DENGUE IN PREGNANCY

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Abstract. This was a retrospective study of patients with dengue infection in pregnancy from year 2000 till 2004. Data were analyzed by looking at the presentation, complications of patient and fetus, and pregnancy outcomes. There was a total of 16 cases with an increasing trend (0.12% in 2003 *vs* 0.25% in 2004). The mean age of patients was 30.19 ± 6.85 years. Fifty percent of patients were multiparae and in their third trimester. The average gestation was 24.44 weeks with 7.5 days being the average duration of ward admission. Tourniquet test was positive in 62.5% of patients. Dengue serology IgM was positive in 50% whereas dengue serology IgG were positive in 68.8% of patients. There were three cases of maternal death. One patient presented as missed abortion. Preterm deliveries happened in 50.0% of the women. There were 4 premature babies, one in-utero fetal death, and two fetuses which suffered acute fetal distress. Three babies required intensive care. One unrelated fetal anomaly resulted in early neonatal death.

INTRODUCTION

In Malaysia, dengue fever was first reported in 1902 in Penang (Skae, 1902). It has since become a major public health problem, with the first dengue hemorrhagic fever (DHF) outbreak in Malaysia also occurring in Penang in 1962 (Rudnick *et al*, 1965).

Dengue infection can present four different clinical syndromes: undifferentiated fever, classical dengue fever (DF), dengue hemorrhagic fever (DHF), or dengue shock syndrome (DSS). Cases are increasingly being reported during pregnancy in Malaysia where they affect adults.

Dengue virus is transmitted via the *Aedes* mosquito, which include *Ae.aegypti* and *Ae.albopictus*. Most of the reported cases are from urban areas (70-80%) and amongst working and schooling age groups (Ministry of Health Malaysia, 1988-1998). There were more cases of DF than DHF, with a ratio of 16 - 25:1 over the last 5 years (Ministry of Health Malaysia, 1988-1998). The 2000 and 2002 national reports showed a six-fold increase in the incidence rate of dengue fever from 1.73 in 2000 to 7.99 in 2002. Mortality rate doubled from 0.16 in 2000 to 0.28 in 2002 (Ministry of Health Malaysia, 2000, 2002). This study was conducted to analyze the patterns and outcomes of dengue infection amongst pregnant women at our center.

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MATERIALS AND METHOD

A retrospective study of patients with dengue infections during pregnancy was conducted between 2000 and 2004. Data analyzation was made by studying maternal presentation, complications of patient and fetus, and pregnancy outcomes. Classical dengue fever (DF) is defined as an acute febrile illness with two or more other clinical mani-

festations involving headache, retro-orbital pain, myalgia, arthralgia, rash, hemorrhagic manifestation, or leukopenia, and is supported by serology or occurrence at same location and time as other confirmed cases. Dengue hemorrhagic fever (DHF) is characterized by fever, hemorrhagic tendencies, thrombocytopenia, and evidence of plasma leakage, as well as possible association with hepatomegaly and circulatory disturbances. Dengue shock syndrome is manifested when DHF symptoms include rapid and weak pulse, narrow pulse pressure of less than 20 mmHg, and hypotension.

RESULTS

A total of 16 cases with an upward trend (0.12% in 2003 *vs* 0.25% in 2004) were reported during pregnancy. Most cases were DF (68.8%), followed by DSS (18.8%) and DHF (12.5%). The mean age was 30.19 ± 6.85 with 75.0% of cases being Malay patients. Fifty percent of the women were multiparous and in the their third trimester. The mean gestational age was 24.44 weeks with the average duration of admission stay being 7.50 days. Tourniquet tests were positive in 62.5% of patients. Dengue serology IgM was positive in 50% of patients, while dengue serology IgG were positive in 68.8% of patients. Preterm deliveries happened nearly in 50.0% of the women. There were three cases of maternal death secondary to DSS. One patient presented a missed abortion and 4 patients were lost during follow-up. There were 4 babies with premature births, one in-utero fetal death, two fetuses with acute fetal distress (one baby was admitted to NICU and one was discharged well). Three babies required intensive care. One unrelated (meconium peritonitis) fetal abnormality resulted in early neonatal death.

DISCUSSION

Dengue infection is an acute febrile illness with symptoms which include high continuous fever of 3 days or more, headaches, retro-orbital pain, myalgia, abdominal pain and vomiting. Signs present include petechial hemorrhages, gum bleeding, generalized rash and hepatomegaly. Platelet deficiency is a constant feature in dengue infection. With DHF, increased vascular permeability resulting in hemoconcentration and plasma leakage is evidenced by pleural effusion, ascites and hypoproteinemia (Ministry of Health Malaysia, 2003). Some of these syndromes may be confused with HELLP syndrome (hemolysis, elevated liver enzyme and low platelets counts) but a high index of suspicion of dengue infection occuring in endemic areas must be entertained.

Studies have demonstrated that in countries such as Malaysia where dengue fever is endemic, antibodies can be detected in pregnant women exposed to this infection (Veerachai *et al*, 2003). It has also been shown that maternal antibodies are actively transported across the placenta (Veerachai *et al*, 2003). At our center, the total number of patients reporting dengue infection increased from 888 patients in 2003 to 1,379 patients in 2004. They were mainly admitted in general wards and casualty units. The incidence in pregnancy also increased. All our pregnant women presented symptoms similar to non-pregnant cases. Major complications affecting patients included risk of preterm delivery (nearly 50.0%). DF and DHF in pregnancy did not cause fetal abnormality but DHF may have been responsible for fetal death (Carles *et al*, 1999). In our study, fetuses with fetal anomalies were not associated with dengue infection.

There were three cases of maternal death secondary to DSS in this study. Fatal complications of dengue infection involving renal failure and disseminated intravascular coagulation disorder (DIC) were reported in all three cases of DSS. There was one case of post partum hemorrhage in a patient who underwent lower segment cesarean section as a

result of bleeding placenta praevia complicating with DIC and succumbed to DSS. Increment of antibodies IgG and IgM helped in the diagnosis (Phupong, 2001), although the isolation of the dengue virus or a four-fold rise in antibody titer using a type-specific plaque reduction neutralization test was needed for confirmation (Phupong, 2001). Treatment of classical dengue fever was the same as for other acute uncomplicated viral infections. Platelet transfusion was generally avoided unless there was significant bleeding or platelet counts less than 50,000 (Ministry of Health Malaysia, 2003). The management of most cases was conservative, as recommended by earlier studies (Phupong, 2001).

Dengue infection in pregnancy may have resulted in maternal morbidity and mortality, particular in preterm deliveries with premature babies. Where dengue fever is endemic, dengue infection should be highly suspected in cases of febrile pregnant women. A thorough investigation should be conducted so as to confirm the infection and prevent further maternal and fetal complications.

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