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## Abstract

Background: HEV infection, a major public health concern, is known to cause largescale epidemic and sporadic cases of acute viral hepatitis in developing countries. The infection occurs primarily in young adults and is generally mild and self-limiting; however, the case fatality rate is reportedly higher among pregnant women.Methods: Our study, a retrospective observational study, was conducted in a tertiary care centre for over a period of 3 years (Jan 2017 to Jan 2020) to find out the fetal and maternal outcome in pregnant women with HEV infection.Results: A total of 38antenatal cases with Anti-HEV IgM-positive were included, and the maternalfetal outcome was analyzed. The maternal mortality was 52.63

***Index terms***— Hepatitis E, pregnancy, fulminant hepatic failure, maternal mortality, still births, hepatic encephalopathy, coagulopathy.

Introduction epatitis E virus is a major cause of hepatitis and death in developing world and disproportionate cause of deaths among pregnant women 1 .It is a non-enveloped, single-stranded RNA virus and is only virus within the genus Hepevirus and family hepaviridae 2 . HEV infectionis primarily transmitted through the feco-oral route 3 . The infection primarily occurs in young adults and is generally mild and selflimiting; however, the mortality rate is higher among pregnant women. 4 The nutritional, immunological and genetic factors play role in pathophysiology of fulminant HEV during pregnancy in developing countries 5 .

Diminished cellular immunity (lowered CD4/CD8 cell ratio) and a high level of steroid hormones that influence viral replication during pregnancy appear to be the plausible reasons for severity of the disease 6 .

The incidence and severity during pregnancy vary widely around the world. The case fatality rate is 1-2 % in outbreaks of waterborne Hepatitis E in India and Asia, which increases up to 10-20 % in pregnant women 7 . Reason for the difference in the outcome of HEV in different geographical areas remains unclear 8 but could be due to early childhood HEV exposures, producing long-lasting immunity and/or modifying subsequent responses to exposure to the virus. HEV is known to have five genotypes, four of which have been detected in humans; genotypes 1 and 2 are more virulent, genotypes 3 and 4 are more attenuated and accountable for subclinical infections 9 .

This disease presents a challenging situation to the obstetrician because of the complications such as postpartum haemorrhage (PPH), preterm labour, preterm premature rupture of membrane (PPROM), maternal coagulopathy, acute fulminant liver failure, spontaneous abortion and intrauterine fetal death (IUFD).

# 1 II.

# 2 Methods & Materials

A retrospective observational study was conducted at a tertiary care centre for over a period of 3 years (Jan 2017 to Jan 2020) to analyse the fetal and maternal outcome in all antenatal patients with Anti-HEV IgM-positive.

# 3 Inclusion criteria:

1. All antenatal patients with Anti-HEV IgM-positive. Associated thrombocytopenia (platelet count ranging between 21000 to 101000) was seen among 13 (34 %) patients with 4 having severe thrombocytopenia (< 50000).

IV.

# 4 Data and Statistical Analysis

Computer based data analysis was done. Data entry sheet was designed and statistical analyses were b) Mode of delivery Induction of labour was done in 14 cases by intracervical foleys catheter insertion. Reason for IOL were IUFD, PROM, patients with acute fulminant hepatitis with 37 completed weeks of gestation.

Most of the patients delivered vaginally 25/38 i.e 65.8%. 1 patient required instruemental delivery due to maternal exhaustion in 2 nd stage of labour.

There were 6 patients who required lower segment c-section which makes 15.8 %. The indication were meconium stained liquor -1, previous LSCS with PROM -1, previous 2 lscs with ovarian mass-1, severe oligohydramnios -2, previous LSCS with breech -1. 1 patient who underwent LSCS died. 1 patient required exploratory laparotomy for drainage of pelvic haematoma and required blood and fresh frozen plasma. 2 patient who underwent LSCS were transfused blood and fresh frozen plasma both pre and postoperatively .

5 In our study, maternal mortality rate was 52.63 % including 5 antenatal deaths. Most of these patients (75 % i.e 15 out of 20 deaths) presented with acute fulminant hepatitis with hepatic encephalopathy.

Highest bilirubin level observed was 28. Median bilirubin value was 18.7.

Bilirubin level was ranging between 8.7 to 28 with grossly elevated liver transaminases (highest being SGOT-4406, SGPT-3491) among the expired patients.

The most common maternal complication was acute fulminant hepatitis (39.5 %) , DIC (36.8 %) and hepatic encephalopathy (31.6%).

Cases complicated by DIC were found to have Prothrombin time ranging between 16.5 to 70, with median value as 39.3. Thrombocytopenia was also seen in association in 92.8 % patients with DIC.

Post partum haemorrhage (18.4 %) and Acute kidney injury (15.8 %) were the other complications which added to mortality and morbidity.

Most of the cases of PPH were managed medically and blood & blood products transfusion. Only 1 case required exploratory laparotomy with devascularisation of uterus.

68 % cases required blood and blood products transfusion reasons being post partum haemorrhage, anemia, disseminated intravascular coagulation. 90 % cases who died were referred from peripheral hospitals with hyperbilirubinemia, hepatic encephalopathy, acute fulminant hepatitis and DIC.

2 cases referred from peripheral hospital with acute fulminant hepatitis with hepatic encephalopathy with coagulopathy died within 6 hours of admission.

# 5 VI.

# 6 Comparative Study

# 7 VII. Conclusion and Recommendation

Our study shows that pregnant women with acute viral hepatitis due to hepatitis E had a high mortality rate especially when infected in 3 rd trimester and post-partum period. They also had poor obstetrics and fetal outcome.

Early diagnosis and active management can improve the outcome. Pregnant women should be closely monitored for fetal well-being and signs of fetal distress by periodic ante-natal scan, biophysical profile , non-stress test. They should be counselled about daily fetal kick count.

Hepatitis E is a preventable disease so emphasis should be on sanitation, personal hygiene, hand washing, proper sewage disposal, facilities for clean drinking water and awareness regarding these.

Vaccine against hep-E is available and can reduce the morbidity and mortality associated with pregnancy 12 . HEV 239 vaccine is safe for both mother and fetus and there was no hepatitis E infection in immunised pregnant women 13 . India being an endemic area for hepatitis E with high mortality rate this may be considered as an option.

# 8 Special cases:

1.21 year old, primigravida, with 34 weeks of gestation in a known case of rheumatic heart disease s/p MVR, with c/o fever with chills, jaundice, altered sensorium and moderate anemia referred from periphery.

# 9 On admission -

Bili-13.8 SGOT-821 SGPT-219 Hb-8.3 TLC-19600 PLT-61000

Patient was diagnosed to be anti-HEV-IgM positive with hepatic encephalopathy with dengue haemorrhagic fever.

Patient had PPH, developed AKI and died on Day 6 post-natal day.

2.25 year old, G3P2L2 with previous 2 LSCS with 35 weeks of gestation with right ovarian cyst was referred in view of threatened preterm and jaundice.

## 10 On admission

Bili-2.6 SGOT-48 SGPT-26, Tumor markersnegative, Viral markers -anti-HEV-IgM positive USG abdomen s/o right adnexal solid cystic mass (15x10x15cm) likely to be mucinous cystadenoma.

Elective LSCS with right ovarian cystectomy with right salpingoopherectomy with left tubal ligation was done at 37 completed weeks. Histopathological report was s/o right mucinous cystadenoma.

Patient was discharged with Bili-0.6 SGOT-12 SGPT-25 3.38 year old, G2P1L1 with previous LSCS with 32 weeks of gestation with PROM with breech presentation with hyperbilirubinemia was referred from periphery.

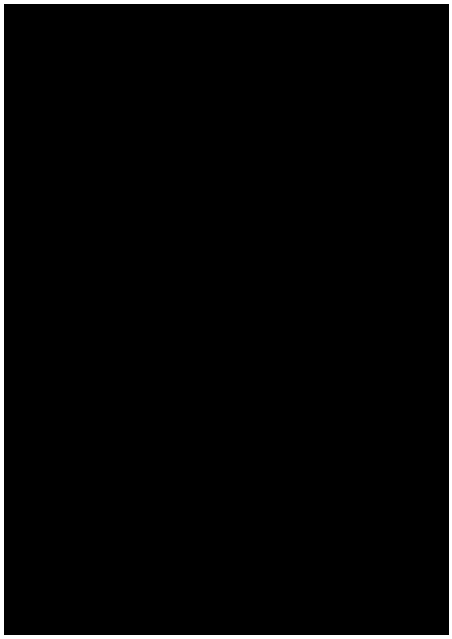

Figure 1:

1 2

57.9 % belong to the age group 20-25 years followed by 36.8 % belong to 26-30 years and the minimum 5.3%

INR Creatinine 8.78 -

H Fever Nausea, vomiting Lethargy

Loss of consciousness Altered sensorium Pruritus Convulsions Ja

fetal movement)

III. Some degree of anemia was seen in 74 % cases. Observations

| Age | Total cases with Anaemia 28 (74 %) | Age and parity distribution | Parity | Mild(8-10.9 |
|---|---|---|---|---|
| 20-25 | | 10 | 12 | |
| 26-30 | | 4 | 10 | |
| 30-40 | | 1 | 1 | |

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Figure 2:

performed by using statistical package for the social

sciences software version 16.0 (Chicago IL, USA). Variables considered are age, gestational age at

## V. Results

a) Pregnancy outcome

| | | | | |
|---|---|---|---|---|
| | | | Alive & well | |
| | | | NICU | |
| | | | Still births | |
| | | Total delivered | | |
| Year | | | Undelivered | |
| 2020 | | | Abortion | |
| 18 | | Primi | Multi | |
| Volume XX Issue VI Version I D D D D ) ( | | | | |
| Medical Research Global Journal of | Total live birth 21 | >/=2.5kg 5 | >1.5kg to <2.5kg(LBW) 14 | |

*[Note: 1. 76 % had low birth weight including 2 very low birth weight.2. 33% of total live borns were admitted to NICU, reasons being prematurity, very low birth weight and respiratory distress. 3.]*

Figure 3:

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