CASE REPORTS

SEVERE DENGUE IN PREGNANT WOMEN

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Abstract. Over half of the world's population lives in areas at risk of dengue infection with 70% of overall disease burden in Asia. A shifting in age group of dengue patients towards adulthood has been widely seen in Asia. This will affect an increase in incidence of dengue infection in childbearing age and pregnant women. Two cases of severe dengue in pregnant women admitted to Photharam Hospital, Ratchaburi, Thailand were described. Both of them had dengue shock syndrome with organopathy involving the central nervous system with alteration of consciousness in one. They had uneventful recoveries following intensive care. This report emphasizes the hazards of dengue infection in pregnant women, which needs special consideration. Early recognition with careful monitoring and symptomatic management are the key factors in a favorable outcome for a dengue patient.

Keywords: HELLP, pregnancy, severe dengue

INTRODUCTION

Dengue is a mosquito-borne viral disease caused by four closely related dengue serotypes, and it ranges from asymptomatic infection to undifferentiated fever, dengue fever (DF), and dengue hemorrhagic fever (DHF). DHF is characterized by fever, bleeding diathesis, and a tendency to develop a potentially fatal shock syndrome (dengue shock syndrome, DSS). Dengue infection with organ impairment mainly involves the central nervous system and liver. Consistent hematological findings include vasculopathy, coagulopathy, and thrombocytopenia. Laboratory diagnosis includes virus isolation, serology, and detection of dengue ribonucleic acid. Successful treatment, which is mainly supportive, depends on early recognition of the disease and careful monitoring for shock. A revised severity-based dengue classification for medical interventions has been developed and validated in many countries. Currently, no specific dengue therapeutics exist, and prevention is limited to vector control measures.

At present, dengue is a growing global health concern with over half of the world's population living in areas at risk of dengue infection, and 70% of overall disease burden is in Asia. In Thailand, dengue is the most important arbovirus infection of the 21st century, and dengue disease is prevalent in all provinces. In Asia, there has been a general shift in age group predominance of dengue disease over the past decades

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to adulthood. Hence, awareness of the increased incidence of dengue infection in women of childbearing age is needed (Thisyakorn and Thisyakorn, 2015). Dengue infection complicated by severe hemorrhage and vertical transmission in a parturient woman has been described. That report emphasized the hazards of surgical intervention in patients with acute dengue infection and the mother-to-child transmission of dengue during the perinatal period (Thaithumyanon *et al*, 1994). This report highlights the higher risk of severe dengue disease in pregnant patients.

CASE REPORTS

Two cases of severe dengue in pregnant women admitted to Photharam Hospital, Ratchaburi, Thailand were described. The diagnosis of dengue patients adhered to clinical and laboratory criteria for the diagnosis of dengue patients as established by the World Health Organization (WHO, 1997; WHO, 2009). Analyses of the cases of two dengue patients were done after the approval of an ethics review committee.

Case 1

A 19-year-old, gravida 2, para 1 woman was hospitalized in Photharam Hospital at 20 weeks of gestation with a history of fever for 3 days, anorexia, vomiting, abdominal pain, headache, and drowsiness. Physical examination revealed a temperature of 39.7ºC, a blood pressure of 100/70 mmHg, a pulse rate of 110/min, and respiratory rate of 26/min. She was drowsy, and petechiae were seen on her legs. Laboratory findings included a hemoglobin of 12.3 g/dl, a hematocrit of 36.1%, a white blood cell count of 7,980/mm^3 (neutrophils 86%, lymphocytes 10%, and monocytes 4%), and a platelet count of 147,000/mm^3. She was admitted as having dengue infection. She received crystalloid intravenous fluid replacement, and her vital signs were closely monitored. Despite the crystalloid replacement, her blood pressure dropped to 80/50 with a rapid and weak pulse with a rate of 104/min. Her hematocrit increased to 45% with the platelet count decreasing to 11,000/mm^3. Colloid (dextran, albumin) replacement and dopamine infusion were then given. At recovery, her chest roentgenogram showed mild pulmonary congestion and cardiomegaly, which became normal later on. She had uneventful recovery after 6 days of hospitalization. She eventually delivered a normal baby boy weighing 3,090 grams at 39 weeks of gestation.

Case 2

A 22-year-old, gravida 1, para 0 woman was hospitalized in Photharam Hospital at 16 weeks of gestation with a history of fever for 4 days, nausea, and abdominal pain. Physical examination revealed a temperature of 38.8ºC, a blood pressure of 100/70 mmHg, a pulse rate of 90/min, and a respiratory rate of 24/min. Laboratory findings included a hemoglobin of 10.7 g/dl, a hematocrit of 33.4%, a white blood cell count of 7,800/mm^3 (neutrophils 62%, lymphocytes 33%, monocytes 3%, and eosinophils 2%), and a platelet count of 112,400/mm^3. She was then admitted as having dengue infection. Crystalloid intravenous fluid was given with close monitoring of vital signs. During the course, her hematocrit rose to 38% with a drop in platelet count to 24,000/mm^3. She finally had an uneventful recovery after 5 days of hospitalization. Subsequently, she delivered a normal baby boy weighing

2,370 grams at 37 weeks of gestation.

DISCUSSION

Dengue epidemics are known to have occurred regularly during the past decades in Asia, causing a heavy burden on the healthcare system. A shift in the age group of dengue patients towards adulthood has been widely seen**,** which will have the consequence of an increased incidence of dengue infection in childbearing age and pregnant women (Thisyakorn and Thisyakorn, 2015). The cases in this report illustrate severe dengue in pregnant women. Both of them had DSS, and organopathy involving the central nervous system occurred in one patient. Dengue infections with organopathy mainly involving the central nervous system and liver have been reported in patients with dengue infection. These manifestations may be associated with co-infections, co-morbidities, or complications of prolonged shock. Exhaustive investigations should be done in these cases (Innis *et al*, 1990; Thisyakorn and Thisyakorn, 1994a,b; Thisyakorn *et al*, 1999; Hemungkorn *et al*, 2007).

Both patients had uneventful recoveries due to early diagnosis, careful monitoring, and intensive management. Evidence-based data on the management of dengue specific for pregnancy are sparse but are needed because pregnant women with dengue infection have a higher risk of severe disease than non-pregnant patients. The following are special considerations in pregnant women with dengue (Royal College Physician of Thailand, 2013):

- Physiologic hemodilution in pregnancy may obscure hemoconcentration in DHF as seen in Case Report 2.

- Dengue infection should be a differential diagnosis of pregnancy-related conditions, especially HELLP (Hemolysis, Elevated Liver enzymes, Low Platelet count) syndrome.

- Platelet transfusion is indicated in in-labor pregnancy, when the platelet count is <50,000/mm^3.

- There are increased risks of abortion, premature uterine contraction, intra- and post-partum hemorrhage, maternal death, fetal distress, low birth weight, or death of the fetus *in utero*, which is associated with disease severity and gestational age.

- With a vertical transmission rate of 1.6%-10.5%, dengue infection is a cause of low platelets in the newborn (usually occurring in pregnant women who have had fever for 1 week before delivery).

The WHO's "Global Strategy for Dengue Prevention and Control, 2012-2020" targets reducing the global burden of dengue by decreasing its morbidity by 25% and its mortality by 50% (WHO, 2012). Two of the key technical elements are diagnosis and case management. Mortality from dengue can be reduced to almost zero by implementing timely, appropriate clinical management, which involves early clinical and laboratory diagnoses, intravenous rehydration, staff training, and hospital reorganization.

Despite the dengue control programs, case management guidelines, and surveillance efforts, rates of dengue virus transmission remain high, and prevention remains a public health priority. Ultimately, an effective and long lasting vaccine needs to be used (Thisyakorn and Thisyakorn, 2014).

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