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A Study of Maternofetal Outcome during Dengue Infection in Pregnancy

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Abstract

Background: Dengue is a vector borne viral disease. Female Anopheles mosquito is the vector for the disease. There is increased incidence of dengue infection in the adult population of South Asian countries. The outcome of dengue in pregnancy is similar to that in non pregnant woman. There is increased incidence of abortions, preterm births, IUGR babies, and bleeding manifestations like PPH, epistaxis. Timely intervention can improve the maternal and fetal outcome. This study aims to study the maternal and fetal outcome of dengue during pregnancy.

Methods: Pregnant women, admitted with fever during the seasonal outbreak of dengue, between August 2018 to October 2018 were studied in the department of Obstetrics & Gynecology, SHKBM, Jhalawar, Rajasthan. Serological testing for dengue virus specific antigen and antibody was done for the diagnosis of dengue fever. The World Health Organization (WHO) classification and case definitions 2009 were used to categorize the dengue patients. Maternal surveillance and fetal surveillance was done. Data was collected related to maternal and fetal consequence both during pregnancy and birth, as well as the effect on newborn. Informed and written consent was taken from all those who participated in the study.

Results: The mean age at admission was 22 years. Thrombocytopenia (<50,000/cu mm) in 4 women (7.84%). Blood product transfusion was required in 5 (9.8%) of women. 23 (45.09%) had oligohydramnios, 27 (52.94%) had bleeding manifestations, 7 (13.72%) were admitted in the ICU. Adverse fetal outcome was seen as, 9 (17.64%) babies were premature, 17 (21.56%) were admitted in NICU, and 1 (1.9%) had IUD.

Conclusion: Dengue fever is associated with increased materno fetal morbidity and mortality. Early detection and treatment are the mainstay to improve the prognosis of this viral infection.

Keywords: Dengue; ICU; Thrombocytopenia, Materno-fetal outcome.

Introduction

Dengue is a mosquito borne viral disease.The virus responsible for causing dengue, is called Dengue Virus (DENV). There are four DENV serotypes, meaning that it is possible to be infected four times.[1] The virusis of the genus Flavivirus, family Flaviviridae. It is transmitted to humans by the mosquito Aedesaegypti. There are an estimated 100–400 million infections each year.Maximum cases of dengue were reported in the year 2019.[1] Dengue remains a major health concern for South East Asian countries with cyclic epidemics. In India multiple viral serotypes are circulating and some regions have case fatality rate of 3–5% in general population, which is much greater than other South East regions.[2]

Dengue can be severe or non-severe. Nonsevere dengue illness often presents as flulike illness, with symptoms included high fever, severe headache,

pain behind the eyes, muscle and joint pains, nausea, vomiting, swollen glands, or rash. Severe dengue, including dengue hemorrhagic fever or dengue shock syndrome, is characterized by severe abdominal pain, persistent vomiting, rapid breathing, bleeding gums, fatigue, restlessness, and blood in vomit, and may be fatal due to plasma leakage, fluid accumulation, respiratory distress, severe bleeding, or organ impairment. Although there is no specific treatment for dengue, case fatality rates can be below 1% with proper case management.

Dengue poses a threat to pregnant women. In thepresent study, we have analyzed the impact of dengue on pregnancy, and the maternal and fetal outcomes.It is associated with maternal complications like oligohydramnios, preterm Labor, spontaneous abortions and various bleeding manifestations like PPH, epistaxis, etc.[3] The fetal complications are low birth weight, preterm birth, intrauterine fetal death, and vertical transmission which may lead to neonatal thrombocytopenia.[4–7]

Materials and Methods

The study was conducted in the department of Obstetrics & Gynecology of a tertiary level government hospital in Jhalawar, Rajasthan. Pregnant women, admitted with fever during the seasonal outbreak of dengue, between August 2018 to October 2018 were studied. As per protocol, dengue PCR (NS1 Ag) was done in all women. Out of 132 women with fever, 51 were dengue positive.

Clinical grading was done according to WHO classification and case definitions. An acute febrile illness with two or more clinical manifestations like headache, retro-orbital pain, myalgia, arthralgia, rash, hemorrhagic manifestation, or leukopenia and positive serology or occurence at a time of Dengue outbreak was taken as the definition of dengue Fever (DF). Dengue Hemorrhagic Fever (DHF) was classified as fever, hemorrhagic tendencies, thrombocytopenia, evidence of plasma leakage, association of hepatomegaly, and circulatory disturbances. Dengue Shock syndrome (DSS) was classified when DHF Symptoms included rapid and weak pulse, narrow pulse pressure of less than 20 mm Hg, and hypotension.[2]

Patients were managed with antipyretics, adequate hydration, and blood products transfusion as necessary. Strict maternal and fetal surveillance was done to identify complications early. Platelet counts were done two to three times, per day depending on clinical profile. Obstetric data, clinical laboratory parameters, and maternal and fetal outcomes were studied.

Results

In the present study, out of the 132 pregnant women admitted with fever, 51 were diagnosed serologically with dengue fever.

Table 1: Distribution According to Age Group.

Age (yrs)	No of patients
19–25	23
26–30	17
31–35	6
>35	5

As seen in Table 1, the age of the women ranged from 19 years to 41 years. Maximum women were in the age group between 19–25 years (45.09%).

Table 2: Distribution According to Booking Status.

	No of patients
Unbooked	32 (62.74%)
Booked	19 (37.25%)

According to Table 2, most of the patients were unbooked i.e. 32 (62.74%), rest of them were booked.

Table 3: Gestational Age at Diagnosis of Dengue.

Gestational Age(Weeks)	No. of Patients
<32	10 (19.60%)
32–37	13 (25.49%)
>37	28 (54.90%)

Table 3 shows the distribution of gestational age at which diagnosis of dengue was made. 54.90% of the cases were affected after 37 weeks of gestation, while 19.60% were affected at less than 32 weeks of gestation.

Table 4: Distribution According to Number of Platelets.

No of Platelets (per cu mm)	No of Patients
<50,000	4 (7.84%)
50,000–1 lakh	25 (49.01%)
>1 lakh	22 (43.13%)

As seen in Table 4, thrombocytopenia was seen in 7.84% of the patients. Maximum patients (43.13%) had platelet count of more than 1 lakh cu mm. 49.01% had platelet count between 50,000 to 1 lakh.

Table 5: Outcome of Pregnancy.

Outcome	No of patients
Term vaginal delivery	11 (21.56%)
Preterm Vaginal delivery	9 (17.64%)
LSCS	4 (7.84%)
Spontaneous Abortion	4 (7.84%)
IUD vaginal delivery	1 (1.9%)
Pregnancy continued	22 (43.13%)

Table 5 shows the outcome of pregnancy in dengue fever. 21.56% patients delivered at term, 17.64% delivered preterm, 7.84% had LSCS, 7.84% had spontaneous abortion, 1.9% had IUD vaginal delivery. Pregnancy continued in 43.13% of patients.

Table 6: Distribution According to Maternal Complications.

Complications	No of Patients (n = 51)
Oligohydramnios	23 (45.09%)
Bleeding manifestations	27 (52.94%)
DHF	11 (21.56%)
DSS	5 (9.80%)
ICU admissions	7 (13.72%)

Table 6 reveals the complications seen in the mother, bleeding manifestation in terms of PPH, epistaxis, was seen in 52.94% of patients. 45.09% had oligohydramnios, 21.56% had Dengue Haemorrhagic Fever (DHF), 9.80% has Dengue Shock Syndrome (DSS). 13.72% required ICU admissions.

Table 7: Distribution according to Neonatal Outcome.

Outcome	No. of Patients
Premature	9 (17.64%)
IUGR	10 (19.60%)
NICU admissions	17 (21.56%)
IUD	1 (1.9%)
Healthy	31 (60.78%)

Table 7, shows the neonatal outcome, 17.64% were born premature, 19.60% were IUGR, 21.56% were admitted in NICU. Remaining 60.78% were healthy.

Discussion

Dengue fever in pregnancy is a challenge for the treating obstetrician, as it's outcome in the fetus and the mother have not been widely studied. It is usually associated with mild flu-like illness, which resolves with adequate hydration, but sometimes the symptoms may progress to severe disease which increases both the morbidity and the mortality for the mother and the fetus. Its outbreak is common during the rainy season. It requires early diagnosis and adequate and prompt intervention.

In this study, majority of patients were unbooked (62.74%) and presented with the complain of fever, myalgia, headache, and rashes. Maximum patients were in the age group of 19-25 years (45.09%), with the mean age being 22 years. In a study conducted by Sharma S et al, all women were young, age ranging 22 to 32 years, mean age was 25 years.[8]

The gestational age at diagnosis in our study was beyond 37 weeks (54.90%) in maximum number of patients. In the study conducted by Gehlot. H et al., 80% patients were beyond 28 weeks of gestation at diagnosis.[9] Sharma. S et al. found that out of the 16 cases 13 presented in the third trimester and two in the second trimester.[8]

In the current study, 21.56% women had term vaginal delivery, 17.64% had preterm vaginal delivery, 7.84% had LSCS, 7.84% had spontaneous abortion. As per the study conducted by, Gehlot H et al., 36% had term vaginal delivery, 32% had preterm vaginal delivery, 8% had LSCS, and 4% had spontaneous abortion.[9] In the French Guiana study, preterm births were only 4%.[10]

In our study, 45.09% pregnancies were complicated by oligohydramnios compared to 52% rate of oligohydramnios from a study conducted by Agrawal et al in India.[3] In this study, bleeding manifestations were seen in 52.94% patients, 21.56% had DHF, and 9.80% had DSS. There were 13.72% ICU admissions. In the study conducted by Sharma S et al., bleeding manifestationswere seen in seven women and three (19%) had post partum hemorrhage. 8 women (50%) had DHF, and one was diagnosed as DSS.[8] In our study, transfusion of platelets was required in 5 women (9.8%) to maintain the platelets in the desired range, as compared to 10 women in the study conducted by Sharma S et al.[8]

In the current study, 21.56% babies were admitted in NICU. 17.61% were premature, 19.60% were IUGR. In the study conducted by Gehlot H et al., 8% babies were admitted in NICU, 28% were premature, 16% were born as low birth weight.[9] Symptomatic dengue infection during pregnancy may increase the chances of preterm birth.

Conclusion

The study focuses on the course of dengue during pregnancy. The presentations of dengue during

pregnancy is almost similar to that seen in non pregnant state. There is increased chances of oligohydramnios, preterm birth and spontaneous abortion. Bleeding manifestation is increased in the mothers in terms of PPH, and epistaxis which increases the maternal morbidity.

Pregnant women with dengue fever should be considered for admission as it has an unpredicatable course.

Early detection and prompt diagnosis decreases the fetomaternal morbidity and mortality.

Conservative treatment should be given unless there are complications.

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