Acute Dengue in a Neonate Secondary to Perinatal Transmission

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SUMMARY

We report a newborn baby girl with acute dengue due to vertical transmission. A 31 year old factory worker of 38+ week gestation, gravida 5 para 3+1, developed acute dengue fever two days prior to delivery. She delivered a normal term baby girl by spontaneous vaginal delivery and recovered uneventfully without peripartum haemorrhage despite the presence of thrombocytopenia. The baby girl developed low grade fever on day four of post-natal life and except for the transient thrombocytopenia, also recovered uneventfully following three days of mild illness. The clinical diagnosis of acute dengue virus infection was confirmed by laboratory tests.

KEY WORDS:
Neonatal dengue, Vertical transmission

INTRODUCTION

Dengue viruses are arboviruses that belong to the genus *Flavivirus* under the family *Flaviviridae*[1]. Dengue infection has become a major public health problem in both tropical and subtropical regions. Infection with a dengue virus may be clinically asymptomatic or may present as a nonspecific febrile illness, classic dengue fever (DF), or dengue haemorrhagic fever/dengue shock syndrome (DHF/DSS)[1,2]. In early reports, DF and DHF/DSS occurred mainly in children under 15 years of age. However, more recent epidemiological data has shown an increasing incidence in the older age groups including pregnant women with severe peripartum bleeding at or post delivery[2-5]. Although it is still not a common occurrence, early recognition and proper management of pregnant women in the late stages of pregnancy with acute dengue virus infection and neonates with perinatal dengue deserves special attention to reduce maternal and infant mortality[3-6]. We report a pregnant woman who had acute dengue virus infection near the time of delivery and delivered a normal healthy baby who subsequently developed neonatal acute dengue.

CASE REPORT

Mother:

A 31 years old factory worker (gravida 5, para 3+1) of 38+ week of pregnancy was previously well and with an uneventful antenatal history. At day 2 prior to delivery, she developed high grade fever associated with chills, rigor, arthralgia, myalgia, retro-orbital pain, headache, sore throat and a few episodes of vomiting. There was no associated rash, bleeding tendency or abdominal pain. She was seen by a doctor in a private hospital and was given antipyretic and oral antibiotics as outpatient treatment. She was still febrile on day two of the illness and was subsequently admitted to the antenatal ward of Hospital Taiping for reduced foetal movement. At admission, she was febrile (axillary temperature of 37.9^{0}C) but otherwise her vital signs were stable and abdominal examination showed her uterine size corresponded to term pregnancy. Other systemic examinations were essentially normal. An antenatal ultrasound scan was done which did not reveal any abnormality. At the same time, a septic workout (blood, urine and high vaginal swab culture) was carried out including a blood sample for laboratory diagnosis of dengue. Her full blood count at admission showed a low platelet count (107 x 10^3/µL), a haemoglobin concentration of 9.9 g/dL, haematocrit of 32.9% and a total white blood cell count of 5.5 x 103/µL. Anti-dengue specific IgM was detected in her blood taken on 28th July 2007 (at admission). She was clinically diagnosed as having acute dengue fever and started on intravenous drip.

She developed uterine contraction on day 2 of admission and delivered a term baby girl by spontaneous vaginal delivery on the same day. Her fever resolved after delivery but her platelet count continued to decrease post-delivery and only normalized at day 7 of admission (Table I). She did not develop post-partum haemorrhage and was discharged well. She stayed in an area which is known to have high transmission of dengue virus. Though, no other family members came down with similar illness, chemical fogging was being carried out in her residential area by the local council a week prior to the onset of her illness.

Baby:

B/O A.T. P, a normal term baby girl was delivered on 29th July 2007 with a birth weight of 3.13kg and an Apgar score of 9 at 1 minute and 10 at 5 minutes post-delivery. She was well, active and tolerating breastfeeding till day 4 (2/8/2007) of life when she developed low grade fever. She was alert, pink with good circulatory perfusion at examination. Her vital signs were stable and there was no associated rash, jaundice, vomiting, diarrhoea or bleeding tendency. The first full blood count taken in postnatal ward at day 5 of life showed haemoglobin: 14.1g/dL, haematocrit: 44.7%, total white cell

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count: 4.7 x 10^3/μL and platelet count: 38 x 10^3/μL. She was transferred to the special care nursery on day 5 for close monitoring of her illness and intravenous crystalline penicillin and gentamicin were started against the possibility of neonatal sepsis after the usual septic workout. Blood was also taken for laboratory confirmation of acute dengue virus infection. Her serial blood examination and laboratory tests for dengue diagnostics were shown in Table II. Her liver function tests and cerebral-spinal fluid investigations were normal.

She continued to have low grade fever ranging from 37.5°C to 38.2°C till day 6 of life. She was off intravenous fluid therapy on day 7 of life and the antibiotics were discontinued after 5 days of treatment and all culture results were noted to be negative for bacterial growth. She was discharged well on day 9 of life.

DISCUSSION

Dengue virus infection is essentially a disease of young children. However, the resurgence of dengue in recent decades has been associated with an increasing incidence of dengue virus infection in the adult population. This in turn may have contributed to an increase in the number of case reports of dengue illness in pregnant women with transplacental transmission to newborns though the number of cases reported is still very low[3-6]. The number of reported cases may not reflect the actual occurrence of such perinatal transmission of dengue virus in the community. Subclinical infection and milder form of dengue illness, lack of awareness by the attending obstetricians and the lack of good laboratory tests for early laboratory confirmation of acute dengue based on a single serum in most hospitals may have contributed to the low reporting of such cases. The first report on transplacental transmission of dengue virus in Malaysia was on two cases of maternal acute dengue with vertical transmission to their newborns by Chye *et al.* in 1994[4]. Though this report constitutes the second report of maternal acute dengue with perinatal transmission to her newborn, we are aware of one such similar past occurrence in a general hospital in Johore, southern part of peninsular Malaysia in February 2007, in which the affected mother unfortunately succumbed to DHF/DSS following caesaerian section and her baby recovered uneventfully following a transient febrile phase (Unpublished data).

Clinical presentation of antenatal and post-partum dengue is similar to other dengue infections and management is more or less similar to that of adult dengue. However, management of perinatal dengue virus infection deserves special attention[3-5]. Dengue shock syndrome and/or bleeding complications may occur in both mothers and infants. The presence of wounds or trauma due to birth coinciding with a period of marked thrombocytopenia, abnormal platelet function and coagulation abnormalities post extra risk of severe uncontrollable haemorrhage and shock. Thus, awareness and early recognition of perinatal dengue together with the availability of a better laboratory test based on the detection of dengue non-structural (NS1) protein present in patient's blood for early laboratory confirmation of acute dengue will contribute to early appropriate management and significant reduction of maternal and infant mortality.

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Table I: The serial blood profile of the mother with acute perinatal dengue

Date	28/7/2007	29/7/2007	31/7/2007	1/8/2007	4/8/2007
Haemoglobin (g/dL)	9.9	10.2	9.9	9.3	10.0
Total white cell (10^3/μL)	5.5	6.2	6.5	5.4	7.6
Haematocrit (%)	32.9	33.8	33.7	30.5	34.2
Platelet count (x 10^3 /μL)	107	91	37	32	117

Table II: The serial blood profile of the neonate with acute dengue and result of laboratory tests for acute dengue virus infection.

Date	2/8/2007	3/8/2007 (am)	3/8/2007 (pm)	22/8/2007
Haemoglobin (g/dL)	14.1	14.9	13.7	
Total white cell (10^3 /μL)	4.7	4.7	6.0	
Haematocrit (%)	44.7	47.6	45.3	
Platelet count (10^3 /μL)	38	94	110	
Blood culture		No growth		
CSF culture		No growth		
Anti-dengue IgM (Unit/ml)			81.1	93.4
Anti-dengue IgG (Unit/ml)			8.7	16.1
Dengue virus NS1 protein			Detected	
Dengue virus nucleic acid			Not detected	
Dengue virus isolation			Negative	