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Maternal and fetal outcome of dengue fever in pregnancy

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ABSTRACT

Background & objectives: As adult dengue fever increases it also affects women with pregnancy. Dengue fever is mainly treated conservatively. However, complications like pre-eclampsia, pre-term labour, increased risk of caesarean section and fetal transmission have been noted. During dengue epidemic in our region we noted many women with dengue fever and observed certain different problems.

Methods: A retrospective analysis of all pregnant women admitted in obstetric ward with dengue fever over a period of 18 months was done.

Results: The striking feature observed was the presence of severe thrombocytopenia in 78.57% of the study population. In addition, coexistence of other vector borne diseases was also noted.

Conclusion: Most cases only require conservative treatment. Only women who went into labour required platelet transfusion. Outcome seemed to correlate with gestational age of occurrence of dengue fever.

Key words Co-infection; dengue fever; fetal myocardial calcification; severe thrombocytopenia

INTRODUCTION

Dengue fever is a viral disease spread by *Aedes aegypti* (Diptera : Culicidae) mosquito. It is more common in children but with increasing rate of adult dengue fever victims, the number of infected pregnant women has also increased. In most of the cases of dengue fever in pregnancy, no serious harm has been noted. Treatment includes proper hydration, antipyretics and careful monitoring[1]. Only case reports and case series have been reported and there is no sufficient data regarding effects on pregnancy with dengue fever[2]. Literature search reveals an increased incidence of pre-term deliveries, low birth weight, pre-eclampsia and caesarean sections. Vertical transmission was also noted. During the dengue epidemic in our region, we came across many pregnant women with dengue fever and found certain features not mentioned in other studies. With this background, we analysed pregnant women with dengue fever who were admitted in the obstetric ward and determined the adverse effects of fever on pregnancy and the fetal outcome.

MATERIAL & METHODS

A retrospective analysis of all the pregnant women with dengue fever was done from January 2009 to June 2010 at P.S.G. Institute of Medical Sciences and Research & Hospitals, Peelamedu, Coimbatore, India. Analysis was done with respect to age of patient, gestational age of pregnancy, complications at presentation, laboratory diagnosis, platelet counts and treatment offered. Outcome of pregnancy like abortion, pre-term delivery and term delivery were noted. Birth weight and condition of fetus at birth were noted. Maternal mortality and morbidity were also noted. Laboratory diagnosis was done by using Pankio Dengue IgM & IgG capture Elisa. A positive result of IgM antibodies >11 Pankio units was indicative of either an active primary or secondary dengue infection. A positive result of >22 Pankio units of IgG antibodies was indicative of active secondary infection. The sensitivity and specificity of the test were 94 and 100% respectively.

RESULTS

A total of 2738 deliveries occurred during this period. A total of 14 cases of pregnant women with dengue fever were identified. Age-wise incidence, gestational age at presentation, platelet count and transfusion received, mode of deliveries, and associated complications are shown in Tables 1–5 respectively.

Fetal complications

Average birth weight was 2.4 kg. There was no evidence of dengue in the neonates. Associated complications are shown in Table 5.

DISCUSSION

Fever with thrombocytopenia during pregnancy causes

Table 1. Age-wise incidence

Age of the patient (yr)	No. of pregnant women
< 20	1
20–24	4
25–29	6
>30	3

Table 2. Gestational age at presentation

Gestational age at which dengue fever occurred (wk)	No. of pregnant women
<13	1
13–27	6
28–36	6
>36	1

Table 3. Platelet count and transfusion received

Platelet count on admission (cell/mm^3)	No. of pregnant women	No. of patients who received transfusions	Platelet transfusions
< 10,000	2	2	20 & 22 units respectively
10,000–25,000	5	3	4–5 units
25,000–50,000	4	2	4–5 units
50,000–1,00,000	3	–	–

Table 4. Mode of delivery

Mode of delivery	No. of women
Lost for follow-up	2
Spontaneous abortion	1
Medical termination of pregnancy	1
Pre-term normal delivery	1
Pre-term caesarean section	1
Term vaginal delivery	5
Caesarean section	3

Table 5. Associated complications of dengue in pregnancy

Complications	No. of cases
Disseminated intravascular coagulation (DIC)	1
Pregnancy induced hypertension (PIH)	3
Dengue haemorrhagic fever	3
Dengue with malaria	1
Post-operative respiratory stridor	1

panic among the practising obstetricians. The main fear is the occurrence of dengue haemorrhagic shock or profuse bleeding. Of the 14 women with dengue fever in pregnancy, primary dengue was seen in only one individual where both IgG and IgM were initially negative and paired sera testing taken after two weeks found to be positive and secondary dengue was found in the remaining 13 cases. Hyperendemic areas are associated with increased probability of secondary infection and occurrence of virulent strains[3].

The presentation was mostly fever with myalgia. Abdominal pain and vomiting were seen in a few cases. Three women presented with bleeding tendencies. The mean age of women was 26.07 ± 4.38 yr, the youngest being 19 yr and the oldest being 35 yr. The mean gestational age at presentation was 23.2 ± 8.48 wk with the lowest being 8 wk and the highest being 38 wk.

The gestational age at presentation of dengue fever appeared to be significant. Early onset or late onset in pregnancy appeared to have a bad prognosis. Two women presented in early pregnancy, one at eight weeks who had a spontaneous abortion one week later and the other women presenting at 18 wk of gestation. This woman was diagnosed to have malaria with *Plasmodium vivax* infection and coincident dengue fever. In hyperendemic areas, dengue with malaria may coexist as reported in certain studies[4]. She had prolonged fever for 3 wk. An anomaly scan at 20 wk of gestation showed extensive multiple myocardial calcifications and medical termination of pregnancy was done. Autopsy of the fetus revealed myocardial infarction. Congenital anomaly noted in this case was probably due to the high fever causing hypoxic ischemia. Very few cases of antenatal myocardial calcification in the fetus have been noted in literature. TORCH infection, hypoxia, chromosomal abnormalities have been described as etiological factors[5].

The number of women who presented beyond 31 wk were 6 out of 14. Three of them had evidence of pregnancy induced hypertension (PIH) and presented with bleeding tendencies. One was referred as bleeding gums with epistaxis, another was referred as bleeding from IV line and the third was referred as malena.

One woman with 38 wk of gestation with previous lower segment caesarean section (LSCS) with bleeding from IV site was referred with platelet count of 20,000 cells/mm^3. After stabilization a repeat caesarean section was done. Immediately following caesarean section, the patient developed respiratory stridor and was on post-operative ventilation for 24 h. Patient recovered uneventfully.

The other women had a twin gestation at 31 wk of

pregnancy who had PIH with evidence of elevated blood pressure (BP), proteinuria and low platelets of 7,000 cells/mm^3 and normal liver enzymes. Other coagulation parameters were normal. She had a pre-term vaginal delivery and delivered a twin of 1.3 & 1.2 kg, respectively. As the patient went into labour, platelet transfusion was done. Severe thrombocytopenia seen here could have been a manifestation of dengue fever with superadded PIH. This patient did not fit into the criteria of HELLP syndrome.

The third woman presented with haematuria at 33 wk of gestation and a platelet count of 33,000 cells/mm^3 and Hb 5.3 g/dl. She was diagnosed as partial HELLP. LSCS was done in view of HELLP. In spite of adequate transfusion, she took 1 wk to stabilize and required 22 units of platelets and seven packed cells.

One patient was referred at 35 wk 3 days of gestation with fever and bleeding gums and in labour. She had a normal vaginal delivery. She had a platelet count of 9,000 cells/mm^3 and evidence of disseminated intravascular coagulation (DIC). Prothrombin time (PT) & activated partial thromboplastin time (APTT) were prolonged and she had a low fibrinogen <100 mg/mm^3. She totally received 20 units of platelets, 14 units of fresh frozen plasma (FFP), 4 units of cryoprecipitate and 5 units of blood transfusion pre- and post-delivery.

Haemorrhagic complications like primary pulmonary hypertension (PPH) and abruption have been described in studies. There has been one case of severe pre-eclampsia with dengue haemorrhagic fever (DHF) requiring 26 units of platelets and another 19-yr old women who also had DHF requiring 10 units of platelets before delivery[6,7]. No study mentioned platelet counts. In our study, there were two pregnant women who received massive transfusion of platelets.

All the women seen in second trimester and two seen after 31 wk of gestation had an uneventful course. Those were treated conservatively and discharged. The striking feature among most of these women was severe thrombocytopenia (platelet count of <50,000 cell/mm^3) which was seen in 11 out of 14 women of which two women had platelet counts <10,000 cell/mm^3. The fall in platelet count was rapid and progressive initially. Platelet transfusion was done only if the mother went into labour or had any bleeding tendencies or if she was posted for caesarean section. The minimum platelet count required in such conditions was 50,000 cells/mm^3.

The DHF was seen in three individuals, however, there was no case of dengue shock syndrome (DSS). DHF was diagnosed when they had fever with ultrasound evidence of pleural effusion, ascites and gall bladder thickening.

Low birth weight[8] and pre-term deliveries[9] have been noted in various studies. The average birth weight in our babies was 2.44 kg and eight women delivered at or beyond 36 wk of gestation. We found that mothers who had dengue fever in the first half of pregnancy had average weight babies. However, if the fever occurred beyond 34 wk, the birth weight was above average. Numbers were too small to be of any statistical significance.

The average incubation period of dengue fever is estimated to be about 7 days. Dengue infection in the neonate has been reported in many studies[10,11]. All babies were asymptomatic at birth except one who had fever and was found to be dengue negative. Dengue serology was not performed on normal babies and hence no comment could be made on vertical transmission. However, studies conducted in India, Thailand and Colombia failed to find evidence of vertical transmission among their study subjects[12].

Ismail *et al*[13] states a maternal mortality of 2.6%. Although morbidity like DIC, PIH, respiratory stridor and prolonged fever were noted in our study, there was no maternal death.

CONCLUSION

Dengue fever in pregnancy most often is treated conservatively. Platelet count may fall rapidly but no active intervention required unless patient is in labour or has bleeding disorder. Gestational age of occurrence of dengue fever seems to have a role—early or late in pregnancy had a poor prognosis. Severe thrombocytopenia requiring prompt resuscitation with blood and blood products prior to and during delivery, and was a key point in successful outcome of individuals having platelet count <20,000 cells/mm^3.

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