially during epidemics. Maternal mortality was 17% in this

study, all in patients with acute hepatitis E infection. Maternal mortality was 25% in a study by Ahmed et al conducted in Sudan.[15] Fulminant hepatic failure was underlying cause of death in all patients. Most of maternal deaths were in postpartum period however reason behind this is not yet clear.

Primary prevention depends upon the sanitary conditions of the society. Measures should be taken to provide clean water for drinking and agriculture, avoiding contamination of water pipe lines with infected source. Community awareness should be created by improving the knowledge and culture to preserve hygiene of water and proper disposal of human waste. Community should be educated about risks factors and sources of transmission of infection. The infection control policies need to be strengthened in health care and access to safe and effective vaccination should be created.[16, 17, 18]

The world's first Hepatitis E vaccine, Hecolin was approved by China's State Food and Drug Administration (SFDA) in December 2011 after a phase III clinical trial published in 2010.It is highly effective and safe. Now it is commercially available in China. Xiamen University of China is in collaboration with World health Organization for its registration.[19, 20]It is the responsibility of the concerned authorities to make easy access and world wide availability of hepatitis vaccine for prevention and control of disease.

Conclusion

Acute viral hepatitis especially hepatitis E is associated with high fetomaternal morbidity and mortality during pregnancy. Fetal prematurity is a significant cause of poor neonatal outcome. All of the maternal mortalities were due to hepatitis E virus infection. Fulminant hepatic failure is the under lying cause of death in all patients. A common infected water source may be major contributor to the spread of disease.

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Translating research and integrating evidence obtained there from, into Policy and Practice in developing countries, should be the goal.

Editor-in-Chief