The Correlation Between Bronchopulmonary Dysplasia and Platelet Metabolism in Preterm Infants

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Abstract

Objective: To explore the relationship between platelet metabolism and bronchopulmonary dysplasia in premature infants. Methods: A prosepective case-control study was performed in a cohort of premature infants (born with a gestational age less than 33 weeks and a birth weight less than 1500 grams) between June 2017 and June 2018. Subjects were stratified into two groups according to the diagnostic of bronchopulmonary dysplasia: with bronchopulmonary dysplasia (BPD group) and without bronchopulmonary dysplasia (control group). Platelet count, circulating megakaryocyte count (MK), platelet activating markers (CD62P and CD63), thrombopoietin (TPO) were recorded and compared in two groups, then, serial thrombopoietin levels and concomitant platelet counts were measured in infants with BPD. Results: A total of 252 premature infants were included in this study. 48 premature infants developed BPD, 48 premature infants in the control group who were matched with 1:1 according to gestational age, birth weight and admission diagnosis at their age of postnatal day 28. Compared to the controls, infants with BPD had significantly lower peripheral platelet count[BPD vs controls: 180.3 (24.2) x 109/L vs 345.6 (28.5) x 109/L, p=0.001], Circulating MK count in the BPD group was significantly more abundant than that in the control group [BPD vs controls: 30.7 (4.5) /mL vs 13.3 (2.6) /mL, p=0.025], The level of CD62p, CD63 and TPO in BPD group were significantly higher in control group [29.7 (3.1)% vs 14.5 (2.5)%,15.4(2.0)% vs 5.8(1.7)%,301.4 (25.9) pg /mL vs 120.4 (14.2) pg/mL,all $P < 0.05$],furthermore, the concentration of TPO was negatively correlated with platelet count in BPD group with thrombocytopenia. Conclusions: Thrombocytopenia and platelet activation in premature infants with bronchopulmonary dysplasia may be related to lung microvascular endothelial cell injury. Thrombopoietin maybe the major regulator in thrombocytopoiesis and platelet homeostasis of infants with BPD.

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