

DOI: <http://dx.doi.org/10.18203/2320-1770.ijrcog20162115>

Research Article

Study of maternal and prenatal outcome in pregnant women with acute hepatitis E viral infection

Sunita Mishra^{1*}, Rajesh Kumar Jha², Ratna Thakur¹, Sindhuja Tiwari¹

¹Department of Obstetrics and Gynaecology, ²Department of Medicine Sri Aurobindo Medical College and Post Graduate Institute, Indore, Madhya Pradesh, India

Received: 14 May 2016

Accepted: 06 June 2016

***Correspondence:**

Dr. Sunita Mishra,

E-mail: dr_sunitamishra_16@yahoo.co.in

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Hepatitis E Virus (HEV) is a major aspect of hepatitis and death in the developing countries and asymmetrical source of deaths in among of pregnant women. The objective of this study was to determine the maternal and prenatal outcome in pregnant women with acute hepatitis E viral infection in Malwa, India.

Methods: Observational, cross-sectional study. The study population was pregnant women with acute hepatitis E infection confirmed by ELISA technique. Pregnant women with other hepatic viral infections were excluded. All medical and obstetric conditions and mortality were noted on the predesigned proforma.

Results: Out of the total 105 admitted pregnant women with hepatitis E viral infection, 21.90% women had severe morbidity, 24.17% perinatal death and 14 (13.3%) expired before delivery. The yellowish discoloration of urine or sclera was observed in 91.42% with abdominal pain in 76.19%. Maternal mortality was higher in patients with primi (47.82%) and patients presented in second trimester (56.50%).

Conclusions: The acute viral hepatitis E infection in pregnant women is associated with maternal morbidities and high mortality rate.

Keywords: Pregnancy, Hepatitis E, Central India

INTRODUCTION

Hepatitis E Virus (HEV) is a major aspect of hepatitis and death in the developing countries and asymmetrical source of deaths in among of pregnant women.¹ HEV is a single stranded, non-enveloped RNA virus and is the only virus within the genus hepevirus and the family hepaciviridae.^{2,3} It was first reported in India in 1970s.⁴ HEV is befalling a major public health problem in world. In pregnant women, maternal age in addition to hormonal, immunological and environmental factors may be the risk factor for fatal and maternal morbidity.⁵

HEV infection has been observe to have high attack rate in pregnant women and associated high maternal mortality and perinatal mortality rate.⁶ The actual source of high mortality in pregnant women is still not known. It

may be due to an altered status of hormones and immunity, which was observed during pregnancy in a study done by Jilani et al.⁷ HEV infection is emerging as a number one killer of pregnant women in India.⁸ Recently, an epidemic of HEV with high maternal mortality was reported among Sudanese women in Darfur as well as in India.^{9,10} However, despite the evidence of high mortality of pregnant women with HEV infection, Bhatia et al observed that outcome of HEV infection during pregnancy is not different when compared with age matched non-pregnant women and men.¹¹ There are conflicting reports also from developed countries where no adverse effect has been observed on the course of infection during pregnancy.¹²

This observational, cross-sectional study was done to find out the prevalence of HEV infection among the

hospitalized cases of acute hepatitis during pregnancy, and maternal and perinatal outcome of pregnancy complicated by HEV infection in Sri Aurobindo Medical College and PG Institute, Indore, Madhya Pradesh, India.

METHODS

The present study includes 105 patients of hepatitis E with pregnancy, admitted at our departments of obstetrics and gynaecology in Sri Aurobindo Medical College and PG Institute, Indore, Madhya Pradesh, India. From April 2015 to April 2016.

Registered pregnant women with HEV infection having severe complications were included in the study and observed in detail. Pregnant women with hepatitis E positive serology without significant complication and non-pregnant women with hepatitis E infection were excluded from the study.

Women with severe complications were registered on the predesigned proforma after taking informed written consent from the patients or the near relatives in case of unconsciousness. These women were managed according to the management protocol of the Institution. The study variables were age, parity, educational status, socioeconomic status, occupation, symptomatology, gestational period, clinical findings, level of consciousness, labour characteristics like pregnancy duration, onset of labour, delivery mode, relevant investigations, types of complications, and management outcomes.

The data was collected and analyzed on Graph Pad. The analyses were done for frequency and percentage determination for the categorical data. Mean and percentage were calculated for age and parity.

RESULTS

Out of the total 105 patients of hepatitis E and pregnancy admitted to our hospital were studied from April 2015 to April 2016. Maximum numbers of patients were in age group 21-24 years (41.90%) with mean age of 23 years. Only 06 patients were of >30 years. Majority of the patients presented with yellowish discoloration of urine and sclera (91.42%) and abdominal pain in (76.19%). Almost half of the patients (48.58%) were primi gravid while one fourth patients (25.71%) were in first trimester and 23.82% were in third trimester.

Maximum number of patients (33.3%) had bilirubin level between 5-10 mg/dl, it was raised >20 mg/dl in 14.29% of patients. Mean serum bilirubin was 8.79 mg/dl. In 59.04% of patients SGPT was raised >1000U/L. Coagulation profile (PT, APTT) was deranged in more than half (54.29%) of the patients. More than half of the patients (56.19%) were delivered full term. Almost one third (30.48%) of patients were delivered preterm. Perinatal mortality was 24.17%. Maternal mortality was

21.90%. Patients with high WBC count (>10000 cu/mm) and high serum bilirubin (>20 m/dl) at the time of admission were having higher mortality.

Table 1: Demographic and clinical spectrum of recruited subjects.

	Number of cases	No. of patients (%)
Age wise distribution		
18-20	23	21.90
21-24	44	41.90
25-29	32	30.48
>30	6	5.72
Symptoms		
Yellowish discoloration of sclera and urine	96	91.42
Abdominal pain	80	76.19
Fever	25	23.80
Itching	12	11.42
Altered sensorium	22	20.95
Hemoglobin		
<8 mg/dl	29	27.62
8-10 gm/dl	24	22.86
>10 mg/dl	52	49.52
Total WBC count		
>10000 cu/mm	79	75.24
40000-10000 cu/mm	26	24.76
Platelets		
<100000 cu/mm	20	19.04
>100000 u/mm	85	80.96
Serum bilirubin		
<5 mg/dl	26	24.76
5-10 mg/dl	35	33.33
10-20 mg/dl	17	16.19
>20 mg/dl	15	14.29
SGPT		
<100 U/L	13	12.39
100-1000 U/L	30	28.57
>1000 U/L	62	59.04
ALP		
Raised	88	83.80
Normal	17	16.2
PT		
Normal	48	45.71
Raised	57	54.29
APTT		
Normal	48	45.71
Raised	57	54.29
Type of birth		
Live	69	75.83
Perinatal death	22	24.17
Outcome		
Discharge	82	78.10
Expired	23	21.90

Maternal mortality was higher in patients with primi gravid (47.82%) and patients presented in second trimester (56.50%). There was no correlation with initial Hb level and platelet count with mortality.

DISCUSSION

Hepatitis E viral infection is a single stranded RNA virus of the hepeviridae family is an emerging infectious disease of global importance.¹³ It is a public health problem in several countries of the world where safe drinking water is a problem. HEV infection occurs most frequently in rainy season.¹⁴ Kumar et al.¹⁵ observed that two-third of the pregnant women with HEV had preterm deliveries, which is consistent with our results as 20 patients (66.6%) had preterm deliveries between 25-35 weeks of gestation. Better maternal outcome was noted in those patients whose pregnancy was terminated earlier irrespective of gestational age.

Fifty percent patients presented during the third trimester and maximum morbidities were noted in this group, which is consistent with the study of Jaiswal et al.¹⁶ where 50 and 51% HEV infected pregnant females developed fulminant hepatic failure during second and third trimester respectively in comparison to 16.66% females developing during first trimester. This shows increasing incidence of fulminant hepatic failure with increasing gestational age. Begum et al proved that prevalence of HEV was found to be much higher in third trimester of pregnancy, 30.3% compared with 25.0% in second trimester.¹⁷ This is consistent with the study as 33.3% patients presented in third trimester and 20% in second trimester. It is a potential disaster for mother and child. HEV infection during pregnancy is fulminant and fatal especially if it occurs in third trimester. The mortality in the second trimester is around 20% and reaches up to 45% in the third trimester.¹⁴ which is consistent with the present study in which Maternal mortality was higher in patients with primi gravid 47.82% and patients presented in second trimester 56.50%. Kumar et al reported that the mortality rate among HEV positive pregnant women was 26.9%.¹⁵ Vertical transmissions was observed in 33.3% and had severe forms of hepatitis in third trimester of pregnancy; hepatitis E in pregnancy is associated with high rates of preterm labour and mortality. Begum et al.¹⁷ reported 22.2% fatality rate with maximum severity during 3rd trimester 44.4% which is comparable with this study. Patra et al.¹⁸ in New Delhi reported 15-20% maternal mortality rate in pregnant patients with HEV. Banait et al in Mumbai reported 69% perinatal mortality and 54% maternal mortality in HEV in pregnancy which is much higher than our results.¹⁹ Beniwal et al reported mortality rate in the range of 30.0-45.0% and may be as high as 70.0%.²⁰ Ahmed reported 25% maternal mortality rate and 17.8% intrauterine deaths in pregnant HEV positive mothers.²¹ Shukla reported 33.3% maternal mortality rate in patients with hepatitis E in pregnancy.²² The main limitation of this study was its small sample size.

CONCLUSION

During the pregnancy hepatitis E infection is a life threatening condition. In present study high morbidity and mortality indicate an urgent need of promoting awareness regarding this preventable disease. The early diagnosis and improvement of the management strategies will help in the control of the disease and its complications.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Labrique AB, Sikder SS, Krain LJ, West KP, Christian P, Rashid M, et al. Hepatitis E, a vaccine-preventable cause of maternal deaths. *Emerg Infect Dis.* 2012;18:1401-4.
2. Purcell RH, Emerson SU. Hepatitis E: an emerging awareness of an old disease. *J Hepatol.* 2008;48:494-503.
3. Aggarwal R, Jameel S. Hepatitis E. *Hepatology.* 2011;54:2218-26.
4. Taniguchi M, Kim SR, Mishro S, Takahashi K, Shin MH, Yun H. Epidemiology of hepatitis E in north eastern China, South Korea and Japan. *J Infect.* 2009;58:232-7.
5. Goumba CM, Yandoko-Nakoune ER, Komas NP. A fatal case of acute hepatitis E among pregnant women, Central African Republic. *BMC Research Notes.* 2010;3:103.
6. Tsega E, Hansson BG, Krawczynski K, Nordenfelt E. Acute sporadic viral hepatitis in Ethiopia: causes, risk factors, and effects on pregnancy. *Clin Infect Dis.* 1992;14:961-5.
7. Jilani N, Das BC, Hussain SA, Baweja UK, Chattopadhyaya D, Gupta RK, et al. Hepatitis E virus infection and fulminant hepatic failure during pregnancy. *J Gastroenterol Hepatol.* 2007;22:676-9.
8. Rana A, Pradhan N, Manandher B, Bista KD, Gurung G, Amatya A. Maternal mortality over the last decade: a changing pattern of death due to alarming rise in hepatitis in the latter five-year period. *J Obstet Gynecol Res.* 2009;35(2):243-51.
9. Boccia D, Guthmann JP, Klovstad H, Hamid N, Tatay M, Ciglenecki I, et al. High mortality associated with an outbreak of hepatitis E among displaced person in Darfur, Sudan. *Clin Infect Dis.* 2006;42:1679-84.
10. Patra S, Kumar A, Trivedi SS, Puri M, Sarin SK. Maternal and fetal outcomes in pregnant women with acute hepatitis E virus infection. *Ann Intern Med.* 2007;3(147):28-33.
11. Bhatia V, Singhal A, Panda SK, Acharya SK. A 20-year single center experience with acute liver failure during pregnancy: is the prognosis really worse? *Hepatology.* 2008;48(5):1577-85.

12. Stoszek SK, Abdel-Hamid M, Saleh DA, El Kafrawy S, Narooz S, Hawash Y, et al. High prevalence of hepatitis E antibodies in pregnant Egyptian women. *Trans R Soc Trop Med Hyg.* 2006;100:95-101.
13. Navaneethan U. Seroprevalence of hepatitis E infection in pregnancy more questions than answers. *Indian J Med Res.* 2009;130:677-9.
14. Kuhroo MS, Kamili S. Aetiology, clinical course and outcome of sporadic acute viral hepatitis in pregnancy. *J Viral Hepat.* 2003;10:61-9.
15. Kumar A, Beniwal M, Kar P, Sharma JB, Murthy NS. Hepatitis E in pregnancy. *Int J Gynecol Obstet.* 2004;85:240-4.
16. Jaiswal SP, Jain AK, Naik G, Soni N, Chitnis DS. Viral hepatitis during pregnancy. *Int J Gynecol Obstet.* 2001;72:103-8.
17. Begum N, Polipalli SK, Hssain SA, Kumar A, Kar P. Duration of hepatitis viremia in pregnancy. *Int J Gynaecol Obstet* 2010; 108:207-10.
18. Patra S, Kumar A, Trivedi SS, Puri M, Sarin SK. Maternal and fetal outcomes in pregnant women with acute hepatitis E virus infection. *Ann Intern Med.* 2007;147:28-33.
19. Banait VS, Sandur V, Parikh F, Ranka P, Sasaidharan, Sattar A, et al. Outcome of acute liver failure due to acute hepatitis E in pregnant women. *Indian J Gastroenterol.* 2007;26:6-10.
20. Beniwal M, Kumar A, Kar P, Jilani N, Sharma JB. Prevalence and severity of acute viral hepatitis and fulminant hepatitis during pregnancy: a prospective study from North India. *Indian J Med Microbiol.* 2003;21:184-5.
21. Ahmed RE, Karsrny MS, Adam I. Brief report: acute viral hepatitis and poor maternal and perinatal outcome in pregnant Sudanese women. *J Med Virol.* 2008;80:1747-8.
22. Shukla S, Mehta G, Jais M, Singh A. Prospective study on acute viral hepatitis in pregnancy: seroprevalence and fetomaternal outcome of 100 cases. *J Biosci Tech.* 2011;2:279-86.

Cite this article as: Mishra S, Jha RK, Thakur R, Tiwari S. Study of maternal and prenatal outcome in pregnant women with acute hepatitis E viral infection. *Int J Reprod Contracept Obstet Gynecol* 2016;5:2300-3.