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Research Article

STUDY TO KNOW THE SPECTRUM OF DENGUE FEVER IN PREGNANCY

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Abstract:

Introduction: dengue fever is a vector-borne disease transmitted by the *Aedes aegypticus* mosquito. Dengue infection during pregnancy carries the risk of bleeding for both the mother and the newborn.

Material and methods: 148 patients with acute fever were analyzed between November 2015 and November 2017 in Holy Family Hospital Rawalpindi. Data on the history of the disease, laboratory reports containing complete blood counts, routine and culture of urine, NSI antigen, WIDAL and peripheral smear for malarial parasites, treatment received and outcome of the mother and child, were analyzed on the basis of recordings.

Results: in 40% of cases, the NSI antigen was detected with fever. Of the remainder, 15% had viral fever, 14% had urinary tract infections, 10% had intestinal fever, 8% had lower respiratory tract infections, 2% had malaria and 9% had fever of unknown origin. Thrombocytopenia was present in 40% of dengue positive patients and 30% of patients needed transfusions. In 2 patients with a short-term diagnosis, postpartum hemorrhage was treated with platelets and FFP. There were two deaths in newborns.

Conclusion: although in most cases only conservative treatment is needed, the correlation of the duration of pregnancy with outcome and complications must be considered.

Keywords: Dengue, Pregnancy, Adverse effects.

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INTRODUCTION:

Dengue fever is a growing problem in the tropical world. It is one of the main arboviral infections affecting humanity. Every year there are between 50 and 100 million cases of dengue fever and 500,000 cases of dengue hemorrhagic fever every year. Dengue fever is a self-limiting febrile illness. However, the lack of early diagnosis and symptomatic treatment causes complications such as dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS). Pregnancy is a very sensitive phase and is associated with several physiological changes.¹ Dengue fever during pregnancy causes maternal complications such as bleeding and abortions, as well as fetal complications such as premature babies, intrauterine deaths (IUDs) and infants with low birth weight. ² Recent epidemics have made it a serious public health problem. The disease is traditionally caused by the bite of an *Aedes aegypti* mosquito and the disease can range from asymptomatic to a life-threatening disease with dengue hemorrhagic fever. There are four serotypes of dengue and it is not probable that one serotype infection confers immunity to the other. Rather, the probability of developing a more severe form of the disease is greater if it is previously sensitized to another serotype. Dengue fever is defined by the World Health Organization (WHO) as an acute febrile illness associated with two or more of the following signs or symptoms: severe headache, retro-orbital pain, myalgia, arthralgia, rash, leukopenia and haemorrhagic manifestations due to the incidence of dengue Epidemics also infect a significant number of pregnant women with dengue fever.

However, there are not many studies on the obstetric consequences of dengue fever during pregnancy. In most cases of dengue fever during pregnancy, no serious damage was found. Treatment includes adequate hydration, antipyretic and careful monitoring. The literature review shows a higher incidence of preterm birth, low birth weight, pre-eclampsia and cesarean section. There was also a vertical transmission⁴. During the dengue epidemic in our region, we met many pregnant women with dengue fever and found some features that were not mentioned in other studies. In this context, we examined pregnant women with dengue fever who were admitted to the obstetric ward and determined the adverse effects of dengue fever on pregnancy and the outcome of the fetus.

MATERIALS AND METHODS:

Study design: cross-sectional study with secondary data. Study population: all pregnant mothers who had a control between November 2015 and November 2017 (24 months) and had a history of

fever were recalled and data on laboratory tests such as dengue NS1 antigen, WIDAL, parasitemia peripheral malaria, complete blood count Routine and urine culture have been recorded. Dengue fever was diagnosed according to the WHO definition: an acute febrile illness with 2 or more clinical manifestations such as headache, retro-orbital pain, myalgia, arthralgia, rash, haemorrhagic manifestation or leukopenia and positive serology or onset of the dengue fever epidemic, We used the NS1 antigen and / or IgM serology. The clinical classification was according to the classification of the WHO and the definition of the case. The analysis was performed on the patient's age, gestational age, presentation complications, laboratory diagnosis, platelet count and treatment offered and outcome of pregnancy.

RESULTS:

148 pregnant women with acute fever have been identified, 60 of whom are infected with dengue virus.

Among patients with dengue fever, fever was the most common form of presentation in 50 pregnant women (83.3%). Fever with myalgia in 10% (6 cases) and abdominal pain in 6.7% (4 cases).

Of the 60 women with dengue fever in pregnancy, 22% (43.3%) had primary dengue fever, while the remaining 38 (63.3%) had positive NS1 and verified secondary dengue. 4 cases (5.83%) had typhoid fever infection at the same time.

The average age of dengue-infected women was 28 years, the youngest was 19 and the oldest was 34 years old. Most patients (56.7%) were in the 25-30 age group. In terms of gestational age, 24 patients (40%) were of gestational age

In the 36 weeks, 16 patients (26.7%) had a gestational age between 13 and 27 weeks and 20 patients (33.3%) were over 36 weeks. Out of 20 patients in the late trimester, there were 4 signs of hypertensive pregnancy and 2 patients developed postpartum hemorrhage, which was treated conservatively. None of the patients needed to be admitted to the intensive care unit.

A 20% increase in hematocrit is a sign of haemoconcentration and precedes the shock. Figure 1 shows the PCV values of 60 patients with dengue. In this study, 10% of patients had a hematocrit of 40% and 23.3% a hematocrit of 42%. Taking into account the normal hematocrit values during pregnancy from 31 to 40% in the different quarters, we can say that 23.3% of patients had haemoconcentration. Those with high PCV levels had a low platelet count, which was responsible for the development of dengue haemorrhagic fever and

postpartum hemorrhage and the need for blood transfusions in these cases.

Table 1 shows the values of liver enzymes. All patients had an increase in liver enzymes, with higher AST levels of ALT, although only 4 patients had PPH. This could be due to early intervention with platelet and blood component transfusions where necessary.

Of the 60 pregnant dengue positive women, 22 patients required platelet transfusions, as shown in Table 2. Of these, 4 patients were transfused with platelets per single donor, since the number was less than 40,000 and these required an immediate abortion for reasons obstetricians. Tables 3, 4 and 5 show the significant relationship between gestational age at birth, the severity of dengue fever and the need for platelet transfusions with delivery methods. Out of 60 patients, 24 patients (40%) had a complete vaginal delivery, 16 had a caesarean section for obstetric indications, 8 patients (33.3%) had a premature vaginal delivery and 8 patients were lost for follow-up care -up. Among patients given premature birth, hyperthermia due to dengue fever may be the trigger. Women who had dengue fever between the ages of 13 and 27 at the beginning of pregnancy improved and were discharged. They did not come to our hospital for further follow-up or were not delivered here, so it was not possible to estimate the result of dengue fever at the beginning of pregnancy. Those who developed dengue in the third trimester gave mainly vaginal vaginal discharge. Among these, 4 patients bleed after birth. There were 2 neonatal deaths due to premature birth and respiratory distress syndrome.

In the case of dengue fever, the incidence of cesarean section was 20% in an emergency, with an indication of an unsatisfactory fetal heart rate. Meconium was found in 8 of these patients. The most common indication for elective cesarean section was a previous cesarean section. The neonatal outcome in these women was relatively good. Table 4 describes the relationship between the severity of dengue infection and the result. In this study, 33.33% (or 20 patients) had dengue fever. The majority, i.e. 16 patients, delivered vaginally. Four patients had pregnancy-related hypertension, all with premature vaginal delivery, with two patients progressing spontaneously and two being induced. Of the 32 patients with dengue hemorrhagic fever, 12 were diagnosed with emergency cesarean section due to an obstetric indication. Four patients had postpartum haemorrhages treated conservatively with blood transfusions.

Table 5 describes the need for platelet transfusions among dengue cases. Of 60 patients with dengue fever, 29 required blood component transfusions. Of these, 12 patients had severe thrombocytopenia, i.e. A platelet count <50,000 /cumm and required 2-3 pints of platelet transfusion. 1 patient with a platelet count of 28,000 /cumm required 5 pints of single-donor platelets (SDP). 8 patients needed a fresh frozen plasma transfusion. The result of the newborn was relatively good. Even in patients with severe thrombocytopenia, platelet transfusion was performed only in patients who had contractions or had to undergo an emergency or elective caesarean section.

Table 1: Frequency of elevation of liver enzyme values among the patients

AST/ALT	Number of cases	Percentage (%)
108/60	2	3.3
154/100	2	3.3
154/116	2	3.3
155/64	2	3.3
156/40	2	3.3
156/60	10	16.7
156/64	2	3.3
156/70	2	3.3
157/40	2	3.3
158/110	2	3.3
158/40	6	10
158/58	6	10
158/60	6	10
158/70	6	10
160/40	4	6.7
160/60	2	3.3
172/40	2	3.3
Total	60	100

Table 2 : Platelet counts and need for platelet transfusion

Platelet count on admission (cells/mm ³)	No. of pregnant women	No. of patients who received transfusion
30,000-50,000	12	1 2
50,000-1 lakh	12	2
>1 lakh	36	8
Total	60	2 2

Table 3 : Association between gestational age and mode of delivery

		MOD						Total
		Elective LSCS	Emergency LSCS	FTVD	FTVD PPH	Lost for follow	PTVD	
Gestational age	13-27 weeks	0	0	0	0	4	0	4
		0.0%	0.0%	0.0%	0.0%	6.67%	0.0%	6.67%
	28-36 weeks	0	0	8	0	4	8	20
		0.0%	0.0%	13.33%	0.0%	6.67%	13.33%	33.33%
	>36 weeks	4	12	16	4	0	0	36
		6.67%	20%	26.67%	6.67%	0.0%	0.0%	60%
Total		4	12	24	4	8	8	60
		6.67%	20%	40%	6.67%	13.33%	13.33%	100.0%

P-value -0.02

Table 4 : Association between severity of dengue fever and mode of delivery

		MOD						Total		
		Elective LSCS	Emergency LSCS	FTVD	FTVD PPH	Lost for follow up	PTVD			
Severity	Dengue fever	0	0	16	0	4	0	20		
		0.0%	0.0%	26.67 %	0.0%	6.67%	0.0%	33.33%		
	Dengue fever + PIH	0	0	0	0	0	4	4		
		0.0%	0.0%	0.0%	0.0%	0.0%	6.67%	6.67%		
	DHF	4	12	8	0	4	4	32		
		6.67%	20%	13.33%	0.0%	6.67 %	6.67%	53.33%		
	PIH + PPH	0	0	0	4	0	0	4		
		0.0%	0.0%	0.0%	6.67%	0.0%	0.0%	6.67%		
	Total		4	12	24	4	8	60	Total	
			6.67%	20%	40%	6.67%	13.33 %	13.33%	100.0%	6.67%

P-value – 0.001

DF- Dengue Fever, DHF- Dengue Hemorrhagic Fever, PPH – Post-Partum Hemorrhage, PIH – Pregnancy Induced Hypertension.

Table 5 : Association between platelet transfusion and mode of delivery

		MOD						Total
		Elective LSCS	Emergency LSCS	FTVD	FTVD PPH	Lost for follow	PTVD	
Pl transfusion	2 Platelets	0	0	4	0	0	4	8
		0.0%	0.0%	6.67%	0.0%	0.0%	6.67%	13.33%
	2 PRBC +1 FFP	0	0	0	4	0	0	4
		0.0%	0.0%	0.0%	6.67%	0.0%	0.0%	6.67%
	3 platelets	0	8	4	0	0	0	12
		0.0%	13.33%	6.67%	0.0%	0.0%	0.0%	20%
	3 PRBC+ 3 FFP	0	0	4	0	0	0	4
		0.0%	0.0%	6.67%	0.0%	0.0%	0.0%	6.67%
5 SDP	0	0	0	0	0	1	1	
	0.0%	0.0%	0.0%	0.0%	0.0%	1.67%	1.67%	
Nil	4	4	12	0	8	3	31	
	6.67%	6.67%	20%	0.0%	13.33%	5%	51.67%	
Total		4	12	24	4	8	8	60
		6.67%	20%	40%	6.67%	13.33%	13.33%	100.0%

P-value – 0.02 s

PRBC – Packed red blood cell, FFP – Fresh Frozen Plasma, SDP – Single donor Platelets

DISCUSSION:

Fever with thrombocytopenia during pregnancy panics the practicing obstetrician. It is important to consider dengue fever as a possible differential diagnosis of acute febrile illness in the endemic area.⁴ In general, fever, myalgia and arthralgia are the most common symptoms. In some cases, abdominal pain and vomiting have occurred. Severe symptoms such as hepatic cytolysis or severe thrombocytopenia have been reported without dengue hemorrhagic fever (DHF). The physiological changes that occur during pregnancy, such as thinning of blood or the ability to coagulate may mask thrombocytopenia, leukopenia or an increase in hematocrit. Furthermore, hepatic and hematological problems can also be observed in other obstetric complications, such as morning sickness or HELLP syndrome, which can lead to underestimation of dengue syndrome. The average age of women was 28 +/- 6 years, the youngest at 19 and the oldest at 34 in our study. The average gestational age at presentation was 28.31 +/- 8.48 weeks, with the minimum 18 weeks and the maximum 40 weeks. Gestational age at the onset of dengue fever appeared to be significant. 2 trimester in which a dengue infection occurs apparently influences the rate of adverse events, so a mother who was infected in the first trimester has a higher risk of death from the fetus. Since women may not be hospitalized in early pregnancy, the frequency of vertical transmission remains difficult to estimate. Zavattoni reports a case of acute dengue viral infection in the first weeks of pregnancy with an

unfavorable outcome.⁵ It should be noted, however, that every fifth identified pregnancy ends in the case of abortion⁶ and maternal hyperthermia is recognized as an independent risk factor for miscarriage. However, when infection occurs in the third trimester, the risks of low birth weight, premature birth and vertical transmission increase. Kanakalatha DH et al⁷ had conducted a prospective study in 73 cases of maternal dengue fever, in which 15 patients had been presented 20 weeks earlier. Of these, 4 had spontaneous abortions, 4 patients had a platelet count of less than 50,000 / mm³, of which 2 patients had developed pre-eclampsia later in pregnancy and had requested abortion 37 weeks ago. All other patients had a pregnancy and a birth without complications. 22 patients were presented between 20 and 34 weeks, 7 patients had a premature delivery, 1 patient had DHF, 1 had DSS and all others had a premature birth. In their study, 30.1% were infected after 37 weeks - 8.8% of patients had PPH, 7.3% had postpartum fever, 7.3% had intensive care and 2.9 % had shortness of breath after birth. In our study, the number of women they presented. There were 44 of 60 over 31 weeks, 3 of which had evidence of pregnancy-induced hypertension. In our study, 1 patient was sent for 33 weeks with fever. He had a platelet count of 28,000 cells / cumm and received 5 units of platelets per single donor. In our study, 4 patients diagnosed with short-term postpartum hemorrhage had platelets and fresh frozen plasma (FFP). In a retrospective study by Carlos et al. Thirteen of 82 pregnant patients with dengue had

obstetric bleeding in four cases (30.8%). Highlights in our study were severe thrombocytopenia (platelet count <50,000 cells / cumm), observed in 12 of 60 patients. The decline in platelet counts was initially rapid. Platelet transfusion was performed only if the mother had contractions or bleeding tendencies or if a cesarean section was planned. Similar results were observed in the study by Chitra et al.⁴, in which pregnant women were treated with dengue fever conservatively, with platelet transfusion administered only during labor or bleeding tendencies. No cases of dengue shock syndrome were found in our study. Numerous studies have found low birth weight and premature delivery. In a clinical study on Swati Sharma et al. 8 deliveries were made prematurely in 12% of cases. The average birth weight found in our study was 2.44 kg. Gehlot H et al⁹ reported a medium birth Weight <2.5 kg in 16% of cases. 8% of children needed neonatal intensive care and 4% had an IUFD. Symptomatic dengue infection during pregnancy can increase the risk of PTB and LBW for children. In our study, there were 2 neonatal deaths. The reason was premature birth and respiratory distress syndrome. The average incubation period for dengue fever is estimated at around 7 days. The dengue serology was not performed in normal newborns and therefore it was not possible to comment on vertical transmission. Although rare, a dengue infection can lead to death. Although morbidity such as PIH, PPH and persistent fever were found in our study, there was no maternal death. Helena et al.¹⁰ reported 1% maternal mortality in the exposed cohort and none in the unexposed cohort (P = 0.040). One of the two maternal deaths was directly related to a dengue virus infection. According to a study by Machado et al. In Rio de Janeiro, eleven pregnant women developed dengue fever which was 3.4 times more likely and mortality was higher in pregnant women than in non-pregnant women. In particular, in endemic areas, a study should be conducted for dengue virus infection since the greater probability of developing serious diseases during pregnancy requires more careful monitoring of pregnant women who are infected with the virus.¹²

CONCLUSION:

Dengue infection has become a serious health problem in tropical countries. Although the majority of dengue cases require only conservative management, the relationship between duration of pregnancy, outcome and complications must be taken into account: the initial or late pregnancy had a poor prognosis. A high level of clinical suspicion is essential in every pregnant woman with fever during an epidemic. The journey in the endemic areas of dengue during pregnancy represents a risk

for the mother and the fetus and therefore requires careful monitoring of the possible maternal and fetal complications. Further studies are mandatory as evidence-based data on pregnancy-specific dengue treatment are scarce.

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