SCIREA Journal of Clinical Medicine

http://www.scirea.org/journal/CM

April 9, 2019

Volume 4, Issue 2, April 2019

Hepatitis E During pregnancy ----- An indirect cause of maternal mortality

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ABSTRACT

The causes of maternal mortality are direct or indirect. It is important to investigate the causes of maternal mortality as maternal mortality is an indicator of nation health. Reviewing and analyzing the causes of maternal deaths we can find out areas to improve our health care system and this is crucial for reduction in maternal mortality. The **aim of** the study is to determine the causes of maternal mortality in Shalamar hospital Lahore. **Method:** Study conducted for the duration of one year from January 2018 to February 2019 in Shalamar hospital Lahore. All the pregnant ladies who became seriously ill during pregnancy and shifted to intensive care unit of hospital for management were included in the study. Causes of critical illness and outcome of critically ill pregnant ladies who were shifted to intensive care units were determined. **Results:** During study period 24 patients shifted to ICU. Out of these 22 were discharged and 2 were expired in ICU. Cause of death is hepatitis E leading to hepatic failure in both patients. **Conclusion**: Hepatitis E infection in pregnancy is associated with poor maternal outcome.

Keywords: maternal mortality, hepatitis E

INTRODUCTION

According to WHO Maternal mortality is defined as death of a woman during pregnancy or within 42 days of termination of pregnancy from any cause related to or aggravated by pregnancy or its management but not from the accidental or incidental causes.[1] The causes of maternal mortality may be direct or indirect. Direct causes are post partal hemorrhage, hypertensive disorders, infections, unsafe abortions, pulmonary embolism.[2] Indirect causes of death is from the conditions that is not directly related to pregnancy but develop and get worse during pregnancy.[3] By the increase in education contraceptive practices, increase in preventive services, availability of blood and blood products and trends of delivery by skilled person there is decline in the maternal deaths due to direct causes. But still maternal mortality rate is high and WHO has included it in sustainable development goals between 2016 to 2030 to reduce global maternal mortality ratio to less than 70 per100000 live births.[4] Maternal mortality is one of the indicators that measures health of nation. We conducted this study to find out the leading cause of maternal mortality in our hospital. This study will help us to identify and analyze the cause of maternal deaths so we can improve our system to decrease maternal mortality.

METHODS.

This is a descriptive study which is carried out in Gynae department of Shalamar hospital Lahore for the duration of 1 year from January 2018 to February 2019.We included all the pregnant ladies who were critically ill and shifted to intensive care unit of the hospital. Age, parity and gestational age of study subjects was noted. Detailed history was taken from the patients and relatives in case if patient is not able to give history, examination of the patients were performed. All the investigations performed in intensive care unit were reviewed. Causes of shifting to intensive care unit were determined. Maternal outcome is recorded. It is noted how many of them recovered and how many expired. It is determined what is the diagnosis of the women who expired. Qualitative variables were expressed by calculating frequencies and percentages.

Results

During the study period 24 women were shifted to intensive care unit. Age of the females were 25 to 30 years mean is 28 years. Parity of the females ranges from 1 to 3 with mean of 3

Table showing causes of shifting to ICU

Serial number	Cause of shifting to icu	Number of patients
1	Hypertensive disorders	8 [33%]
2	Post partal hemorrhage	10 [41.6%]
3	Sepsis	2 [8.3%]
4	Acute liver failure due to hepatitis E	2 [8.3%]
5	Cardiac disease	2 [8.3%]

Out of these 24 women 22 were survived and 2 were expired

Number of women discharged from icu	22	91.6%
Number of women expired	2	8.3%

Diagnosis of the patient who expired

Patient expired in icu	Diagnosis
Patient 1	Disseminated intravascular coagulopathy due to liver failure because of hepatitis E
Patient 2	Fulminant hepatic failure due to hepatitis E

DISCUSSION

Results of the study showed the main cause of maternal morbidity due to which pregnant lady become critically ill and needed admission in intensive care unit is post partal hemorrhage. Next most frequent cause associated with maternal morbidity are hypertensive disorders. These findings are like findings of other studies which shows post partal hemorrhage and hypertensive disorders are the main causes of the intensive care unit admissions in obstetric patients.[5,6]

In our study we found that both patients who were expired were Hepatitis E positive. Hepatitis E is a cause of adverse maternal and perinatal outcome in pregnancy. Shrestha S N et al reported in their review of 93 case studies in Nepal that hepatitis E is associated with high liver failure and maternal mortality.[7] Patra S et al in India and Nadar S in Pakistan also had similar results.[8, 9]

Hepatitis E is a viral infection that effects mainly liver It is caused by RNA virus and transmitted through feco-oral route. In men and non-pregnant females' disease is self-limited case fatality rate is less than 1%but in pregnancy it is more severe leading to fulminant hepatic failure and death.[10,11] In our study we also noted both patients with hepatitis E who were expired developed acute liver failure. Acute liver failure is defined those cases which developed hepatic encephalopathy within 4 weeks of developing acute hepatitis.[12] In our study both patients have short duration of illness and developed severe abnormalities in liver enzyme and coagulation profile within one week of onset of jaundice and fever. Why hepatitis E effects liver so badly is still a mystery. High levels of steroid hormones estrogen and progesterone consider as a favorable factor on rapid replication of the virus.[13] Other factor consider responsible for increased morbidity and mortality by hepatitis E virus during pregnancy is decrease in T cell mediated immunity of mother during pregnancy and alteration in the immune system of mother.[14] So it is said that complex interaction between virus and host hormonal and immunological factors lead to disastrous outcom.[15] Hepatis E has 4 genotypes. Type 3 and 4 are less pathogenic. In humans type 1 and 2 are more pathogenic. Type 1 and 2 are more frequently found in Asia, Middle East and Nigeria and type 3 and 4 are found in Europe, Egypt, North America, Japan and Newzealand.[16] This explained the high rates of maternal mortality in India and Pakistan and in Egypt and Europe the course of disease is benign and self-limited.

In our study both patients developed hepatitis E in third trimester of pregnancy, maternal outcome is comparable with other studies which show the disease is more fatal if occur in 3rd trimester of pregnancy.[17, 18]

Whenever the case of hepatitis E is reported in pregnancy the patient needs high dependency care in ICU. ICU staff, physician and obstetrician are all involved in the care of the patient. It is also challenging to decide when to deliver the fetus and if delivery improved survival. In our study we performed delivery in both cases but there is no improvement in maternal outcome even after delivery. Banait SV et al studied42 pregnant females in their study in India and found no difference in maternal outcome in both groups in which delivery occurred

or in which pregnancy continued.[19] Deng L et al in large multicenter retrospective study in China concluded no significant difference in maternal and perinatal outcome in those who deliver by C section or those who were deliver by normal vaginal delivery.[20]

Conclusion

We concluded that Hepatitis E during pregnancy is a cause of poor maternal outcome especially if occurs late in pregnancy.

We recommend steps should be taken for prevention of the disease which include education of pregnant ladies about signs and symptoms of disease, early hospitalization, frequent hand washing with soap and water before eating and preparing food and after using toilet or changing diaper of baby. Personal hygiene, drinking of clean water and avoid using ice in water if you are not sure it is clean. Government should also take steps to improve water and environmental sanitation and emphasize on need of global availability of vaccine for prevention of Hepatitis E.

LIMITATIONS.

We studied the causes of maternal mortality in patients who were in tertiary care hospital and shifted to ICU for care. Larger studies are also required in other hospitals and in communities to determine the causes of maternal deaths so we will improve our maternal mortality by prevention.

Acknowledgement

We are thankful to Dr Amir Waseem Assistant professor of Anesthesia who helped us in data collection from the ICU.

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