

Maternal and Perinatal Outcome in Dengue Fever in Pregnancy in North India

Ruchika Garg¹, Narendra Malhotra², Anu Pathak³, Deepa Singh⁴, Prabhat Agrawal⁵, Ashish Gautam⁶, Prashant Gupta⁷

ABSTRACT

Aim and objective: The aim and objective of the study was to assess the maternal and neonatal complications in all the cases of dengue fever in pregnancy.

Materials and methods: This was a prospective observational study of pregnant and postpartum women with dengue hemorrhagic fever.

Results: Postpartum hemorrhage (PPH) was reported in 35/195 (18%); PPH occurred due to severe thrombocytopenia, atonic uterus, and deranged coagulopathy. Other complications seen were antepartum hemorrhage such as abruption (11.7%), preeclampsia (3.5%), and eclampsia (0.5%). Seven cases of dengue were seen in the first and early second trimesters and two of these had miscarriages. Oligohydramnios was reported in 21%, preterm birth in around one-fourth of the patients. Majority of the patients (80%) presented with thrombocytopenia. Around half (46%) pregnant women in late second and third trimesters presented without any complications.

Conclusion: Dengue fever in pregnancy leads to adverse maternal and perinatal outcomes including PPH, preterm labor, oligohydramnios, and intrauterine fetal deaths.

Keywords: Dengue hemorrhagic fever, Dengue neonatal outcome, Dengue maternal outcome, Dengue pregnancy perinatal outcome.

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INTRODUCTION

Dengue fever is a major public health problem in tropical and subtropical regions. An estimated 50 million dengue infections occur worldwide with 500,000 people suffering from dengue hemorrhagic fever requiring hospitalization annually. In the South Asian regions, 232,530 dengue cases were reported with a mortality rate of 0.79 in 2009.¹ In fact, dengue in pregnancy increases the risk of more serious infections than the general population, and it also increases the risk of mother-to-child transmission that may occur before delivery and also during delivery. Several previous studies have shown that dengue in pregnancy can increase the risk of postpartum hemorrhage (PPH), premature labor, severe oligohydramnios, fetal death, and vertical transmission requiring platelet transfusion for neonatal thrombocytopenia.² The clinical presentation of dengue can be confused with hemolysis, elevated liver enzymes, low platelet count (HELLP) syndrome. Thus, serology helps to differentiate these two conditions.

This study aimed to assess the maternal and neonatal outcomes in the patients suffering from dengue in all the three trimesters.

MATERIALS AND METHODS

This was a prospective observational study on all pregnant women attending Antenatal outpatient department (OPD) and emergency Department of Obstetrics and Gynaecology, SN Medical College, Agra, and three private hospitals from July 2021 to October 2021. One hundred and ninety-six antenatal and postpartum women were diagnosed with dengue.

All the cases underwent detailed clinical history, general, systemic examination, and routine blood investigations. The cases were followed daily for their clinical and laboratory parameters. Fever, headache, thrombocytopenia, and any other hemorrhagic manifestations were noted. On blood investigations, dengue virus nonstructural (NS) protein 1 antigen and dengue immunoglobulin

^{1,3,4}Department of Obstetrics and Gynaecology, SN Medical College, Agra, Uttar Pradesh, India

²Department of Obstetrics and Gynaecology, Rainbow Hospital, Agra, Uttar Pradesh, India

^{5,6}Department of Medicine, SN Medical College, Agra, Uttar Pradesh, India

⁷Department of Surgery, SN Medical College, Agra, Uttar Pradesh, India

Corresponding Author: Deepa Singh, Department of Obstetrics and Gynaecology, SN Medical College, Agra, Uttar Pradesh, India, e-mail: deepasingh2210@gmail.com

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IgM antibody were detected by enzyme-linked immunosorbent assay (ELISA). Primary or secondary infections were determined by dengue IgG immunoglobulin.

RESULTS

We studied 196 women suffering from dengue fever confirmed with the serology IgM and IgG ELISA assay. And, data were collected regarding maternal and fetal complications.

Around half (46%) of the pregnant women in late second and third trimesters presented without any complications (Table 1). They were given symptomatic management for dengue. The most common complication seen was preterm labor (23.5%) followed by severe oligohydramnios (20.9%) and PPH (17.8%). PPH occurred due to severe thrombocytopenia seen in most of the dengue cases and due to deranged coagulopathy. Other complications seen were antepartum hemorrhage such as abruption (11.7%),

Table 1: Perinatal outcomes

Outcomes	No. of cases	% of cases
Moderate-to-severe oligohydramnios	41	20.9
PPH	35	17.8
Abruption	23	11.7
Preterm labor	46	23.5
Preeclampsia	07	3.5
Eclampsia	01	0.5
Miscarriage	02	1.0
Without complications	45	22.9

Table 2: Neonatal outcome

Outcomes	No. of cases	% of cases
Preterm	44	22.4
Fetal distress	21	10.7
Stillborn	05	2.5
Intrauterine death	13	6.6
NICU admissions	23	11.7
Without complications	67	34.2

preeclampsia (3.5%), and eclampsia (0.5%). Seven cases of dengue were seen in the first and early second trimesters and two of these had miscarriages.

Most of the neonates were discharged successfully (Table 2). The major complication seen was prematurity and hence increasing the neonatal intensive care unit (NICU) admission rates. Other complications observed were meconium stained liquor, fetal distress, stillborn, and intrauterine death in 13 (6.6%).

Out of these 196 cases, normal vaginal delivery was done in 62%. Lower segment cesarean section was done in 38% of the cases for fetal and obstetric indications including oligohydramnios. Some postoperative complications observed were wound gaping and wound hematoma, and also resuturing was done in two cases due to the collection of blood clots in stitch line.

DISCUSSION

Dengue infection presents with a febrile period of 2–7 days, followed by a delayed phase of 3–4 days leading to shock due to massive plasma leakage. Dengue infection during pregnancy is difficult to clinically assess, diagnose, treat, and monitor. In our cases, the patients were referred to our hospital after 4–5 days of fever. In our cases, around 80% of the patients showed clinically severe thrombocytopenia. The birth committee in hematology recommends prophylactic platelet transfusion for platelet levels below 10,000/ μL in the absence of manifestations of bleeding, or massive systemic bleeding. In the case of the disease, platelet transfusion should be given in addition to red cell transfusion.³ Despite prophylactic platelet transfusion, some studies have shown clinical bleeding in patients with dengue infection due to a complex effect on the hemostatic system. The American College of Obstetrics and Gynaecology (ACOG) recommends platelet transfusion to increase maternal platelet by more than 50,000/ μL before major surgery; meanwhile, epidural and spinal anesthesia is considered acceptable with a platelet count of 70,000/ μL to lower the risk of epidural hematoma.⁴

There were many complications of dengue in pregnancy and the most commonly seen was severe oligohydramnios in about 29% of the cases.

PPH was reported in 9.6% of the cases. In three cases, PPH occurred 2–3 days after the normal vaginal delivery due to atonic uterus that was managed first by uterotonics followed by Bakri balloon or condom catheter kept for 48 hours when balloon tamponade was removed after 24 hours bleeding recurred. Bakri balloon acts by the application of pressure against the wall of the uterus that results in compression of the uterine blood vessels, thereby reducing blood flow. Condom balloon tamponade was highly effective in preventing PPH. Hung et al.⁴ state that the PPH has been detected in dengue patients. Platelet transfusions were also decided by each attending physician, and their decisions were based on the general conditions of the patients.

Thrombocytopenia is universally observed in dengue hemorrhagic fever. However, it is a poor indicator of the manifestation of bleeding. A platelet count of less than 30,000/ μL was observed in dengue shock syndrome, with an increased risk of bleeding. Coagulopathy describes a low fibrinogen level and a prolonged aPTT that is usually increased in pregnancy due to the condition of hypercoagulopathy. In all cases that appeared with bleeding manifestation, low fibrinogen and prolonged aPTT were observed. According to this study, there were 25 cases of thrombocytopenia without any unfavorable outcomes. There was one case of bleeding from abdominal drain after Cesarean delivery without any obstetric risk factors. There were two cases of hematoma in the stitch line. There were three cases of gapped episiotomy in cases of normal vaginal delivery. Other complications observed were preterm labor, placental abruption, and some cases of preeclampsia and eclampsia. There were seven cases in the first and second trimesters and two had missed abortions.

Most of the cases of dengue fever during pregnancy yielded favorable outcomes for mothers and newborns. Therefore, almost all of them can continue their pregnancy. Five cases of maternal mortality were observed in this study due to acute kidney injury and acute liver failure (multisystem failure). One case presented with 17-week gestation complaining of melena and epistaxis and thrombocytopenia and died due to cardiopulmonary arrest. Mortality in the other two cases occurs due to severe PPH and deranged coagulopathy.

Adverse fetal outcomes occur due to endothelial damage affecting the placental circulation. In our case study, majority of the neonates were healthy and discharged successfully. Although majority of the cases were of prematurity and fetal distress, meanwhile increasing the NICU admission rates. Neonates admitted to NICU were also discharged within one week with a good prognosis. Only one neonate was NS1 antigen positive on the 6th day of birth. A study from Tan et al.⁵ showed that the vertical transmission rate of dengue is 1.6%. Another study by Basurko et al.⁶ showed a high rate of vertical transmission, up to 5.6%. It is possible that the vertical transmission rate is dependent on the severity of maternal dengue. The rates of preterm birth, low birth weight, and stillbirth were 20, 5.0, and 5.0%, respectively. However, the surviving newborns were discharged. There were two cases of miscarriages in the first trimester, whereas in our previous study of 25 cases, 16% had abortion.⁷

Thirteen cases of intrauterine fetal death were seen. No fetal anomalies were reported in our study. No neonate required platelet transfusion, although routine screening of cord blood or serum was not performed due to financial constraints.

In addition, we recommended the recruitment of a population of larger sample sizes to determine the maternal and fetal outcomes of dengue fever in pregnancy.

CONCLUSION

Dengue hemorrhagic fever leads to adverse perinatal outcomes. Hemorrhage and reduced liquor are increased. More stringent vector control strategies are required to control the infection.

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