

**Original article:**

**FETOMATERNAL OUTCOME OF PREGNANCY WITH DENGUE INFECTION**

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**ABSTRACT**

**Background:** Dengue is a vector born viral infection. Dengue fever during pregnancy is associated with early pregnancy failure, preterm delivery, low birth weight babies, prematurity and occasionally neonatal mortalities. The aim of the study was to know the clinical profile, maternal and fetal outcome of dengue fever during pregnancy.

**Objective:** To study the impact of dengue fever on the natural course of pregnancy and labor as well as on neonates.

**Materials & Method:** A prospective study was carried out from the month of May to October 2018 (monsoon and post monsoon season) over a period of six months which has included all pregnant patients irrespective of period of gestation and who have been admitted with fever and features suggestive of dengue infection at tertiary care teaching hospital.

**Results:** Out of the 120 pregnant patients admitted with suspected dengue infection, 30 were diagnosed serologically with dengue. Fever with generalized myalgia was found in 73.3% patients and Thrombocytopenia was found in 42.3% patients. Fortunately no maternal mortality was there in present series, but 6.6% were still born and 16.6% of the babies required NICU admission due to prematurity and low birth weight.

**Conclusions:** Pregnancy with dengue infection is a great high risk factor for maternal and fetal wellbeing. Outcome is correlated not only with gestational age but also the severity of clinical manifestations due to viral load at the time of occurrence of dengue fever. With high index of suspicion, prompt diagnosis and management help to improve fetomaternal outcome.

**Keywords:** Dengue fever, Fetomaternal outcome, Tertiary care teaching hospital.

## **INTRODUCTION**

Dengue fever also known as break bone fever, is an acute mosquito-borne viral infections affecting wide range of populations that can lead to severe flu like illness with a significant socioeconomic and disease burden in India [1,2]. Increasing incidence of dengue fever in adults, also increases the incidence in pregnant women [3].

Classic Dengue Fever (DF) is defined by the World Health Organization as an acute febrile illness with two or more of the following signs or symptoms: headache, retro-orbital pain, myalgia, arthralgia, rash, leukopenia and hemorrhagic manifestations. The clinical severity of disease has a wide spectrum ranging from uncomplicated Dengue Fever (DF) to Dengue Hemorrhagic Fever (DHF) and devastating Dengue Shock Syndrome (DSS).

World Health Organization (WHO) defines DHF as:

- Fever or recent history of fever lasting 2-7 days.
- Any hemorrhagic manifestation.
- Thrombocytopenia (platelet count of  $<1,00,000/\text{mm}^3$ ).
- Evidence of increased vascular permeability [4].

Among dengue positive pregnant women, there are increased risk of bleeding tendencies, hemorrhagic manifestations, early pregnancy failure, oligohydramnios, preterm delivery, prematurity and low birth weight babies. The most common hemorrhagic manifestations are mild, and include a positive tourniquet test, skin hemorrhages (petechiae, hematomas), epistaxis (nose bleed), gingival bleeding (gum bleed) and microscopic hematuria. More serious types of hemorrhage include vaginal bleeding, hematemesis, melena and intracranial bleeding.

## **MATERIALS & METHOD**

This prospective study was carried out at the tertiary care teaching hospital during the month of May to October 2018 ( monsoon and post monsoon season). It includes all the pregnant women who had presented with clinical features suggestive of dengue fever were admitted and confirmed serologically irrespective of gestational age, parity and social status. Detailed history, examination and investigations were done at the time of diagnosis. Details regarding ICU admission, course of disease, duration of stay and need for platelet transfusion were noted. Strict maternal and fetal surveillance was done to identify any complications at an early stage and prompt intervention was done. Fetomaternal outcome was studied by following pregnant patient and babies up to six weeks postpartum.

## OBSERVATION AND DISCUSSION

In the present series, out of the 120 pregnant patients admitted with suspected dengue infections, 30 were confirmed serologically. Majority (80%) of which were booked cases and 20% were emergency cases. Age of patients ranged from 19-36 years, with mean age of 25 years corresponding to peak of reproductive age group which is similar to the study of Kanakalatha DH et al [7].

**Table No.1: Clinical presentation of Dengue in pregnancy:**

Symptomatology	Number of patients
Fever	30 (100%)
Generalized myalgia	22 (73.3%)
Headache	20 (66.6%)
Arthralgia	09 (30%)
Petechia	05 (16.6%)
Vaginal bleeding	03 (10%)
Respiratory distress	01 (03.3%)
Abdominal pain and vomiting	02 (06.6%)

Most common presenting symptom was fever (100%) with a temperature ranging between 99°F-104.1°F. In present series, apart from fever some patients have more than one symptoms. Generalized myalgia was present in 73.3% of patients followed by headache(66.6%), arthralgia(30%) and skin rash(16.6%) which is similar to the study of Gehlot H et al [5]. 10% of cases had postpartum hemorrhage which is similar to Basurko C et al study [6]. **Table No. 2: Gestational age at diagnosis of dengue fever:**

Gestational age(weeks)	Number of patients	Kanakalatha DH et al [7]
<12	01 (03.3%)	02.7%
12-20	02 (06.6%)	17.8%
20-28	02 (06.6%)	13.7%
28-34	07 (23.3%)	16.4%
34-37	08 (26.6%)	19.2%
>37	10 (33.3%)	30.1%

Above table reveals that 83.3% of patients were affected in third trimester, while only 16.6% of cases were affected in first or second trimester. Dengue fever in early and late pregnancy had bad prognosis.

**Table No. 3: Serological reporting of dengue cases:**

Biological test	Number of patients	Gehlot H et al [5]
Dengue NS1 positive	20 (66.6%)	72%
Dengue IgM positive	05 (16.6%)	16%

Only IgG positive	02 (06.6%)	12%
Both IgM & IgG positive	03 (10%)	-

Above table suggests that 66.6% of cases were Dengue NS1 Ag positive while 16.6% were IgM positive and only 06.6% were IgG positive. NS1 test detect non – structural protein NS1 of dengue virus in patient serum during acute phase of infection (0-7 days of symptoms). A negative NS1 test does not rule out infection; they should be further tested for the presence of IgM antibodies via IgM Antibody Capture Enzyme – Linked Immunosorbent Assay (MAC-ELISA) which appear approximately after five days of illness, followed by IgG which appears about 14 days post onset in primary infection. When IgG levels rises rapidly within 1-2 days of illness and IgM may not appear within 20 days of illness suggest secondary infections.

In our study, 10% of cases had raised aspartate aminotransferase and alanine aminotransferase levels ranging 2 to 7 times the normal level was also observed by Chanana C et al [8] mistakenly diagnosed as HELLP syndrome. However serology helped to clinch the diagnosis. **Table No. 4: Thrombocytopenia in present series:**

Platelet count/cubic mm	On admission	During delivery	Number of patients
<20,000	02 (06.6%)	00	00
20,000-50,000	03 (10%)	02 (06.6%)	02 (06.6%)
50,000-1,00,000	08 (26.6%)	04 (13.3%)	01 (03.3%)
1,00,000-1,50,000	12 (40%)	09 (30%)	00
>1,50,000	05 (16.6%)	15 (50%)	00

In the present series, 43.3% of cases were having thrombocytopenia and 10% of cases required platelet transfusion which is similar to the study of Kanakalatha DH et al [7]; suggesting of bone marrow hypoplasia or platelet consumption due to disseminated intravascular coagulopathy.

**Table No. 5: Obstetric outcome:**

Outcome	Number of patients	Gehlot H et al [5]
Early pregnancy failure	02 (06.6%)	00
Second trimester abortion	02 (06.6%)	4%
Preterm vaginal delivery	10 (33.3%)	32%
Term vaginal delivery	11 (36.6%)	36%
IUD vaginal delivery	01 (03.3%)	04%
Cesarean section	04 (13.3%)	08%

Above study reveals that 33.3% of cases had preterm delivery; 36.6% had term delivery and 13.3% underwent caesarian section due to fetal distress and meconium stained amniotic fluid in first stage of labor. Two (6.6%) mid trimester spontaneous abortions were observed in the present series which is coinciding with the study Carles et al [9]. Dengue fever in pregnancy promote spontaneous abortion and preterm birth by inducing placental inflammation and trophoblast

apoptosis, production of inflammatory cytokines and chemokines such as interleukin 6,8 and 18 resulting in heat shock protein interaction causing damage to placenta or fetus and stimulation of uterine contractions.[12,13].

In the present series, two cases of Dengue Hemorrhagic Fever in pregnancy were found among which one was referred from CHC with eclampsia at 34 weeks of gestation. Emergency LSCS was performed for meconium stained amniotic fluid in first stage of labor and fetal distress. Baby was admitted in NICU due to birth asphyxia and low birth weight (<2.5 kg). Similar case was seen in Tagore S et al study [10].

One case of Dengue Shock Syndrome in pregnancy was referred from PHC at 32 weeks of gestation was managed intensively with inotropic support and intravenous fluids in Obstetrics Intensive Care Unit. But unfortunately due to severe oligohydramnios; intrauterine fetal demise occurred which was delivered vaginally. Similar case was seen in Kanakalatha DH et al study [7].

**Table No. 6: Fetal outcome:**

<b>Fetal complications</b>	<b>Number of patients (N=16)</b>	<b>Kanakalatha DH et al [7]</b>
IUGR	02 (06.6%)	05.5%
Fetal distress (intrapartum)	04 (13.3%)	07.6%
Meconium stained amniotic fluid	08 (26.6%)	16.7%
Still births/fetal loss	02 (06.6%)	04.1%

Above table shows that 53.3% of cases had fetal complications like meconium stained amniotic fluid (26.6%), fetal distress (13.3%), IUGR (6.6%) and still birth (6.6%).

43.3% of cases had oligohydramnios which is an ominous sign seen with dengue fever in pregnancy; dehydration associated with hyperthermia might be the cause which is similar to study by Agrawal et al [11].

**Table No. 7: Neonatal outcomes:**

<b>Outcome</b>	<b>Number of patients</b>	<b>Gehlot H et al [5]</b>
Birth asphyxia	08 (26.6%)	
Prematurity	09 (30%)	28%
Low birth weight (<2.5 kg)	07 (23.3%)	16%
Neonatal thrombocytopenia	01 (03.3%)	04%
Neonatal ICU admissions	05 (16.6%)	08%

Above table shows that with dengue infection during pregnancy, neonatal outcome can be affected in the form of prematurity (30%), birth asphyxia (26.6%), low birth weight babies (23.3%) and neonatal thrombocytopenia (03.3%). Among which 16.6% of neonates required NICU admission. Prematurity and low birth weight babies were found in cases where birth has occurred in maternal fetal viremia period (interval between day 1 and labor ≤15 days) due to placental inflammation or vertical transmission of dengue virus [13].

The Center for Disease Control recommends that pregnant women should stay indoors during peak mosquito activity, wear protective clothing, and use insect repellent on clothing and sparingly on skin as an primordial prevention before acquiring disease.[14].

## CONCLUSION

Pregnant women acquiring dengue infections at any gestational age require close monitoring, early diagnosis of complications and prompt management to improve fetomaternal outcome. Maintaining normothermia and adequate hydration by encouraging intake of oral rehydration fluids, fruit juices and intravenous fluids should be the goal in management. Awareness programs and medical education sessions should be conducted during seasonal outbreaks as primordial prevention such as screen installation, avoidance of stagnant water, mosquito repellants, vector control and vaccination. Study for longer duration of time as well as involving multiple centers can reveal more facts and informations relating to fetomaternal outcome with dengue infection during pregnancy.

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