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Dengue in Pregnancy - Presentation, Complications and Outcome

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Dengue, a mosquito-borne flavivirus infection, is endemic in South-East Asia with increasing incidence in adults, including pregnant females. The present study focuses on the clinical presentation of dengue fever in pregnant females, its complications and maternal - fetal outcome. The study was done in 32 pregnant females with serogically confirmed dengue, attended ANC clinics, or admitted in medicine wards or obstetric wards. All patients underwent routine laboratory investigations and were followed till delivery. Fever was the presenting complaint in all the patients, followed by headache and myalgia (64%), Vomiting (50%), abdominal pain and vomiting (40%). Bleeding manifestations were present in form of gum bleed (12%), hematuria (9%), malena (6%), hematemesis (6%), epistaxis (6%) and 3 patients (9%) had bleeding per vaginum. On follow-up, two patients underwent preterm delivery and three newborns were having low birth weight. Dengue fever presents in pregnancy in a manner similar to non-pregnant state. Though there was no maternal or fetal mortality but preterm delivery and low birth weight was observed.

Key words: Dengue, Pregnancy, Maternal - fetal outcome.

Dengue Fever is an Aedes aegypticus vector borne infection caused by dengue virus, a member of Flaviviradae group which includes the causative agent of yellow fever, West Nile fever and Japanese Encephalitis. Dengue virus has four serotypes DEN1 -DEN4. Infection with one serotype does not appear to confer immunity to others, rather predisposes individual to more severe disease when infected with other serotypes[1]. The disease has a wide spectrum of clinical presentations from asymptomatic to potentially life threatening manifestations like dengue hemorrhagic fever to dengue shock syndrome[2].

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The incidence of dengue fever has been increasing worldwide, with over 100 million infections occurring annually, of which 250,000 progress to severe dengue and 25,000 being fatal[3]. With the increasing incidence of DF in adults, the number of pregnant females presenting with DF has also increased.

Typically the disease presents with fever, headache, myalgias, arthralgia and retro-orbital pain. In some patients, the predominant symptoms are respiratory and gastrointestinal. Commonly, there is also a fine, petechial rash. Fever typically lasts 5–7 days but the disease may be followed by a prolonged period of physical and emotional fatigue[4].

Pregnancy results in physiological changes in the cardiovascular, renal and haematological systems. Dengue fever may blunt these compensatory responses. In addition, some complications in DF may be potentially hazardous in pregnancy, for example, plasma leakage and thrombocytopenia during normal/operative

delivery may result in serious consequences to both mother and fetus. The manifestations of severe dengue may itself be confused with complications of pregnancy like HELLP and severe sepsis. Therein lies the relevance of a systematic study to evaluate the clinical presentations, complications and maternal and fetal outcome in pregnant females having dengue.

MATERIALS AND METHODS

The study was conducted at Jawaharlal Nehru Medical College Hospital, Aligarh, tertiary care hospital in North India. It included 32 pregnant females who presented with fever and had serologically confirmed dengue. These patients were either attending ANC clinics or admitted in medicine and obstetric wards. All were followed till delivery to assess the maternal - fetal outcome.

All women with dengue were subjected to detailed history which included the presenting complaints, any bleeding manifestations (major or minor) and evidence of organ dysfunction like oliguria, jaundice, convulsions etc. Along with routine physical examination, special emphasis was placed on assessment of hydration and hemodynamic status, examination for rash and bleeding manifestations and performing detailed antenatal checkup.

The laboratory investigations included complete blood count (including total leukocyte count, platelet count, haemoglobin and hematocrit), liver function tests, blood urea, serum creatinine, serum electrolytes and urine examination. Blood cultures were done in patients with WBC d" 4000/ mm^3. NS 1 antigen and IgM and IgG antibodies against dengue were done. Ultrasound abdomen and pelvis was done to assess for congenital malformation in fetus, any bleeding in placenta or to detect any fluid collection in pleural or peritoneal cavity. Estimation of cardiac enzymes, electrocardiography and echocardiography was done in selected cases.

Observations

The study included 32 pregnant females, out of whom 13 were primigravida and 19 multigravida. Of them, the majority were in their

Table 1. Distribution of pregnant women according to trimester

S. No.	Trimester	No. of Patients
1	First Trimester	04
2	Second Trimester	13
3	Third Trimester	15

Table 2. Presenting symptoms of dengue.

S. No.	Symptoms	No. of pts	Percentage (%)
1	Fever	32	100
2	Headache	20	64
3	Myalgia	20	64
4	Arthralgia	4	12
5	Vomiting	16	50
6	Pain abdomen	13	40
7	Anorexia	13	40
8	Itching/flushing	10	32
9	Haemetemesis	2	6
10	Malena	2	6
11	Epistaxis	2	6
12	Gum bleed	4	12
13	Haematuria	3	9
14	Bleeding per vaginum	3	9
15	Abortion	0	0

Table 3. Clinical signs and non-obstetric complications of dengue

S No	Signs	No. of patients	Percentage (%)
1	Maculopapular rash	8	25
2	Petiechial rash	7	21
3	Sub conjuctival haemorrage	4	12
4	Hepatomegaly	4	12
5	Splenomegaly	3	9
6	Ascites	3	9
7	Pleural effusion	2	6
8	Myocarditis	0	0
9	Shock	2	6
10	ARF	2	6

Table 4. Distribution of cases according to dengue serology

S. No.	Dengue Serology	No. of Patients
1	NS 1 Ag +	20
2	IgM +, IgG -	16
3	IgM -, IgG +	12
4	IgM +, IgG -	14

Table 5. Laboratory investigations in pregnant women with dengue

S. No	Investigation	No. of Patients
1	THROMBOCYTOPENIA	
	50,000-1,00,000/cu mm	08
	20,000-50,000/cu mm	16
	<20,000/cu mm	08
2	LEUKOPENIA(<4,000)	12
3	AST RAISED	24
4	ALT RAISED	24
5	AST>ALT	24

Table 6. Obstetric complications of dengue

S. No	Complications	No.
1	Low birth weight	1
2	Intrauterine death	0
3	Congenital anomaly	0
4	Preterm labour	2
5	Mortality	0

second trimester (13) and third trimester (15) (Table 1).

In our study, fever was present in all the patients, headache and myalgia was seen in 64% of cases, followed by vomiting in 50%, and itching/ flushing in 32%. Bleeding manifestations were seen in the form of malena (6%), hematemesis (6%), epistaxis (6%), hematuria (9%), and minor bleeding per vaginum (9%), but none had miscarriage (Table 2) (Fig. 1).

On general examination of the patients, maculopapular rash was observed in 25%, petechial rash in 21% and subconjunctival haemorrhage in 12%.The abdominal examination of the patients

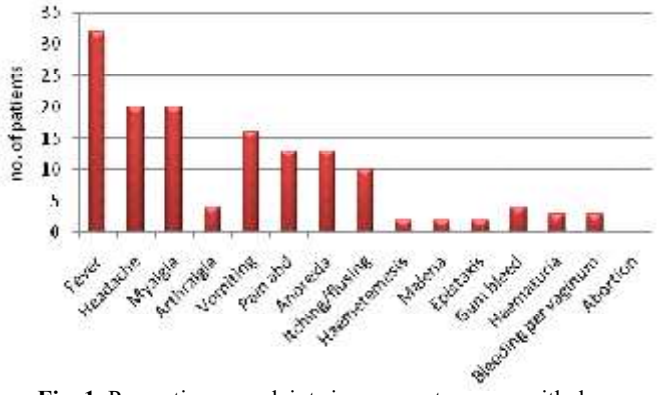

Fig. 1. Presenting complaints in pregnant women with dengue

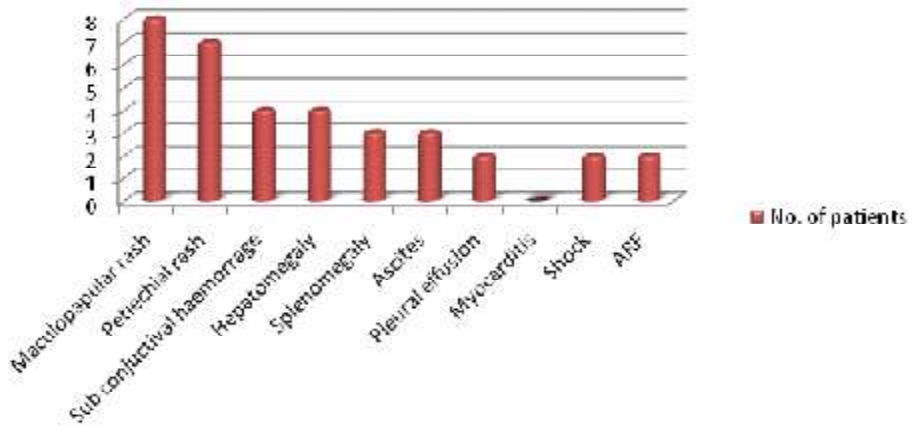

Fig. 2. Clinical signs and non-obstetric complications of dengue in pregnant women

revealed hepatomegaly (12%), splenomegaly (9%) and ascitis (9%).These abdominal findings were easily discernible by clinical examination in early pregnancy but later required ultrsonography of abdomen. In the study we did not observe the rare manifestations like myocarditis , myopathy, or convulsions (Table 3) (Fig. 2).

Dengue serology (NS1 Antigen, IgM and IgG Anti dengue antibody) was done in all the patients. In 20 patients NS1 Antigen was positive, 16 had only IgM antibody positive whereas IgG antibody alone was positive in 12 patients. Both antibodies were positive in 14 patients.(Table 4).

The laboratory investigations revealed leucopenia (WBC < 4000/mm^3) in 12 patients, thrombocytopenia with platelet count in the range of 50,000 -1,00,000/mm^3 in 8 patients; 20,000 - 50,000/mm^3 in 16 patients and less than 20,000/mm^3 seen in 8 patients. The liver enzymes (ALT, AST) were raised in 24 patients (Table 5).

All our patients regularly attended the ante-natal clinics till their delivery. Of the 32 females who were enrolled in the study, two went into preterm labour and subsequently gave birth to preterm baby. In addition, a LBW baby was born to a female with term delivery (Table 6). None of the babies had any congenital anomaly. In addition there was no maternal or foetal mortality observed in our study.

DISCUSSION

Our study outlines the clinical and laboratory features of pregnant females having serologically confirmed dengue, with special emphasis on maternal and fetal outcome. This is clinically relevant as the presentations of dengue fever may be confused as being due to primary obstetric complications like pre-eclampsia and HELLP syndrome. Thus the medical personnel, both physician as well as obstetrician should have an overview of the presentation of disease in pregnancy, especially in dengue endemic regions, otherwise the condition may be life threatening. In addition, valuable time and resources would be wasted in managing patients incorrectly.

All the pregnant females had fever as their presenting complaint. Other significant complaints were headache and myalgia (64%), followed by vomiting (50%) and itching/flushing (32%). Apart from minor bleeding in the form of malena (6%), hematemesis (6%), epistaxis (6%), hematuria (9%), we observed bleeding per vaginum in 3 patients, but it was minor and there was no abortion. Similar observations were made by Sirinavin et al. in a review where 93% pregnant females had typical presentation with abrupt onset fever with headache, retro-orbital pain, myalgia, in some cases accompanied by shock and pleural effusion[5]. Similarly, a case report by Phuphong showed typical clinical course[6].

In our study, platelet count 50,000 - 1,00,000/mm^3 was present in 8 patients, 20,000 - 50,000/mm^3 in 16 patients and < 20,000/mm^3 in 8 patients. Leucopenia was seen in 12 patients and 24 patients had raised liver enzymes (ALT/AST).Similar patterns of liver enzyme abnormalities have been reported in non pregnant adults and children with DHF and DSS[7, 8] .

Dengue Fever is characterized by plasma leakage (haemoconcentration, pleural effusion and ascitis) and haemorrhagic manifestations. However, the haemodilution associated with normal pregnancy may mask the classical features of haemoconcentration associated with plasma leakage in DHF. Thus, it requires high index of suspicion to detect fluid leakage in patients with dengue in pregnancy. In addition, there may be difficulties in differentiating DHF from conditions such as the HELLP syndrome where haemoconcentration, thrombocytopenia, abdominal pain and elevated liver enzymes may occur.

Apart from the clinical presentations and laboratory parameters, the other major focus of our study was to observe obstetric complications and to assess the maternal and fetal outcome. Our study group included 32 patients, who were all followed till delivery. There was no mortality. Two pregnant females went into preterm delivery and gave birth to preterm babies. In addition, a low birth baby was born to female with term delivery. Similar observations have been made by Carles et al in their review of 38 cases where there was significant increase in prematurity and fetal deaths[9,10]. In a similar study conducted in South-East Asia by Ismail et al in 16 patients, 50% prematurity rate and 3 maternal deaths were reported[11]. The higher incidence of prematurity and mortality was probably due to more severely ill

patients included in the studies. In our study, none of the newborns had any congenital anomaly or clinical features suggestive of neonatal dengue. This demonstrates that dengue virus poses no specific threat of fetal malformation, as in the case of rubella. Perret *et al* also showed no foetal effects from maternal dengue infection[12].

CONCLUSION

Dengue fever in pregnancy manifests with similar pattern of symptoms and signs as in non-pregnant state. Most of the females in our study had favourable obstetric outcome, except 2 preterm delivery and one low-birth weight baby. Since dengue fever may mimic other complications of pregnancy or pregnancy itself may mask the florid manifestations of dengue fever, misdiagnosis or delay in diagnosis may become potentially hazardous.

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