

Dengue in Pregnancy

Authors

Neelakandan Ramya¹, Sethu Prabhu Shankar²

¹Associate Professor, Department of General Medicine, Aarupadai Veedu Medical College & Hospital,
Pondicherry, India

²Professor, Department of General Medicine Aarupadai Veedu Medical College & Hospital,
Pondicherry, India

Corresponding Author

Dr. Neelakandan Ramya

Associate Professor, Department of General Medicine, Aarupadai Veedu Medical College & Hospital,
Pondicherry, India

Email: dr.ramyamd@yahoo.com

ABSTRACT

Background: *Dengue is the most rapidly spreading mosquito borne viral disease in the world. There is an increase in incidence of dengue in adult population in South Asian countries in recent years.*

Objective: *To study the pattern of dengue in pregnancy and the impact of dengue on the natural course of pregnancy.*

Materials & Methods: *All pregnant patients admitted with fever and features suggestive of dengue infection were included in the study. The demographic data, clinical features, hematological and biochemical parameters were collected. Serological testing for dengue virus specific antigen and antibody was done for the diagnosis of dengue fever. The World Health Organization classification and case definitions 2009 was used to categorize the dengue patients. The variable pattern of the disease and the effect of dengue infection on the natural course and outcome of pregnancy and labour was studied.*

Results: *Of the 49 pregnant patients admitted with suspected dengue infection, 16 were diagnosed serologically with dengue. Of these 6 (37.59%) had primary dengue and 10 (62.5%) had secondary dengue infection. Eight patients were diagnosed with dengue in the second trimester. Number of patients who had dengue \pm warning signs and severe dengue were 14 (87.5%) and 02 (12.5%) respectively. Skin rashes were seen in 09 (56.2%) patients, vomiting in 4 (25%) patients. Severe thrombocytopenia was seen in 2 (12.5%). Preterm labour was seen in 8 (50.0%) patients.*

Conclusion: *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 treatment of dengue in pregnancy is mainly conservative as in non pregnant adults*

Keywords: *Dengue, pregnancy, thrombocytopenia, preterm labour*

INTRODUCTION

Dengue is the most rapidly spreading vector borne viral disease in the world¹. There is a increasing incidence of dengue in adult population in South Asian, South- East Asian and Latin American countries in recent years^[2-4]. As the incidence of dengue in adults increases, the incidence in pregnant women also increases^[5]. The dengue virus comprises four distinct serotypes^[1] (DEN 1-4) and DEN-3 is frequently associated with severe disease^[2]. Majority of dengue patients have a mild self-limiting illness and a few progress to a severe disease^[1]. Intravenous rehydration is the treatment of choice, which can reduce the mortality in dengue to less than 1% of severe cases^[1]. Dengue poses a significant threat to pregnant women. We in our study have studied the pattern of dengue in pregnancy and the impact of dengue on the natural course of pregnancy. The maternal and fetal outcomes were also analysed.

MATERIALS AND METHODS

The study was done in a tertiary care maternal and child health hospital in South India. A proper ethics approval was obtained from the human institutional ethics committee. All the pregnant women who presented with fever and features suggestive of dengue were included in the study. The age, weight, gestational age, parity, detailed history, clinical features, complete blood count, liver function test, renal function test were recorded on admission and were repeated serially as required till discharge. Dengue was diagnosed using ELISA method^{[8],[9]} by detection of dengue virus specific NS 1 antigen and IgM, IgG

antibody. The World Health Organisation classification and case definitions, 2009 was applied to classify dengue as either Dengue ± warning signs and severe dengue^[1]. Primary dengue infection was diagnosed when only IgM dengue virus specific antibody was detectable and secondary dengue^{[8],[9]} infection was diagnosed when pregnant women had detectable IgM and IgG dengue antibodies. The clinical manifestations were correlated with the hematological and biochemical parameters. Those patients who were diagnosed to have dengue were followed up till the postpartum period. The impact of dengue on the natural course of pregnancy and labour and the maternal and fetal outcomes were noted.

DISCUSSION

Dengue fever in pregnancy creates anxiety among the treating obstetrician and also among the patients and their relatives for the fear of bleeding tendencies. The outbreak of dengue is common during the monsoon and post monsoon season^{[3],[12]}. Studies on dengue in pregnancy from South India is very limited. We in our study had 16 pregnant women who were diagnosed with dengue during at the time of outbreak of dengue. The age of patients ranged from 19-36 years and eight (50%) patients presented with dengue in the second trimester. Number of pregnant women who presented with secondary dengue infection was higher (62.5%) than the number of primary dengue infection^{[2],[5]} (37.6%). Most common presenting symptom other than fever was myalgia^[5] followed by headache and arthralgia

[11]. Petechiae was the most common bleeding manifestation noted in our study. Abdominal pain along with vomiting [2],[13] was the most common gastrointestinal complaint, which was present in four patients (25%) and three of them had persistent vomiting. The clinical presentation of dengue in pregnancy in our study was similar to those observed in dengue in non pregnant adults [11] as observed in earlier studies by Ismail et al [10]. Thrombocytopenia of varying severity was present in all of our patients [5],[10]. The drop in the platelet count was more during day 5-8 from the onset of fever [11]. Bleeding manifestations [10] like petechiae, ecchymosis, bleeding gums were seen in patients whose platelet count was less than 50,000/cubic mm. Two of our patients presented with severe dengue [1] manifestations in the third trimester, one presented with profuse vaginal bleeding with clots and the other with acute respiratory distress [6]. These two patients also presented with a platelet count of less than 10,000/cubic mm. Central nervous system and cardiovascular complications were not seen in any of our patients. All the patients responded well to conservative treatment [5],[10] and only one patient who presented with profuse vaginal bleeding with clots needed transfusion with fresh whole blood. There was no mortality in our study. In the follow up of all these pregnant women after recovering from dengue infection till delivery, the antenatal period was found uneventful, but we in our study noted that dengue infection in pregnancy was associated with a increased risk of preterm delivery, as eight (50%) of our patients had preterm delivery [7],[15]. None of our patients

delivered either at preterm or at term had post partum hemorrhage [14]. Five (31.2%) women delivered babies of low birth weight [15]. Average birth weight of the baby was 2.7 kg and all the neonates were asymptomatic during the post natal period and there was no features in the babies to suggest neonatal dengue [5],[14] and as all the babies were asymptomatic, serological testing for dengue was not done to rule out any vertical transmission. The present study helps in the understanding of the variable presentation of dengue in pregnancy and its management.

RESULTS

Of the 49 pregnant patients admitted with suspected dengue infection, 16 women were diagnosed serologically with dengue. The age of the pregnant women ranged from 19-36 years. All the patients had fever with a temperature between 99°F-104.1 during the first 1-5 days of the illness. Generalized myalgia was present in 13 (81.2%) patients (Table/Figure No.1). Eight patients were diagnosed with dengue in the second trimester (Table/figure 2). Of the total 16 patients, 06 (37.6%) had primary dengue and 10 (62.4%) had secondary dengue infection. Number of pregnant women who had dengue ± warning signs and severe dengue were 14 (87.5%) and 02 (12.5%) respectively. Leukopenia (leucocyte count < 4000/cubic mm) was seen in 10 (62.5%) patients. Severe thrombocytopenia (platelet count <10000/cubic mm) was seen in 02 (12.5%)(Table/Figure No.3). Severe dengue was seen in two patients (12.5%) in the third trimester, one had profuse vaginal bleeding with clots and

the other had acute respiratory distress. Renal function test was normal in all the patients. There was mild elevation of liver transaminases in 08 (50%) patients. Preterm delivery was seen in 08(50%) patients. The weight of the baby at birth was less than 2.5kg in 05(31.2%) women.

Table/Figure No.1: Clinical presentation of Dengue in pregnancy (n=16)

Fever	16 (100%)
Generalised myalgia	13 (81.2%)
Headache	11 (68.7%)
Arthralgia	10 (62.5%)
Low back pain	10 (62.5%)
Skin rash	08 (50%)
Petechiae	04 (25%)
Ecchymosis	02 (12.5%)
Gum bleeding	02 (12.5%)
Vaginal bleeding with clots	01 (06.2%)
Respiratory distress	01 (06.2%)
Abdominal pain	04 (25%)
Persistent vomiting	03 (18.7%)
Limb edema	06 (37.5%)

Table/Figure No. 2: Gestational age at diagnosis of dengue

Gestational week	No. of patients
<13	05 (31.2%)
13-28	08 (50.0%)
>28	03 (18.7%)

Table/Figure No. 3: Thrombocytopenia in dengue fever (n=16)

Platelet count/cubic mm	No. of patients
<10000	02 (12.5%)
10000-50000	03 (18.7%)
50000-150000	11 (68.7%)

Table/Figure No. 4. Pattern of delivery (n=16)

Pattern	No. of patients
Preterm vaginal delivery	6
Preterm caesarean delivery	2
Term vaginal delivery	7
Term caesarean delivery	1

CONCLUSION

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 treatment of dengue in pregnancy is mainly conservative as in non pregnant adults

REFERENCES

1. WHO. Dengue: guidelines for diagnosis, treatment, prevention and control. A joint publication of the World Health Organization (WHO) and the Special Programme for Research and Training in Tropical Diseases (TDR). New edition 2009
2. Velasco JM, Alera MT et al. Demographic, clinical and laboratory findings among adult and pediatric patients hospitalized with dengue in the Philippines. Southeast Asian J Trop Med Public Health Vol.2014 Mar; 45(2)
3. Gupta E, Dar L, Narang P, Srivastava VK. Serodiagnosis of dengue during an outbreak at a tertiary care hospital in Delhi Indian J Med Res 2005; 121:36–8.

4. Chakravarti A, Kumaria R. Eco-epidemiological analysis of dengue infection during an outbreak of dengue fever, India. *Virol J* 2005; 2:32.
5. T.V. Chitra, Seetha Panicker. Maternal and fetal outcome of dengue fever in pregnancy. *Vector Borne Dis* 48, Dec 2011;210–213
6. Gulati S ,Maheshwari A. Atypical manifestations of dengue. *Tropical Medicine and International Health* 2007 Sep;12(9):1087-95.
7. Basurko C, Carles G, Youssef M, Guindi WE. Maternal and foetal consequences of dengue fever during pregnancy. *Eur J Obstet Gynaecol Reprod Biol* 2009; 147(1): 29–32.
8. N Bhattacharya, H Mukherjee, R Naskar, S Talukdar. Serological diagnosis of dengue in laboratory practice in Kolkata. *Indian Journal of Medical Microbiology*, (2014) 32(3): 277-280
9. Vazquez S,A.B.Perez,D.Ruiz et al. Serological markers during dengue primary and secondary infections. *Journal of Clinical Virology*, 2005, 33(2):132–137.
10. Ismail NA,Kampan N,Mahdy ZA. Dengue in pregnancy. *Southeast Asian J Trop Med Public Health* 2006 Jul;37(4):681-3
11. N Ramya, SP Shankar. Clinico-Heamatological Study of Dengue in Adults and the Significance of Total Leukocyte Count in Management of Dengue. *Journal of Medical Sciences and Clinical Research*,2014,2(10):2547-2553
12. P.Gunasekaran,K.kaveri et al Dengue disease status in Chennai (2006-2008): A retrospective analysis. *Indian J Med Res*. Mar 2011; 133(3): 322–325.
13. Ho TS,Wang SM,Lin YS,Liu CC. Clinical and laboratory predictive markers for acute dengue infection. *J Biomed Sci* 2013 Oct 20;20:75. doi: 10.1186/1423-0127-20-75.
14. S Kariyawasam ,H Senanayake. Dengue infections during pregnancy: case series from a tertiary care hospital in Sri Lanka. *J Infect Dev Ctries* 2010; 4(11):767-775.
15. EE Friedman,F Dallah,EW Harville etal. Symptomatic Dengue Infection during Pregnancy and Infant Outcomes: A Retrospective Cohort Study. *PLoS Negl Trop Dis*. Oct 2014; 8(10): e3226.