

Usage of Cord Blood Stem Cells of Asphyxia Infants for Treatment

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Abstract : Background: Prenatal asphyxia or birth asphyxia is the medical situation resulting from a newborn infant that lasts long enough during the birth process to cause physical harm, usually to the brain. Human umbilical cord blood (UCB) is a well-established source of hematopoietic stem/progenitor cells (HSPCs) for allogeneic stem cell transplantation. These can be used clinically to care for children with malignant diseases. Low O₂ can cause in proliferation and differentiation of stem cells. Method: the cord blood of 11 infants with 3-5 Apgar scores or need to cardiac pulmonary Resuscitation as an asphyxia group and ten normal infants with more than 8 Apgar scores as the normal group was collected, and after isolating hematopoietic stem cells, the cells were cultured in enriched media for 14 days to compare the numbers of colonies by microscope. Results: There was a significant difference in the number of RBC precursor colonies (red colonies) in cultured media with 107 cord blood hematopoietic stem cells of infants who were exposed to hypoxemia in two wells of palate. There was not a significant difference in the number of white cell colonies in the two groups in the two wells of the plate. Conclusion: Hypoxia in the perinatal period can cause the increase of hematopoietic stem cells of cord blood, special red precursor stem cells in vitro, like an increase of red blood cells in the body when exposed to low oxygen conditions. Thus, it will be usable.

Keywords : asphyxia, neonre, stem cell, red cell

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