Gynecology and Reproductive Endocrinology

Plasmapheresis in the treatment and prevention of hemolytic diseases of the fetus and the newborn in rhesus conflict pregnancy

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Abstract

Introduction: The development of hemolytic disease in children born to women with Rh sensitization reaches 63%, and in 7% of women this leads to a complicated course of pregnancy, intrauterine and perinatal pathology with the development of hemolytic disease of the fetus and newborn (GBN). Severe forms of hyperbilirubinemia in newborns with an unconjugated bilirubin (UB) level of more than 310-340 μmol/L (in premature baby 170 μmol/L) with a risk of developing nuclear jaundice are usually eliminated by replacement blood transfusion (RBT). Material and methods: The analysis of three groups of newborns. 1 - 37 children who underwent syringe membrane plasmapheresis (PA) after RBT with plasma removal and its simultaneous replacement with donor plasma up to 2% of body weight; 2 - 16 newborns whose mothers during pregnancy had 4-5 sessions of membrane plasmapheresis with a Rhesus antibody titer of 1:34 and higher; 3 - 17 newborns who used only RBT with a replacement of 175-200 ml per kg of body weight. Laboratory diagnostics included the determination of unconjugated bilirubin (UB), which is the main marker of HDN, and free hemoglobin (FH) - an indicator of the erythrocytes cell membranes stability. Results: It was noted that in newborns of Group 2, whose mothers had been treated for Rh-sensitization dur¬ing pregnancy with a course of membrane PA, there were more stable UB findings by the end of the 2-nd day and significantly lower ($p < 0.05$) in Group 1, compared with the control Group 3. Attention is drawn to the initially high FH, which after PA sessions came to normal, but after RBT there was an even greater increase in it. A more significant decrease in the level of FH af¬ter PA procedures is likely to result in a more positive dynamics of bilirubin reduction in these newborns. Since the newborn's condition in Group 1 and Group 2 was more stable there was no need to trans¬fer them to the Department of Newborns Pathology. This was reflected in the number of beds/days per 1 newborn spent in the ICU of the maternity hospital, which was: Group 1 – 6.5±0.5 beds/day; Group 2 – 5.2±0.3 beds/day; Group 3 – 11.8±0.7 beds/day. Conclusion: In the HDN, the method of syringe membrane plasmapher¬esis provided faster normalization of free he¬moglobin and unconjugated bilirubin level in the blood. RBT helps to re-move defective red blood cells but does not suf¬ficiently free the newborn body from autoanti-bodies, because they are distributed not only in the circulation but also in the interstitial space. Prophylactic membrane PA dur¬ing pregnancy in the case of Rh-antibodies elevat¬ed levels can significantly reduce the level of UB in newborns at birth, without resorting to replacement blood transfusion and eliminates the need for an intrauterine infusion of red blood cells into the umbilical cord vessels.

Biography

Voinov VA is pursuing her studies in I.P. Pavlov First St. Petersburg State Medical University, Russian Federation. Her interest expands in the field of pathophysiology of pregnancy.

Publications

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Global Meeting on Gynecology and Obstetrics Congress,
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