

ORIGINAL RESEARCH

Assessment of maternal and fetal complications of dengue fever in pregnancy

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ABSTRACT

Background: Dengue is the most prevalent mosquito-borne viral disease affecting humans. The present study was conducted to assess maternal and fetal complications of dengue fever in pregnancy.

Materials & Methods: 96 antenatal patients diagnosed with dengue fever clinically and serologically were included. Parameters such as parity, gestational age, symptoms at the time of diagnosis, platelet count and haematocrit at the time of diagnosis were recorded. Details regarding ICU admission need for transfusion and medical examination was recorded. Maternal and fetal complications were also recorded.

Results: Gestational age at diagnosis (weeks) <12 was seen among 5, 12-20 in 8, 20-28 in 14, 28-34 in 16, 34-37 in 20 and >37 in 33. Trimester I was seen in 7, II in 23 and III in 66. Platelet count <20000 was seen in 10, 21000-50000 in 22, 51000- 100000 in 20, 1 lakh- 1.5 lakh in 32 and >1.5 lakh in 12. Fetal complications were IUGR in 3, fetal malformation in 2, meconium- stained amniotic fluid in 8 and fetal distress in 5. Neonatal outcome was prematurity in 11, low birth weight in 34, ICU admission in 5 and vertical transmission in 6. The difference was significant ($P < 0.05$).

Conclusion: There were significant maternal and fetal outcome in pregnant women suffering from dengue fever. Hence, there is need to have close monitoring of complications.

Key words: Dengue, Fetal, maternal

INTRODUCTION

Dengue is the most prevalent mosquito-borne viral disease affecting humans. The causative agent is dengue virus (DENV; family Flaviviridae, genus Flavivirus), an Aedes transmitted virus that occurs as four serotypes. Dengue is endemic in most, if not all, tropical and subtropical countries and about half of the world's population is considered to be at risk. According to one recent estimate, DENV is responsible for 390 million infections worldwide each year.¹

DHF is currently defined by the following four World Health Organization (WHO) criteria: Fever or recent history of fever lasting 2-7 days.² Any hemorrhagic manifestation, thrombocytopenia (platelet count of $<100,000/\text{mm}^3$), evidence of increased vascular permeability. The most common hemorrhagic manifestations are mild, and include a positive

tourniquet test, skin haemorrhages (petechiae, hematomas), epistaxis (nose bleed), gingival bleeding (gum bleed), and microscopic haematuria. More serious types of hemorrhage include vaginal bleeding, hematemesis, melena, and intracranial bleeding.³

Dengue infection in pregnancy carries the risk of hemorrhage for both the mother and the new-born. Literature search reveals an increased incidence of pre-term deliveries, low birth weight, pre-eclampsia and caesarean sections.⁴ Vertical transmission has also been noted. A systematic review of pregnancy outcomes due to maternal dengue in 2016 described the complications of dengue in pregnancy, including increased rates of caesarean deliveries, pre-term births and low birth babies.⁵ The present study was conducted to assess maternal and fetal complications of dengue fever in pregnancy.

MATERIALS & METHODS

The present study comprised of 96 antenatal patients diagnosed with dengue fever clinically and serologically. Dengue IgM ELISA were used to confirm the diagnosis of Dengue fever. All were enrolled in the study with their written informed consent.

Demographic data such as name, age, gender etc. was recorded. Detailed history and examination were performed. Parameters such as parity, gestational age, symptoms at the time of diagnosis, platelet count and haematocrit at the time of diagnosis were recorded. Details regarding ICU admission need for transfusion and medical examination was recorded. Maternal and fetal complications were also recorded. Results thus obtained were subjected to statistically analyzed. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Parameters	Variables	Number	P value
Gestational age at Diagnosis (weeks)	<12	5	0.05
	12-20	8	
	20-28	14	
	28-34	16	
	34-37	20	
	>37	33	
Trimester	I	7	0.02
	II	23	
	III	66	
Platelet count	<20000	10	0.15
	21000-50000	22	
	51000- 100000	20	
	1 lakh- 1.5 lakh	32	
	>1.5 lakh	12	

Table I, graph I shows that gestational age at diagnosis (weeks) <12 was seen among 5, 12-20 in 8, 20-28 in 14, 28-34 in 16, 34-37 in 20 and >37 in 33. Trimester I was seen in 7, II in 23 and III in 66. Platelet count <20000 was seen in 10, 21000-50000 in 22, 51000- 100000 in 20, 1 lakh- 1.5 lakh in 32 and >1.5 lakh in 12. The difference was significant (P< 0.05).

Graph I Distribution of patients

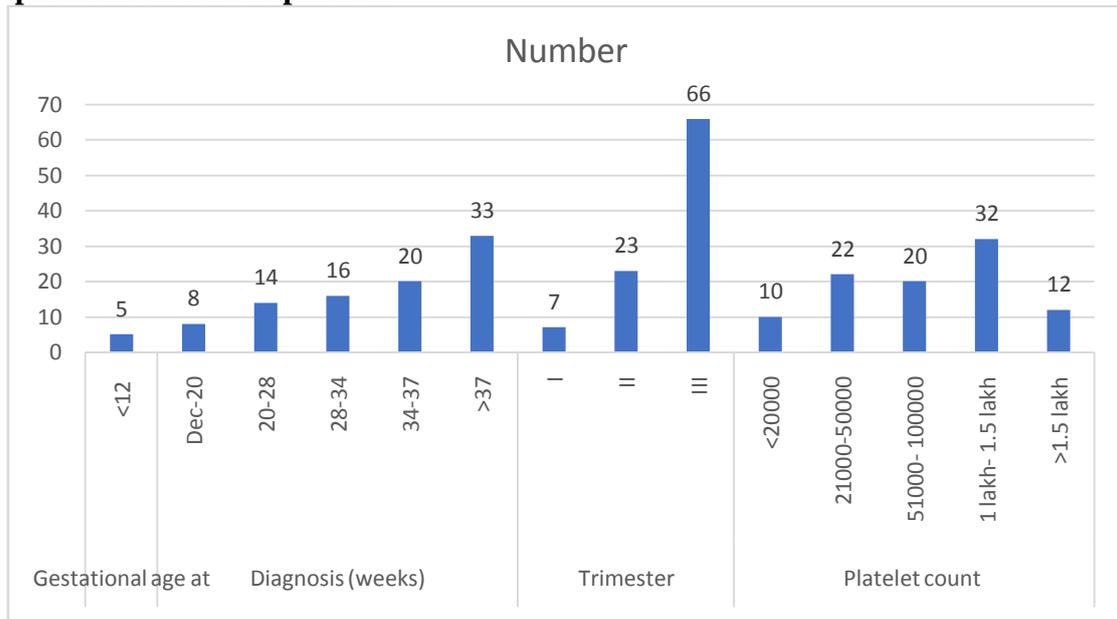


Table II Assessment of fetal complications

Fetal complications	Number	P value
IUGR	3	0.02
Fetal malformation	2	
Meconium- stained amniotic fluid	8	
Fetal distress	5	

Table II, graph II shows that fetal complications were IUGR in 3, fetal malformation in 2, meconium- stained amniotic fluid in 8 and fetal distress in 5. The difference was significant ($P < 0.05$).

Graph II Assessment of fetal complications

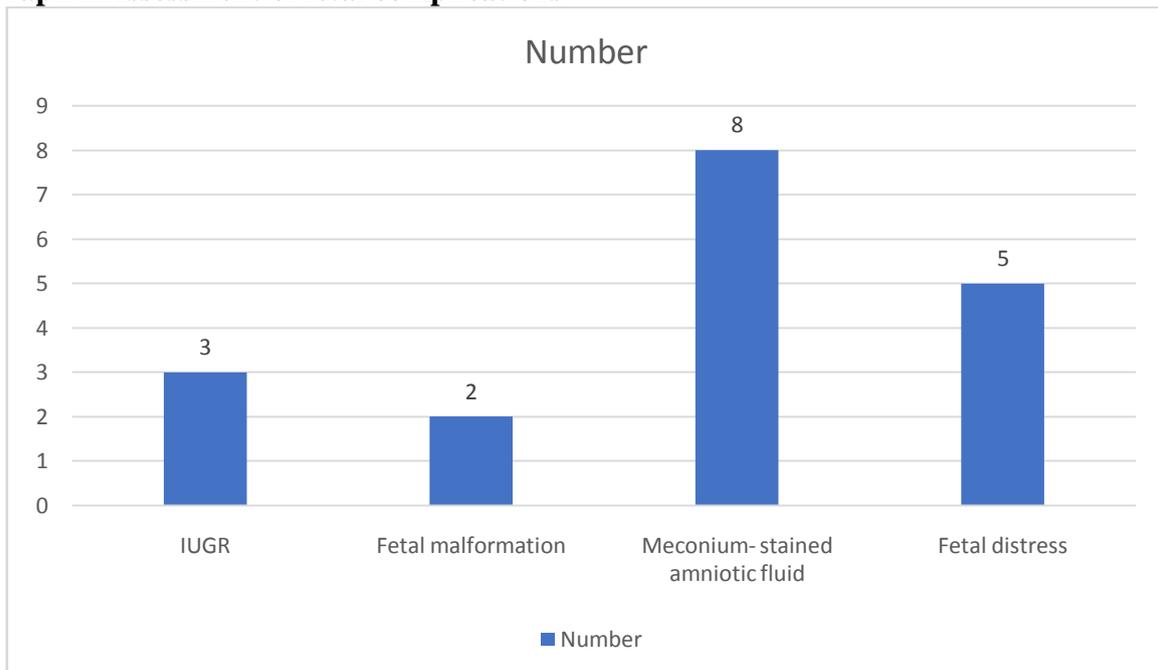


Table III Assessment of neonatal outcome

Neonatal outcome	Number	P value
Prematurity	11	0.01
Low birth weight	34	
ICU admission	5	
Vertical transmission	6	

Table II, graph II shows that neonatal outcome was prematurity in 11, low birth weight in 34, ICU admission in 5 and vertical transmission in 6. The difference was significant ($P < 0.05$).

DISCUSSION

Dengue fever a mosquito-borne febrile illness has rapidly emerged as the most common arboviral infection globally.⁶ It is caused by dengue virus, a single positive stranded RNA virus belonging to the family Flaviviridae. Dengue is transmitted by the bite of mosquito *Aedes aegypti* and *Aedes albopictus*.⁷ It is a major public health problem, especially in tropical and sub-tropical areas worldwide. According to the World Health Organization (WHO), approximately 40% of the world's population (over 2.5 billion people) live in areas with high risk of contracting dengue infection.⁸ The disease still has the potential to cause massive outbreaks in regions from where it has been previously eliminated, including areas of United States and Europe.⁹ The ability of the virus to cause explosive outbreaks has led public health professionals across the globe to step up their efforts to control this disease.^{10,11} The present study was conducted to assess maternal and fetal complications of dengue fever in pregnancy. In present study, gestational age at diagnosis (weeks) <12 was seen among 5, 12-20 in 8, 20-28 in 14, 28-34 in 16, 34-37 in 20 and >37 in 33. Trimester I was seen in 7, II in 23 and III in 66. Platelet count <20000 was seen in 10, 21000-50000 in 22, 51000- 100000 in 20, 1 lakh-1.5 lakh in 32 and >1.5 lakh in 12. Braret al¹² assessed maternal and fetal outcomes of pregnancies affected with dengue fever. 216 pregnant women with fever were screened. Of these, 44 women tested positive for dengue (non-structural protein antigen 1 or dengue IgM antibodies in the sera). The clinical and laboratory characteristics of women with dengue were recorded. Maternal outcomes, pregnancy outcomes and fetal outcomes were studied. Mean period of gestation was 31.89 ± 7.31 weeks. Thrombocytopenia was seen in 23 (52.3%) women. Of 40 women, 10 (25%) developed post-partum haemorrhage. The incidence of maternal systemic complications was high: eight (18.2%) women developed acute kidney injury and two (4.5%) required haemodialysis support; eight (18.2%) women developed ARDS and seven (15.9%) women required ventilatory support; four (9.1%) women developed acute liver failure. 18 (40.9%) women had evidence of shock. Seven (15.9%) women died and another seven (15.9%) were classified as WHO maternal near-miss cases. Two (4.5%) pregnancies suffered from miscarriages, four (9%) from still births and two (4.5%) from neonatal deaths. Preterm babies were delivered in 15 (34.1%) and low birth weight babies in 13 (29.5%).

We observed that fetal complications were IUGR in 3, fetal malformation in 2, meconium-stained amniotic fluid in 8 and fetal distress in 5. Neonatal outcome was prematurity in 11, low birth weight in 34, ICU admission in 5 and vertical transmission in 6. Kanakalatha et al¹³ assessed the clinical profile, maternal and fetal outcome of dengue fever during pregnancy. Patients were included irrespective of period of gestation of contracting the disease and were followed up till delivery and all babies were followed up to six weeks post-partum. Thrombocytopenia (<1.5L/mm³) was found in 86.3% patients, of which 2.7% patients had Platelet count below 20,000 cells/mm³ and 4.1% patients required platelet transfusion. Other complications observed were spontaneous abortions (5.5%); preterm birth (9.5%), oligohydramnios (8.2%) and antepartum hemorrhage (4.1%). Fetal distress and meconium-

stained amniotic fluid were observed in 7.6% and 16.7% patients respectively. Adverse fetal outcome observed were low birth weight (27.3%), prematurity (23%) and 28.7% of the babies required NICU admission.

CONCLUSION

Authors found that there were significant maternal and fetal outcome in pregnant women suffering from dengue fever. Hence, there is need to have close monitoring of complications.

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