Journal of Cardiovascular Disease Research

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 03, 2023

ORIGINAL RESEARCH

To investigate the maternal and foetal consequences of dengue fever in pregnant women

Dr. Kiranjeet Kaur[1], Dr. Jagdeep Singh[2]

[1]Assistant Professor, Department of Gynaecology and Obstetrics, Government Medical College Amritsar, Punjab, India
[2]Assistant professor, Department of Surgery, Government Medical college Amritsar, Punjab, India

Corresponding author
Dr. Jagdeep Singh

Received: 22-02-2023 Accepted: 28-03-2023

ABSTRACT

Aim: The aim of this study is to investigate the maternal and foetal consequences of dengue fever in pregnant women.

Material and methods: The current research included a total of one hundred pregnant individuals who were both clinically and serologically diagnosed with dengue fever. Dengue IgM ELISA was used so that a confirmed diagnosis of dengue fever could be attained. Everyone who agreed to participate in the research did so after providing their written informed permission. The following parameters were recorded: gestational age, parity of the mother, symptoms present at the time of diagnosis, platelet count, and haemoglobin concentration at the time of diagnosis.

Results: Platelet count <20000 was observed in 11, 20000-50000 in 23, 50000- 100000 in 21, 1 lakh-1.5 lakh in 34 and >1.5 lakh in 11 females. It was determined that there was a significant difference ($P<0.05$). Foetal problems included intrauterine growth restriction in four cases, foetal deformity in three cases, meconium-stained amniotic fluid in nine cases, and foetal distress in six cases. The neonatal outcomes included preterm in 12 cases, low birth weight in 35 cases, admission to the intensive care unit in 6 cases, and vertical transmission in 7 cases.

Conclusion: The authors discovered that pregnant women who were suffering from dengue fever had substantial outcomes for both the mother and the unborn child. As a result, it is essential to keep a careful eye on any issues that may arise.

Keywords: Maternal, Foetal, Dengue Fever, Pregnant Women

Introduction

Dengue fever is a mosquito-borne febrile disease that has swiftly emerged as the most frequent arboviral infection worldwide. It is caused by the dengue virus, which is a single positive stranded RNA virus that is a member of the family Flaviviridae. The mosquitoes Aedes aegypti and Aedes albopictus are responsible for the transmission of dengue fever. According to the World Health Organization (WHO), approximately 40 percent of the world's population, or over 2.5 billion people, live in areas with a high risk of contracting dengue infection.[1,2] The disease still has the potential to cause massive outbreaks in regions from which it has been previously eliminated, including areas of the United States and Europe.[3] The ability of the virus to causatively transmit itself from person to person is a major public health concern. Fever or a recent history of fever lasting 2-7 days, any hemorrhagic manifestation, thrombocytopenia (platelet count of 100,000/mm3), and evidence of increased vascular permeability are the four criteria that are currently used to define DHF by the World Health Organization (WHO). Fever or a recent history of fever lasting 2-7 days. A positive tourniquet test, cutaneous haemorrhages (petechiae, hematomas), epistaxis (nose bleed), gingival bleeding (gum bleed), and microscopic haematuria are some of the most frequent mild hemorrhagic symptoms. Other common mild hemorrhagic manifestations include microscopic haematuria. Vaginal

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 03, 2023

bleeding, hematemesis, melena, and cerebral bleeding are the forms of haemorrhage that are considered to be among the most serious.[3]

When a woman is pregnant and has dengue fever, she and her unborn child both run the danger of experiencing severe bleeding complications. A systematic review of pregnancy outcomes due to maternal dengue in 2016 described the complications of dengue in pregnancy, including increased rates of caesarean deliveries, pre-term births, and low birth babies.[4,5] The present study was conducted to assess maternal and foetal complications of dengue fever infection.

Material and methods

The current research included a total of one hundred pregnant individuals who were both clinically and serologically diagnosed with dengue fever. Dengue IgM ELISA was used so that a confirmed diagnosis of dengue fever could be attained. Everyone who agreed to participate in the research did so after providing their written informed permission. The individual's name, age, gender, and other demographic details were recorded. A thorough history and physical examination were carried out. The following parameters were recorded: gestational age, parity of the mother, symptoms present at the time of diagnosis, platelet count, and haemoglobin concentration at the time of diagnosis. Information was documented on the patient's requirement for a transfusion and their subsequent medical check up. In addition to it, both maternal and foetal problems were noted. The results that were collected in this manner were then examined statistically. A significance level of 0.05 or less was required for the P value.

Results

Table 1 Distribution of patients

Parameters	Variables	Number	%	P value
Gestational age at Diagnosis (weeks)	<12	4	4	0.04
	12-20	10	10	
	20-28	13	13	
	28-34	17	17	
	34-37	21	21	
	Above 37	35	35	
Trimester	1	8	8	0.03
	2	24	24	
	3	68	68	
Platelet count	<20000	11	11	0.11
	20000-50000	23	23	
	50000- 100000	21	21	
	1 lakh - 1.5 lakh	34	34	
	Above 1.5 lakh	11	11	

According to Table 1, the gestational age at the time of diagnosis ranged from 12 weeks in four cases, 12-20 weeks in ten, 20-28 weeks in thirteen, 28-34 weeks in seventeen, 34-37 weeks in twenty-one, and >37 weeks in thirty-five. Platelet count <20000 was observed in 11, 20000-50000 in 23, 50000-100000 in 21, 1 lakh- 1.5 lakh in 34 and >1.5 lakh in 11 females. It was determined that there was a significant difference ($P<0.05$).

Table 2 Assessment of fetal complications

Fetal complications	Number	%	P value
IUGR	4	4	0.01
Fetal malformation	3	3	
Meconium- stained amniotic fluid	9	9	
Fetal distress	6	6	

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 03, 2023

According to Table 2, foetal problems included intrauterine growth restriction in four cases, foetal deformity in three cases, meconium-stained amniotic fluid in nine cases, and foetal distress in six cases. It was determined that there was a significant difference (P 0.05).

Table 3 Assessment of neonatal outcome

Neonatal outcome	Number	%	P value
Prematurity	12	12	0.01
Low birth weight	35	35	
ICU admission	6	6	
Vertical transmission	7	7	

According to Table 3, the neonatal outcomes included preterm in 12 cases, low birth weight in 35 cases, admission to the intensive care unit in 6 cases, and vertical transmission in 7 cases. It was determined that there was a significant difference (P<0.05).

Discussion

Dengue fever is a mosquito-borne febrile illness that has rapidly emerged as the most common arboviral infection worldwide.[6] It is caused by the dengue virus, which is a single positive stranded RNA virus that belongs to the family Flaviviridae. The virus is transmitted by the bite of an infected mosquito.[7] The mosquitoes Aedes aegypti and Aedes albopictus are responsible for the transmission of dengue, making it one of the most significant threats to public health in the globe, particularly in tropical and subtropical regions. According to the World Health Organization (WHO), approximately forty percent of the world's population, or over 2.5 billion people, live in regions with a high risk of contracting dengue infection.[8] The disease still has the potential to cause massive outbreaks in regions from which it has been previously eliminated, including areas of the United States and Europe.[9-11] The ability of the virus to cause explosive outbreaks has led public health professionals all over the world to step up their efforts to combat the virus. In the current investigation, a gestational age at diagnosis of less than 12 weeks was found in 4, 12-20 weeks in 10, 20-28 weeks in 13, 28-34 weeks in 17, 34-37 weeks in 21, and more than 37 weeks in 35. Platelet count of less than 200,000 was found in 11 patients, 50,000 to 50,000 in 23, 50,000 to 100,000 in 21, 1,000,000 to 1.5,000,000 in 34, and more than 1.5 million in 11. The maternal and foetal outcomes of pregnancies that were impacted by dengue infection were investigated by Braret al[12]. The screening included 216 pregnant women who were experiencing fever. 44 of these ladies had dengue virus antibodies in their blood (non-structural protein antigen 1 or dengue IgM antibodies in the sera). The clinical and laboratory features of female dengue patients were documented in this study. Researchers looked examined the effects of the experiment on the mother, the pregnancy, and the baby. The average duration of pregnancy was 31.89 weeks, plus or minus 7.31 days. Twenty-three of the women, or 52.3%, had thrombocytopenia. Ten out of forty women, or 25%, suffered post-partum haemorrhage after giving birth. The incidence of maternal systemic complications was high: eight (18.2%) of the women developed acute kidney injury, and two (4.5%) of the women needed support from haemodialysis; eight (18.2%) of the women developed ARDS, and seven (15.9%) of the women needed support from ventilators; and four (9.1%) of the women developed acute liver failure. 18 ladies, or 40.9% of the total, showed signs of shock. Seven women had a fatal outcome (15.9%), while another seven women experienced what the WHO refers to as a "maternal near-miss" occurrence. Miscarriages occurred in two (4.5%) pregnancies, while still births occurred in four (9%) and neonatal deaths occurred in two (4.5%) of the pregnancies. There were 15 deliveries of preterm infants (34.1%), and there were 13 deliveries of kids with a low birth weight (29.5%).

We found that foetal problems included intrauterine growth restriction in four cases, foetal deformity in three cases, meconium-stained amniotic fluid in nine cases, and foetal distress in six cases. The neonatal result was preterm in 12 of the cases, low birth weight in 35 of the cases, admission to the intensive care unit in 6 of the cases, and vertical transmission in 7 of the cases. The clinical characteristics, as well as the maternal and foetal outcomes of dengue fever in pregnant women, were investigated by Kanakalatha et al.[13] Patients were included in the study regardless of how far along in their pregnancies they were when they contracted the condition. Patients were monitored right up to

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 03, 2023

the moment of birth, and their newborn children were observed for a period of six weeks after delivery. It was revealed that 86.3% of patients had thrombocytopenia (1.5L/mm3), of which 2.7% of patients had a platelet count below 20,000 cells/mm3 and 4.1% of patients needed platelet transfusions. Additional problems that were seen were spontaneous abortions (5.5%), premature births (9.5%), oligohydramnios (8.2%), and antepartum haemorrhages (4.1%). In 7.6% of patients and 16.7% of patients respectively, there was evidence of foetal distress as well as meconium-stained amniotic fluid. Low birth weight (27.3%), premature delivery (23%) and newborns that needed to be admitted to the NICU (28.7% of the total) were some of the adverse foetal outcomes that were found.

Conclusion

The authors observed that pregnant women who were suffering from dengue fever had substantial outcomes for both the mother and the unborn child. As a result, it is essential to keep a careful eye on any issues that may arise.

References

1. Fact sheet: Neglected tropical diseases: Dengue. World Health Organisation. http://origin.searo.who.int/entity/vector_borne_tropical_diseases/data/data_factsheet/en/. Accessed 17 Septem- ber 2020.
2. Matusali G, Colavita F, Carletti F, Lalle E, Bordi L, Vairo F et al . Performance of rapid tests in the management of dengue fever imported cases in Lazio, Italy 2014–2019. Int J Infect Dis.2020; 99:193–198
3. Sondo KA, Ouattara A, Diendere EA, Diallo I, Zoungrana J, Zem- ane G et al. Dengue infection during pregnancy in Burkina Faso: a cross-sectional study. BMC Infect Dis.2019; 19:997
4. Chitra TV, Panicker S. Maternal and fetal outcome of dengue fever in pregnancy. Journal of Vector Borne Diseases. 2011;48(4):210-3.
5. Kulkarni N. Study on the effectiveness of transfusion programs in dengue patients receiving platelet transfusion. Intern Jour TransfImmunohaemat. 2012;2:11-5.
6. Tagore S, Yim C F, Kwek K. Dengue haemorrhagic fever complicated by eclampsia in pregnancy. Singapore Med J Case Report. 2007;48(10):e281.
7. Chansamouth V, Thammasack S, Phetsouvanh R, Keoluangkot V, Moore CE, Blacksell SD et al. The aetiologies and impact of fever in pregnant inpatients in vientiane. Laos PLoSNegl Trop Dis.2016;10:e0004577.
8. TienDat T, Kotani T, Yamamoto E, Shibata K, Moriyama Y, Tsuda H et al. Dengue fever during pregnancy. Nagoya J Med Sci.2018; 80:241–247.
9. Basurko C, Carles G, Youssef M, Guindi WEL. Maternal and fetal consequences of dengue fever during pregnancy. Eur J ObstetGynecolReprodBiol.2009; 147:29–32.
10. Yang J, Zhang J, Deng Q, Wang J, Chen Y, Liu X et al.Investigation on prenatal dengue infections in a dengue outbreak in Guangzhou City, China. Infec Dis.2017; 49:315–317
11. Kariyawasam S, Senanayake H (2010) Dengue infections during pregnancy: case series from a tertiary care hospital in Sri Lanka. J Infect DevCtries 4:767–775
12. Brar et al. Maternal and fetal outcomes of dengue fever in pregnancy: a large prospective and descriptive observational study Archives of Gynecology and Obstetrics (2021) 304:91–100.
13. Kanakalatha DH, Radha S, Nambisan B. Maternal and fetal outcome of dengue fever during pregnancy. Int J ReprodContracept Obstet Gynecol 2016;5:3959-64.