



STUDY OF MATERNAL AND FETAL OUTCOME OF DENGUE FEVER IN PREGNANCY

Gynecology

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ABSTRACT

Dengue infection, caused by mosquito *Aedes Aegyptii*, in pregnancy carries the risk of haemorrhage for both the mother and the new-born. In addition, there is a risk of premature birth and fetal death and vertical transmission causing neonatal thrombocytopenia that necessitates platelet transfusion.

Aim: The aim of our study was to find out the maternal and perinatal outcome in patients with dengue fever in pregnancy.

Objectives: The study was carried out in patients with dengue fever in pregnancy to assess:

1. The clinical presentation and pregnancy outcome.
2. Complications causing maternal and perinatal morbidity.
3. Maternal and perinatal mortality rate.

Study Design and Methodology: This was a retrospective study over 2 years from May 2015 to April 2017 regarding the various presentations of Dengue fever in pregnancy.

Data analysis was done with respect to the clinical presentation, maternal and foetal complications and maternal and foetal outcome of pregnancy.

KEYWORDS

Dengue fever, Thrombocytopenia, Haemorrhage, Pregnancy

Introduction

Dengue infection is caused by mosquito *Aedes Aegyptii* which acts as the vector for the virus of class *Flaviviridae*. The dengue virus comprises four distinct serotypes¹ (DEN 1-4) and DEN-3 is frequently associated with severe disease². There is an increasing incidence of dengue in adult population in South Asian, South-East Asian and Latin American countries in recent years^{3,4}. As the incidence of dengue in adults⁵ increases, the incidence in pregnant women also increases⁵. It classically occurs as an acute febrile illness which can be accompanied by other clinical features such as generalised severe grade body ache, headache more often retro-orbital, myalgia, joint ache, purpuric erythematous rash over the body as well as gastrointestinal disturbances like nausea, vomiting, diarrhoea and abdominal pain. Majority of dengue patients have a mild self-limiting illness and a few progress to a severe disease¹. There are 2 variants and more severe form of this dengue fever which are called as the Dengue haemorrhagic fever (DHF) and the Dengue shock syndrome (DSS). DHF includes fever, haemorrhagic manifestations, and varying degrees of thrombocytopenia and evidence of plasma leakage seen as hemoconcentration, pleural effusion, ascites and hypoproteinaemia. Hepatomegaly and peripheral circulatory shock may also be seen. When DHF symptoms include low volume pulse, tachycardia, a narrow pulse pressure of less than 20 mmHg along with hypotension it is termed as DSS. These clinical features may confuse the physician as well as the obstetrician to make a diagnosis of HELLP syndrome (hemolysis, elevated liver enzyme and low platelets counts) however, the endemicity of dengue fever can help reach a diagnosis. Dengue poses a significant threat to pregnant women. In our study we have analysed the maternal and fetal outcomes in the course of pregnancy.

Materials and Methods

The study was conducted as per the applicable national guidelines (ICMR 2006) respecting the elements of research involving human participation which include respect for individual, beneficence and justice. This was a retrospective study from May 2015 to April 2017 regarding the various presentations of Dengue fever in pregnancy. Patients who had tested positive for Dengue NS1 or IgG or IgM over a course of 2 years were selected for this study and analysed for their clinical manifestations, associated complications, gestational age at time of diagnosis, trend of thrombocytopenia, maternal and foetal complications and maternal and foetal outcome of pregnancy.

Results

There were a total of 14 cases of dengue fever in antenatal women during the period from May 2015 up to April 2017 in our tertiary care institute. These patients had either dengue NS1 antigen positive or the presence of IgM or IgG antibodies in their serum. Their obstetric

details, clinical features, associated high risk factors and the maternal as well as the fetal outcomes were analysed in our study keeping in mind the increasing incidence of dengue fever in developing nations like India.

All of these 14 patients had initially presented to the out-patient department or the emergency ward with chief complaints of an acute febrile illness associated with a severe generalised body ache in half of them. 6 patients also had a characteristic headache with retro-orbital radiation. 35 % patients⁵ also presented with a diffuse erythematous rash over the body. 4 of them had gastrointestinal symptoms like nausea, abdominal pain (not associated with labour pains), diarrhoea and vomiting.

Table 1- Clinical manifestations

Clinical Manifestations	Patients	Percentage
Fever	14	100
Generalised body ache	7	50
Headache	6	42.8
Skin rashes	5	35.7
Gastrointestinal disturbances	4	28.5

Of all the 14 patients, 4 were anaemic with haemoglobin less than 10gm%. All the 4 patients required blood transfusion. When the laboratory investigations of all patients were analysed they revealed an interesting pattern in the platelet count. Maximum of the patients³ had just a mild degree of thrombocytopenia with platelet counts in the range of 50,000 to 100,000/mm³. While on one hand, 1 patient had a platelet count of 160,000/mm³, there was another with a severe thrombocytopenia whose platelet count dipped to as low as 17,000/mm³. The remaining 3 patients had platelet counts ranging between 20,000 to 50,000/mm³. 6 patients required platelet transfusion (42.9%).

Table 2- Haemoglobin levels

Haemoglobin level	No. of Patients (%)	Blood transfusion
>10gm%	10 (72.5%)	Not required
8-10gm%	4 (28.5%)	Given blood transfusion
<8gm%	None	

Table 3- Platelet count

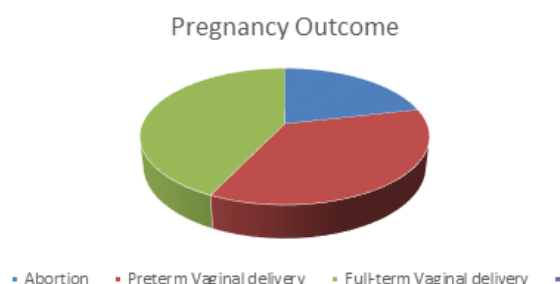
Platelet count	No. of Patients (%)	Platelet transfusion
>1,00,000/cmm	1 (7.1%)	Not required
50,000-1,00,000/cmm	9 (64.3%)	2 required platelet transfusion
20,000-50,000/cmm	3 (21.4%)	3 required platelet transfusion
<20,000/cmm	1 (7.1%)	1 required platelet transfusion

2 patients who were also diagnosed as cases of pre-eclampsia were found to have moderately deranged liver enzymes with SGOT and SGPT of 349 and 295 IU/ml respectively, without a primary hepatic pathology. One of the patients had severely deranged renal function with serum creatinine spiking to as high as 2.7mg/dl which eventually dropped to 1.2mg/dl as the fever subsided. Another patient was diagnosed with dengue myocarditis with a normal ejection fraction and structurally normal valves.

Considering the gestational age, 3 out of the 14 patients were in the 1st trimester, 3 were in the 2nd trimester and the remaining 8 in the last trimester of pregnancy.

All the 3 patients in the 1st trimester had spontaneous abortion, 2 of whom required check curettage in view of incomplete abortion. Although 5 patients had preterm vaginal delivery, the remaining 6 patients had full term vaginal delivery. None of the patients required caesarean section. Patients with platelet counts of 50,000/mm³ can safely undergo a normal vaginal delivery, however a minimum count of 75,000/mm³ is required to take up a patient for Caesarean section.

Figure 1- Pie Chart depicting the pregnancy outcome

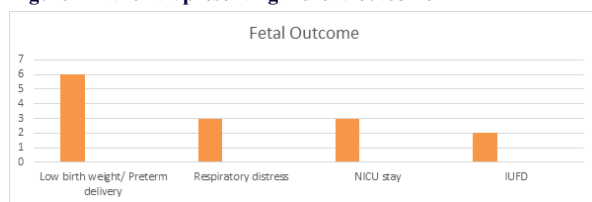


As we analysed the fetal outcome in pregnancies affected by dengue fever, there were 3 babies who were full term, with a good Apgar score and required no specific treatment. Out of the 3 remaining full term deliveries, 2 turned out to be full term still births and 1 of the full term delivered baby had a component of superimposed IUGR, with a birth weight less than 2kg. Out of the 5 preterm vaginally delivered babies, 3 developed respiratory distress and needed resuscitation. In all, 6 babies had to be shifted to the NICU for observation and management (5 of the preterm and 1 full term with IUGR).

Table 4- Fetal outcome

Fetal outcome	Full term	Preterm	Total
Live births	4 (36.4%)	5 (45.5%)	9 (81.8%)
Still births	2 (18.1%)	0	2 (18.1%)
Shifted to NICU	1 (9%)	5 (45.5%)	6 (54.5%)

Figure 2- Bar chart presenting the fetal outcome



Discussion

Dengue infection in pregnancy has an imminent risk of haemorrhage which can occur in the mother as well as her new-born. Premature birth, foetal death and vertical transmission causing neonatal thrombocytopenia are other risks associated with dengue fever which might necessitate platelet transfusions.⁵⁻⁷ Decisions about the mode of delivery because of the potential risk of haemorrhage secondary to thrombocytopenia largely affect the mode of delivery in these patients. Deranged liver enzymes, haemolysis and thrombocytopenia can create an impression of HELLP syndrome, which is common in pre-eclampsia and eclampsia.

For the confirmatory diagnosis of dengue infections viral PCR studies are used. In view of the associated complications, antenatal women need to get admitted, early diagnosis has to be made and conservative treatment which includes proper hydration, antipyretics and careful

monitoring has to be instituted. Pregnant women with fever during epidemics in endemic areas should be evaluated for dengue fever and the atypical presentations kept in mind which may be confused with the physiological changes of pregnancy. There can be a quick fall in the platelet count but no active intervention is required unless patient is in labour or presents with bleeding manifestations. Dengue fever early or late in pregnancy has a poor prognosis. Severe thrombocytopenia which may occur requires prompt management with transfusion of blood and/or blood products prior to and during delivery.

The bi-regional dengue strategy (2008-2015) has been implemented by the WHO South-East Asia and Western Pacific regions for dengue prevention and control. It consists of six elements: dengue surveillance, case management, outbreak response, integrated vector management, social mobilization and communication for dengue and dengue research (a combination of both formative and operational research)⁸.

Conclusion

Dengue fever in antenatal women creates anxiety among the obstetricians with regard to the bleeding tendencies. Also it leads to panic among the patient and her relatives. The peak season for the outbreak of dengue fever is the monsoon and post monsoon season^{3,9}.

This study highlights the clinical pattern and the natural course of dengue in pregnancy. The clinical presentation of dengue in pregnancy is almost similar to dengue in non-pregnant adults. There is increased association of dengue with preterm delivery and low birth weight. The main modality of treatment of dengue in pregnancy is mainly conservative by maintaining intravenous hydration as in non-pregnant adults. Patients might require platelet transfusions occasionally.

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