Case Reports

Congenital Brucellosis in a Preterm Neonate

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Brucellosis is primarily a zoonotic infection. Transmission to humans occurs through direct contact with infected animals or consumption of infected animal products. Human to human transmission is rare, but has been reported in association with blood transfusion, bone marrow transplantation, transplacental or perinatal exposure, during sexual intercourse and postnatally through breast milk. This report presents a case of transplacentally transmitted neonatal brucellosis.

Key words: *Congenital brucellosis, Neonate, Perinatal transmission.*

Brucellosis is primarily a zoonotic infectious disease found in both domestic and wild animals(1). Humans are accidental hosts and can be infected via exposure to infected animals or by consumption of contaminated foods (2).

Human to human transmission is uncommon and has been described after blood transfusion(3), bone marrow transplantation(4) and possibly during sexual intercourse(5). Lubani, *et al.*(6) suggested transmission via breast milk in three cases. Neonatal brucellosis is rare and there are only a few reports of congenital brucellosis.

We describe one case of perinatal transmission of *Brucella melitensis* biovar abortus from an infected mother to her preterm baby.

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Case report

A 900 g male infant was born at 26 weeks gestation to a 25-year-old primigravida rural female who presented in active labor with spontaneously ruptured membranes. The apgar scores were 4 at 1 minute and 7 at 5 minutes. The infant was immediately resuscitated, and had to be placed on mechanical ventilation because of poor respiratory effort. The child was hypotensive requiring vasopressors. Rest of the physical examination was unremarkable. Sepsis work up was performed and the infant was started on 50 mg/kg ampicillin and 7.5 mg/kg amikacin twice a day intravenously.

The initial compelete blood count showed a hemoglobin of 16.8 g/dL , a leukocyte count of 12500/mm^3 with 64% polymorphonuclear cells, 34% lymphocytes and 2% monocytes and platelet count of 233,000/ mm^3. Clotting studies, CRP and liver function tests were within normal limit. The infant's hospital stay was complicated by thrombocytopenia (91,000/mm^3 platelet), hyperbilirubinema requiring phototherapy and exchange transfusion. Hypocalcemia was treated with 10% calcium gluconate. A tension pneumothorax occurred which resolved by chest tube

insertion. He was maintained on parenteral nutrition.

The blood culture obtained on admission yielded Brucella spp. sensitive to rifampin, imipenem and resistant to ceftazidime, amikacin, trimethoprim-sulfamethoxazole and ceftriaxone. Since there was no significant improvement in infant's clinical status the antibiotics were changed to rifampin 10 mg/kg/day and imipenem 20 mg/kg/day. The brucella titer was 1:320.

For further evaluation, blood was sent for Nested PCR and DNA sequencing to the Cellular and Molecular Biology Research Center of Shaheed Beheshti University of Medical Sciences. The PCR was done by brucella rDNA gene primers:

(Br1F5' - ATA GCT GGT CTC AGA GGA TGA TCA G-3', Br1R5' - TTC GGG TAA AAC CAA CTC CCA TGG -3' , Br2F5' - ATA TTG GAC AAT GGG CGC AA-3' and Br2 R'- AGC GAT TCC AAC TTC ATG CA-3') (OligoGenset, France).

PCR restriction analysis revealed the Brucella spp. as *B. melitensis* biovar *abortus* and confirmed by DNA sequencing.

Mother was well during the gestation, but did not receive antenatal care. The family lived in a farm and was involved in the care of cows and goats. Mother had history of intake of unpasteurized dairy products. A blood culture and brucella agglutination titer on mother blood was positive for *B. melitensis* and brucella titer was 1:160. She was further treated with doxycycline 200 mg and rifampin 600 mg daily for 6 weeks.

Repeat blood culture after one week was negative in our case. He experienced several episodes of cardiovascular and pulmonary collapse and expired at age of 21 days of life with a massive tension pneumothorax.

Discussion

Brucellosis remains an important infection of humans in many parts of the world especially Latin America, Southern Europe, Africa and Asia including Middle East(1).

Although infected pregnant animals transfer brucella to their offspring transplacentally with resultant massive wastage of conception; this mode of transmission and resultant interference with the normal course of pregnancy has been disputed in human beings. The discrepancy between the abortive effect of brucellosis in animals and that in humans has been attributed to the presence of erythritol. However, a few reports have documented isolation of brucella species from aborted human fetuses or premature stillbirths and from their respective placental or maternal blood and lochia(2).

Our patient delivered prematurely. Brucella like any other gram negative bacteremia would be expected to increase the risk of premature birth. It seems that mother had subclinical illness with no clinical findings and more likely was bacteremic during pregnancy and transplacentally transmitted brucella to the newborn infant during pregnancy. The initial blood culture was positive and as the baby did not receive breast milk since birth, infection through breast milk can be excluded.

Thrombocytopenia in our case could be due to complications of prematurity and a wide variety of neonatal problems as well as brucellosis. Thrombocytopenia, clotting disorders and erythrophagocytosis in the bone marrow can occur in brucellosis(7).

Brucella serologic tests have proved to be an invauable screening method in children. In rare instances brucella has been recovered from blood cultrues of children with negative

or insignificant brucella titer (<1:160)(8). However most cases of active infection have titers higher than 1:160(1). In our patient the culture was positive and brucella titer was 1:320.

In the treatment of brucellosis a variety of durgs can be used safely . Ampicillin has been shown to be effective in treating a premature newborn with brucellosis(9). Khuri-Bulos, *et al.*(10) showed that treatment with trimetoprim sulfamethoxazole and rifampin for at least 6 weeks is safe for children younger than 8 years of age whereas treatment with gentamicin for 5 days followed by rifampin is effective in newborns.

Clinical manifestations of neonatal brucellosis vary. Therefore, in areas where brucellosis is endemic, it is important to consider it if other bacterial infections are excluded.

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