

Maternal and Neonatal Outcomes in Pregnant Women with Dengue

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ABSTRACT

Background: Dengue infection has been observed to cause critical outcomes in mother as well as child from an infected pregnancy.

Objective: To assess the maternal and neonatal outcomes of dengue infected pregnancy.

Study Design: Prospective study.

Place and Duration of Study: Department of Obstetrics & Gynaecology, Sandeman Provincial Hospital, Quetta 1st August 2018 to 28th February 2021.

Methodology: Fifty pregnant females were enrolled after their dengue confirmation either by NS1, IgM or IgG test. Clinical and demographic information was recorded. Pregnancy and neonatal outcomes were noticed by following the patients until delivery and postpartum period and the new born if infected then up to post 6 months of delivery.

Results: The mean age of patients was 25.5±3.5 years. Out of the total pregnant dengue infected females 60% had multigravida. Fifty percent of females came for clinical assistance in their third trimester. Post-partum hemorrhages were common in 6% patients. Vertical transmission was seen in three cases where two did not survive and had intra uterine death. Maternal mortality was seen in 14% of total cases.

Conclusion: Morbidity, preterm labor, vertical transmission, intrauterine death are some of the maternal and neonatal outcomes of dengue infected pregnancy.

Keywords: Dengue, Pregnancy, Neonatal outcomes, Maternal outcomes

INTRODUCTION

Dengue is a viral endemic transmitted through a mosquito vector. It is highly prevalent in South East Asian countries like Pakistan and India. The infection is caused by dengue virus having various serotypes. The genus flavivirus, family flaviviridae contains four main dengue serotypes. (DENV1 to 4). The virus might lead to an infection which would with be symptomatic or asymptomatic.¹

The occurrence of dengue infection is not linked with any specific age although children are most affective from this infection. If the infection occurs during pregnancy, it can be fetal for both such as mother as well as neonates.² As already mentioned that the dengue virus is transmitted through a vector/host which is a female *Aedes aegypti* mosquito. The mosquito is mostly found in tropical or sub-tropical regions. During 2013 Pakistan suffered from large bulk of this disease which caused high number of mortality and morbidity all over the country similar to Indonesia dengue outbreak where until 2009 majority of South Asian dengue cases were reported from Indonesia.^{3,4}

Dengue fever causes a decrease in platelets levels. In severe cases where organs start to bleed it can result into dengue hemorrhagic followed by dengue shock syndrome effecting brain and heart. Until now a proper treatment consensus of dengue infection for women in their gestation has not been introduced.⁵ The mortality rate with dengue infection is a high as 2.5% with pregnant women at a high risk of serious illness or mortality.^{6,7}

Various researches have mentioned poor prognosis of dengue infection during pregnancy with deprived outcomes for maternal as well as neonatal life and growth respectively.⁸ A recent systematic-review has elaborated that low birth weight in addition to preterm delivery are associated outcomes of gestation with dengue infection. On the other hand, there is still vagueness in literature for better understanding of the dengue infected pregnancy outcomes. Despite of the debate researcher simultaneously agrees dengue as a high-risk factor for poor pregnancy outcomes.^{9,10}

MATERIALS AND METHODS

In a prospective observational study a total of 50 pregnant female were included. The study was conducted at Department of Obstetrics & Gynaecology, Sandeman Provincial Hospital, Quetta 1st August 2018 to 28th February 2021. The inclusion criteria consisted of enrolling those pregnant female which were suffering from dengue fever, dengue hemorrhagic fever or dengue shock

syndrome with either NS1 or dengue IgM and or IgG positive results. Those pregnant females who were admitted within day one or two of their infection were tested for NS1 while others were confirmed through dengue IgM and IgG levels. The complete demographic information, clinical history, dengue characteristics, pregnancy related history and age between 23-42 years were recorded.

The clinical symptoms included antiperistalsis, rash, nausea, myalgia, bone pains, positive blood test for dengue, complete blood count picture (Platelets, TLC as well as HCT). Warning symptoms (WS) were persistent vomiting, abdominal or chest pain. Fluid accumulation, organ bleeding, lethargy, restlessness, hepatomegaly (> 2cm) and high HCT level with decreased platelets. Dengue shock syndrome was categorized by leakage of plasma leading into shock, accumulating fluids causing respiratory distress, severe organ bleeding noticeable by hematuria, ear or mouth bleeding. Further severity was also defined by abnormally raised aspartate-aminotransferase and alanine-aminotransferase values (>1000) with impaired level of consciousness. Each pregnant female was followed until her delivery and born neonates were tested for NS1 antigen (during 1st two days) followed by IgM and IgG for dengue infection. Each pregnant female was followed uptill post-partum period. For those neonates who were tested positive a follow up of further six months was continued for identifying any related complications. Data was entered and analyzed through SPSS-24.

RESULTS

The mean age of patients was 25.5±3.5 years. Out of the total pregnant dengue infected females 60% had multigravida. Majority of the patients showed Dengue-IgG positivity. Almost 52% of patients have warning signs of dengue infection with 18% suffering from severe dengue (Table 1).

Half of the patients were in their third trimester followed by second trimester. Preterm labor was presented in 18% of patients with 60% of patients delivering by conservative method (Table 2).

Post-partum hemorrhages were common in 6% patients. The neonatal outcomes were also followed up in the current study. Intrauterine death (IUD) was observed in 4% of infected pregnant females neonates with dengue encephalitis presented in 2% of infected pregnant females. One of the vertically transmitted neonates survived and was followed for its six months outcomes. After early days of treatment baby was hemodynamically stable with no sign of hypotension or hemorrhage (Table 3).

Table 1: Clinical characteristics of dengue infected pregnant females

Variable	No.	%
Trimester		
1 st Trimester	2	4.0
2 nd Trimester	8	16.0
3 rd Trimester	40	50.0
Pregnancy outcome		
Term labor	41	82.0
Preterm labor	9	18.0
Mode of delivery		
Cesarean section	11	22.0
Normal labor	9	18.0
Conservative	30	60.0

Table 2: Maternal outcomes through dengue infected pregnancy

Variable	No.	%
Gravida		
Primigravida	20	40.0
Multigravida	30	60.0
IgG Serology Test		
Positive	45	90.0
Negative	5	10.0
NS1 Test		
Positive	17	34.0
Not checked	33	66.0
Serology IgM		
Positive	36	72.0
Negative	14	28.0
Clinical diagnosis		
DI without warning signs	15	30.0
DI with warning signs	26	52.0
Severe dengue infection	9	18.0

Table 3: Post-Partum and neonatal outcomes in dengue infected pregnant females

Variable	No.	%
Postpartum hemorrhage	3	6
Intrauterine fetal death	2	4
Dengue encephalitis	1	2
Vertical transmission survive	1	2

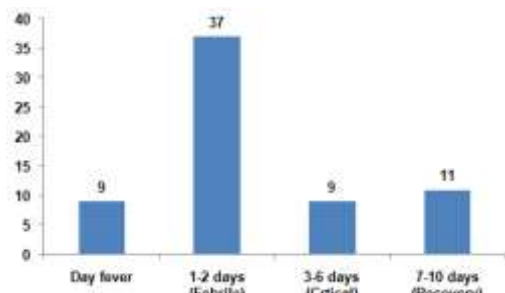


Fig. 1: Dengue Phases in various dengue infected pregnant females

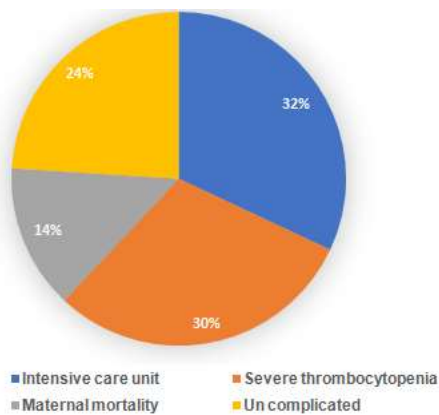


Fig 2: Maternal outcomes in dengue infected pregnant females

Patient's dengue symptoms were categorized under various staging with 54% of patients having high grade fever with febrile phase for almost 1-2 days while it took almost 7-10 days before recovery (Fig. 1). Patients who suffered severe dengue infection had to battle their disease for survival. Unfortunately, 14% of such cases could not survive. Severe thrombocytopenia and intensive care unit requirement was observed in 30% and 32% cases respectively (Fig. 2).

DISCUSSION

Maternal as well as neonatal outcomes of dengue fever becomes crucial in many cases and required early management and control. Appropriate plan of treatment is required for fluid maintenance and timely monitoring of the diseases for promising outcomes.¹¹

Majority of the pregnant females came for clinical assistance while they were in their third trimester as reported earlier in various other literature.^{12,13} However the increased volume of intravascular physiology during pregnancy causes misleading results in dengue infection.^{14,15} Neonatal poor outcomes are seemed to be a consequence of the placental-circulation which is related with endothelial damaging and increased vascular-permeability resulting into leakage of plasma.¹⁶ Vertical transmissions has been reported in 1.6% cases to 5.6% in various study findings.^{17,18}

On the contrary results from an Indian study have reported no case with vertical transmission of dengue infection between mother and child from the observed eight cases of dengue infection.¹⁶

In the present study only three cases has been found for vertical transmission which could be the affect of using ELISA test for seropositivity instead of polymerase chain reaction (considered as gold standard test). Similar results were also reported in an Indonesian study with a least number of vertically transmitted dengue infection.^{19,20}

CONCLUSION

Vertical Transmission was observed in 6% cases with two intrauterine deaths. Poor maternal outcomes were also seen in some cases with 14% morbidity rate and 2% suffering from encephalitis.

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