

Flood and Dengue: Increased risk of Gestational PestilencesAmna Rizwan¹, Moeez Tariq², Maryum Imran³

Madam Editor, Dengue fever is an acute viral disease caused by an RNA (Ribonucleic Acid) virus transmitted by Aedes mosquitoes. Symptoms can range from asymptomatic fever to life-threatening complications such as haemorrhagic fever and shock.¹ Dengue fever is recognized by the (WHO) World Health Organization as a serious global public health threat in tropical and subtropical countries. Dengue-endemic regions are home to 2.5 billion people, and 400 million infections occur each year, with mortality rates exceeding 20% in some areas.² Extremely heavy rains have lately devastated Pakistan, with its most populous metropolis of Karachi witnessing the worst floods in a century. Flooding and inadequate water sanitation have increased the risk of dengue, malaria, and other water-borne disease outbreaks. Determining whether dengue infection during pregnancy is associated with adverse effects on the foetus is important, given that women of reproductive age in dengue-endemic areas are at risk of contracting the disease.

Studies have suggested an association between maternal infection during pregnancy and preterm birth, low birth weight, small gestational age births, stillbirth, and miscarriage.^{3,4} According to Pouliot SH, et al., high rates of Caesarean deliveries (44%) and pre-eclampsia (12%) occurred in women who had dengue infection during pregnancy.⁵ Even though there are several variants of dengue infection, the study found that the proportion of DENV-4 in pregnant women was higher than in non-pregnant women,⁶ the reason for which is still unclear.

The gestational period involves various anatomical and physiological changes in the female body, such as increased capillary permeability, haemodilution, leukocytosis, thrombocytopenia, etc., which may complicate the assessment of the clinical manifestation of dengue due to opposing effects on the body, such as the

contradicting leucocyte concentration, as pregnancy causes leukocytosis, whereas dengue causes leukopenia.⁶

Though the exact mechanism of the effect of maternal dengue on the foetus is yet to be determined, recent studies have put forward two mechanisms for foetal and neonatal morbidity caused by maternal dengue infection. The first theory is that dengue infection causes haemodynamic changes during pregnancy that could affect the placenta and cause foetal hypoxia, In contrast, the second theory states that dengue infection affects the foetus directly.⁷

Recently, a study was conducted in placental tissues and retained products of conception from 24 patients with confirmed dengue infection during pregnancy. Histopathological changes were associated with inflammatory responses, including deciduitis, chorio-deciduitis, necrotizing villitis, proliferative villitis, etc.⁷ Pathological changes observed in this study were like those seen in hypoxia, oedema of the placental components. This study concluded that both the haemodynamic changes experienced by the mother due to capillary leak syndrome and the vertical transmission of the virus could be responsible for the high rate of foetal and neonatal complications and morbidity in dengue infection.⁷

Dengue fever has affected Pakistan after the torrential rains this year.⁸ The flood-affected areas of the country are at high risk for the disease. There is a huge burden on the health sector to cope with the outbreak. Given the gestational pestilence of dengue, timely diagnosis, and prompt management of the affected gravida are required. Careful assessment and exclusion of the problems mentioned above are also needed during routine antenatal visits. All these measures do not supersede the basic strategies for preventing the infection, including bed-netting, the application of mosquito repellents, and the use of insecticides. The stakeholders should supervise the provision of these basic services as well as maternal and infant care in flood-affected areas more vigilantly to prevent fatal consequences.

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MT Conceptualized the idea and formulated the final version.

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