Preliminary study between IgG antibody in breast milk and neonatal jaundice

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Abstract

Background: Maternal IgG antibodies can pass through the placental barrier to the fetal circulation, and may sensitize fetal red cells when there is maternal-fetal blood type incompatibility. The pathogenesis of breast milk jaundice is not yet clear. Few studies have focused on hemolytic disease of the newborn (HDN) associated with passively-acquired maternal antibodies from breast milk, for which individual cases were occasionally reported in recent years. Case Report: Five newborns were found to develop jaundice 19 hours to 4 days after birth. These affected neonates were enrolled in a study to test free antibodies in plasma and antibodies bound to the surface of red blood cells, as well as antibodies in their mothers' blood and breast milk. The data were analyzed in combination with the mothers' antibody monitoring records during pregnancy. Methods: 3 mL of EDTA-anticoagulated venous blood was collected from each affected neonate and 5 mL from his/her mother to separate plasma. The plasma was incubated with panel cells in normal saline in test tubes at 37 °C for 45 min, and then added to anti-human globulin micro-column gel cards and centrifuged to observe the results. 100–200 mL of the whey separated from breast milk was used in a two-stage papain technique: 50 μL of panel cells was incubated with 50 μL of 1% papain at 37 °C for 10 min, then washed once with normal saline and prepared to a 3–5% cell suspension; the cell suspension was incubated with 200–300 μL of whey at 37 °C for 30 min, then washed 3 times with normal saline and prepared to a 0.8–1% cell suspension. 50 μL of the resultant suspension was added to anti-human globulin micro-column gel cards and centrifuged to observe the results. In addition, an antibody elution test was conducted on the red blood cells of the affected neonates. Results: The antibodies in the red blood cell eluate of the affected neonates were consistent with those in the maternal blood and breast milk. The antibodies acquired in case 1 can immediately be considered irrelevant to the placental route. Conclusion: Anti-erythrocyte IgG antibodies may result from breast milk and cause red blood cell sensitization in newborns. For children with severe HDN, restrictions on breastfeeding should be considered to prevent continuous antibody acquisition.

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