



Effects of dengue infection on pregnancy outcome

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Abstract

Background: Dengue is a vector transmitted viral infection; tropical and subtropical countries see outbreaks of dengue each year. Dengue infection in pregnancy carries the risk of haemorrhage for both the mother and the new-born. The present study was undertaken to assess the impact of dengue infection on pregnancy outcomes.

Method: In this retrospective observational study, twenty pregnant women admitted during the seasonal outbreak of dengue were studied in the Department of Obstetrics and Gynecology, at Bhabha Hospital Bandra Mumbai during the period of June to September 2018.

Results: The mean age of the women was 27.2 ± 3.73 year and the average gestational age at presentation was 25.45 ± 9.40 weeks. Most common presenting symptom was fever followed by fever with myalgia. Out of 20 women 80% had dengue fever, 15% had dengue haemorrhagic fever (DHF) and 5% had dengue shock syndrome (DSS). Only 5% patient required platelet transfusion. There was 1 maternal death due to DSS. 4 patients delivered vaginally. We had no Perinatal and neonatal complications.

Conclusion: Dengue in pregnancy requires early diagnosis and treatment. A high index of clinical

suspicion is essential in any pregnant woman with fever during epidemic.

Keywords: Dengue, Haemorrhage, Pregnancy, Retrospective, Myalgia, Dengue Shock Syndrome

Introduction

Dengue is an acute mosquito-borne viral infection that places a significant socioeconomic and disease burden in India [1, 2]. 3.9 billion Peoples are at risk [3]. Accurate estimates are hampered by underreporting and misclassification; currently 390 million dengue infections per year are estimated to occur [4]. The classic dengue fever (DF) is defined by the World Health Organization as an acute febrile illness with two more of the following signs or symptoms: intense headache, retro-orbital pain, myalgia, arthralgia, rash, leucopenia, and a hemorrhagic manifestation [5]. A small proportion of infected persons develop dengue hemorrhagic fever (DHF), which is characterized by fever, thrombocytopenia, hemorrhagic manifestations, and increased vascular permeability with plasma leakage primarily into the pleural cavity and peritoneum [6]. The main clinical feature differentiating DF from DHF and dengue shock syndrome (DSS) is the increased vascular permeability, which, if unrecognized or

not judiciously treated may result in hypovolemic shock, organ impairment, and death [7].

The occurrence of dengue infection in pregnancy has been reported in the literature since 1948. But in recent year's women who are pregnant becoming infected with dengue has been heightened due to an increase in adolescent and adult infections [8, 9]. Currently, it is unclear if dengue infection in a pregnant woman results in serious health consequences for the mother or the child. Previous research has suggested higher proportions of preterm birth and low birth weight in infants born to mothers who had dengue during pregnancy [10-12].

There is a paucity of literature on effects of dengue infection on pregnancy outcome and this prompted us to undertake a study for better understanding of pregnancy implications with dengue infection.

Materials and Methods

It is a retrospective observational study carried out in Department of Obstetrics and Gynecology, at Bhabha Hospital Bandra Mumbai. Twenty pregnant women admitted during the seasonal outbreak of dengue were studied between the periods of June to September 2018. Inclusion criteria were pregnant patients of any gestational age fulfilling WHO diagnostic criteria for dengue infection for probable or confirmed dengue [13].

A detailed history and examination were performed with special regard to maternal age, parity, gestational age, symptoms at the time of diagnosis, platelet count and haematocrit at the time of diagnosis. Clinical parameters of all patients were recorded in individual proforma by the investigators. Details regarding need for transfusion and medical complications of dengue fever also were obtained and entered in the proforma. Patients were followed up till the end of their pregnancy for the final outcome including gestational age at delivery, mode of delivery, obstetric,

fetal and neonatal complications and maternal and infant mortality.

Observations and Results

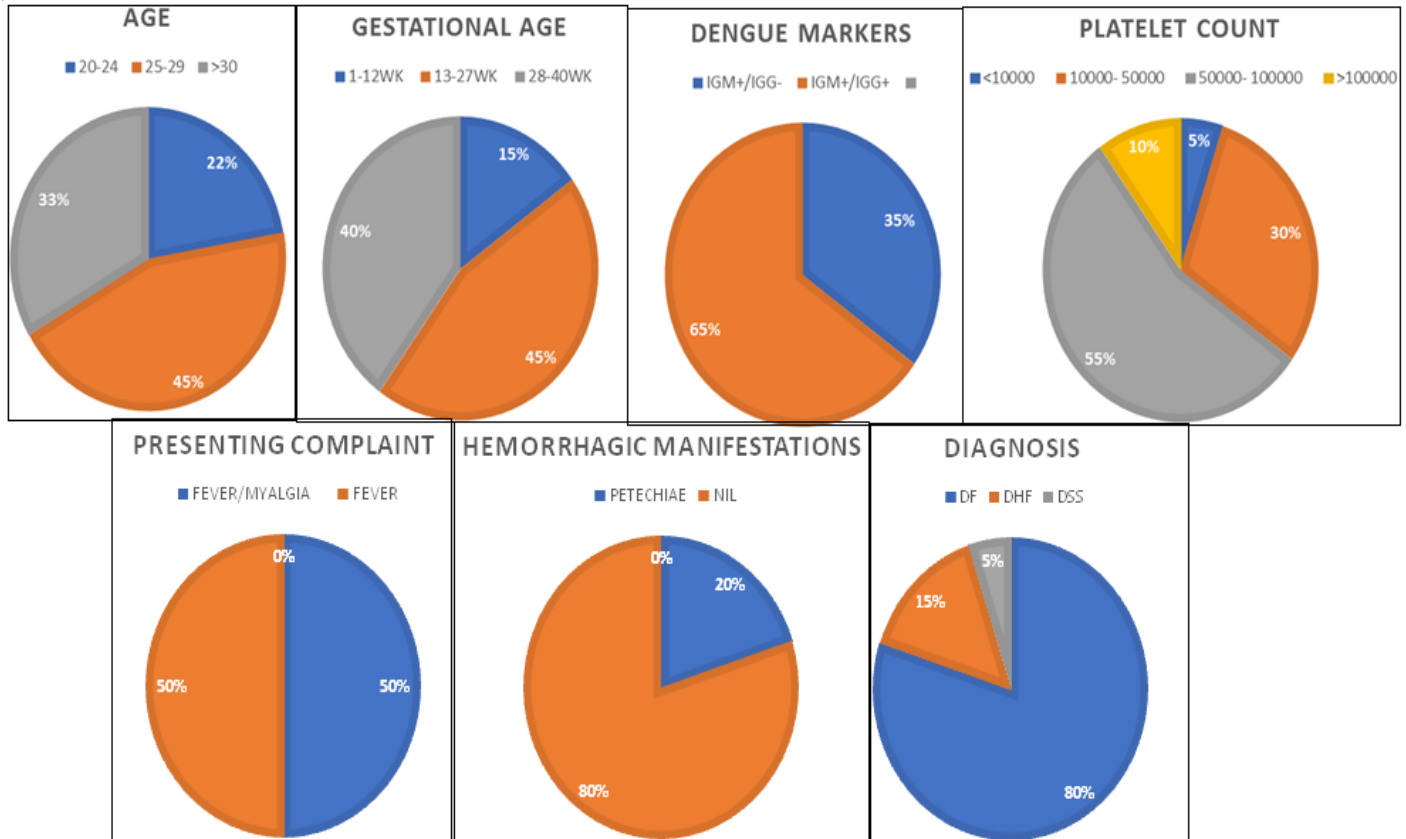
A total of 20 cases of pregnant women with dengue fever were identified during the period of three months. The mean age of the women was 27.2 ± 3.73 year, the youngest being 20 years and the oldest being 35 years. The average gestational age at presentation was 25.45 ± 9.40 weeks with the lowest being 8 week and the highest being 39 week. Age-wise incidence, gestational age at presentation, dengue markers, platelet count, presenting complaints, hemorrhagic manifestations and diagnosis are shown in table and figure 1.

Out of 20 women 80% had dengue fever, 15% had dengue haemorrhagic fever (DHF) and 5% had dengue shock syndrome (DSS). Only 5% patient required platelet transfusion. There was 1 maternal death due to DSS. 4 patients delivered vaginally and remaining 16 cases has continuing their pregnancy. All the babies (four babies) are normal. We had no perinatal and neonatal complications.

Table 1: Clinical Examination and Diagnosis of Dengue Infection in the Study Population

Age	Gestational Age (Weeks)	IgM/IgG	Platelet Count	Presenting Complaint	Haemorrhagic Manifestations	Clinical Diagnosis
22	39	+ve/-ve	30000	Fever/Myalgia	Petechiae	Dengue Hemorrhagic Fever
24	25	+ve/+ve	74000	Fever	No	Dengue Fever
20	23	+ve/-ve	70000	Fever/Myalgia	No	Dengue Fever
30	27	+ve/-ve	37000	Fever/Myalgia	No	Dengue Fever
28	39	+ve/-ve	5000	Fever/Myalgia	Petechiae	Dengue Shock Syndrome
23	8	+ve/-ve	61000	Fever	No	Dengue Fever
26	32	+ve/+ve	52000	Fever/Myalgia	No	Dengue Fever
23	18	+ve/-ve	32000	Fever/Myalgia	Petechiae	Dengue Hemorrhagic Fever
32	38	+ve/+ve	94000	Fever	No	Dengue Fever
25	12	+ve/+ve	45000	Fever/Myalgia	No	Dengue Fever
28	38	+ve/+ve	57000	Fever	No	Dengue Fever
25	20	+ve/-ve	95000	Fever	No	Dengue Fever
32	25	+ve/-ve	125000	Fever	No	Dengue Fever
28	12	+ve/-ve	62000	Fever/Myalgia	No	Dengue Fever
35	27	+ve/+ve	85000	Fever	No	Dengue Fever
27	35	+ve/+ve	42000	Fever/Myalgia	No	Dengue Fever
26	15	+ve/-ve	15000	Fever/Myalgia	Petechiae	Dengue Hemorrhagic Fever
29	30	+ve/-ve	68000	Fever	No	Dengue Fever
31	28	+ve/-ve	115000	Fever	No	Dengue Fever
30	18	+ve/-ve	84000	Fever	No	Dengue Fever

Figure 1: Clinical Examination and Diagnosis of Dengue Infection in the Study Population



Discussion

After swine flu, cases of dengue are showing a marked rise in Maharashtra. The latest report of the state health department has revealed that 1,151 people tested positive for dengue between August 1 and 21 in 2018, against 2,134 cases between January and July. However, the number of dengue cases in Maharashtra was 63% between January and October 2018 compared to the same period last year [14]. The majority of the cases were reported from Kolhapur, followed by Greater Mumbai, Nashik and Pune. The surge in cases has been recorded not just in the city areas, but interior parts of the state as well, [15].

Pregnant women are more likely to develop a severe form of the disease because their immune system is suppressed during pregnancy. If someone has contracted dengue during pregnancy, they should be rushed to hospital as soon as possible. The dengue fever in pregnancy creates anxiety amongst the treating obstetrician and also amongst

the patients and their relatives for the fear of bleeding tendencies. The outbreak of dengue is common during the monsoon and post monsoon season [16]. Studies on dengue in pregnancy from Maharashtra are very limited. The present study had 20 pregnant women who were diagnosed with dengue during at the time of outbreak of dengue. The age of patients ranged from 20-35 years which was similar to the study done by Gehlot et al [16]. The gestational age at presentation ranged from 8-39 week. The cases of dengue in pregnancy are on a rise due to the increasing incidence of dengue fever in adulthood. In present study also the incidence of dengue fever was more in cases having age ranged from 25-29 years. We found only 3/20 cases of infection during the first trimester of pregnancy. This was probably because few women consult before 15 weeks of gestation, as they are unaware of their pregnancy.

Dengue in pregnancy requires early diagnosis and treatment and it should be considered differential diagnosis of fever during epidemics [10]. A detailed history taking is helpful in diagnosis. The others hematologic signs, such as thrombocytopenia and atypical lymphocytosis, similarly detected in this case are also helpful for the diagnosis [17]. Serologic test is used to confirm the diagnosis and detect the specific serotype. Serologic diagnosis depends on the presence of IgM antibody or a rise in IgG antibody titer in paired acute and convalescent phase serum [18]. In present study, 65% of cases have positive IgM/IgG tests while 35% cases have IgM positive /IgG negative tests for dengue antibodies. Only one patient (5%) having platelet count < 10,000/cumm and had received platelet transfusion. 30% of patients having platelet count in between 10,000-50,000/cumm whereas majority of patients (55%) were having the platelet count in the range of 50,000-100,000/cumm and 10% having platelet count >100,000/cumm. Thus, out of the 20 diagnosed patients only 5 required platelet transfusions, rest were managed conservatively.

The clinical features of dengue virus infection in the 20 pregnant women were similar to those of the general population [19]. A 'Dengue-like' syndrome, with fever, headache and myalgia, was observed in the majority of infected pregnant women, as in our study, 50% of cases presented with fever and 50% with fever with generalized myalgia. Severe symptoms like hepatic cytolysis or severe thrombocytopenia were reported without dengue haemorrhagic fever (DHF), [20-22]. However, the physiological changes that occur during pregnancy such as haemodilution or ability to coagulate may mask thrombocytopenia, leucopenia, or a hematocrit increase. In addition, hepatic and haematological problems can also be observed with other obstetric complications such as

morning sickness or HELLP syndrome, which may result in an underestimate of dengue [20-22]. The main obstetric consequences of infection were an increase in premature births and an increased risk of preterm labour but in our study we did not observed such type of consequences.

Management of dengue in pregnancy is similar to dengue management in others. If patients diagnosed with dengue, they will treat based on symptoms and severity of illness. There is no specific vaccine or antiviral treatment currently available for dengue. The main form of treatment is to suppress the symptoms. Symptoms can usually be managed by taking paracetamol which is considered to be safe during pregnancy. Drinking plenty of fluids and resting can also help. Pregnant women may need to be monitored closely by their doctors. People with severe dengue need to be treated in hospital and given fluids via a drip to prevent dehydration and stabilise blood pressure [23].

However, dengue fever is typically a self-limited disease with a mortality rate of less than 1% when detected early and with access to proper medical care. When treated, severe dengue has a mortality rate of 2%-5%, but when left untreated, the mortality rate is as high as 20%, [24]. In present study, there was one maternal death due to DSS. Regarding the effect of DF and DHF in pregnancy, it hardly caused any infant abnormality, but DHF might be responsible for fetal death [25]. Fortunately, in our study, all the babies (4 babies) appeared normal. We had no perinatal and neonatal complications.

Impact of dengue on pregnancy [26]

- Adverse pregnancy outcome: It is still uncertain whether dengue is a significant factor for adverse pregnancy outcomes such as preterm birth, low-birth weight and caesarean deliveries
- Significant impact of dengue at parturition: Severe bleeding may complicate delivery and/or surgical

procedures performed on pregnant patients with dengue during the critical phase, i.e. the period coinciding with marked thrombocytopenia with or without plasma leak.

Conclusion

Dengue in pregnancy requires early diagnosis and treatment. A high index of clinical suspicion is essential in any pregnant woman with fever during epidemic. The dengue fever led to privileged maternal and perinatal outcomes in our setting. The present study suggested that the preventive measures against dengue should be employed in the region, and more research on dengue during pregnancy is needed.

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