

AB035. Relationship between platelet counts and plateletocrit in the first 24 hours of life and haemodynamically significant patent ductus arteriosus in preterm infants

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Background: To investigate the relationship between platelet counts (PLT) and plateletocrit (PCT) in the first 24 hours of life and the incidence of haemodynamically significant patent ductus arteriosus (hsPDA) in preterm infants.

Methods: The preterm infants were admitted to NICU of The Affiliated Xuzhou Hospital of Southeast University from Nov 2012 to Jul 2017. Totally 760 preterm infants were chosen by the inclusion criteria and exclusion criteria. The following data were retrospectively collected: the PLT, PCT, platelet distribution width (PDW), mean platelet volume (MPV), platelet-large cell ratio (P-LCR) in the blood routine examination of venous blood in the first 24 hours of life, the correlative factors of PDA (gender, birth order, gestation age, hypertension of pregnancy, a complete course of hormone before delivery, premature rupture of membranes more than 18 hours, cesarean, birth weight, small for gestational age, 5-minute Apgar score, respiratory distress syndrome, positive pressure ventilation more than 3 days, and fluid intake and urine volume in the first 3 days of life), and echocardiography examination at the 4–7 days after birth. According to the diagnostic criteria of hsPDA, all preterm infants were divided into the non-PDA (nPDA) group (587 cases), non-hsPDA (nhsPDA) group (106 cases), and hsPDA group (67 cases). SPSS 20.0

software was used for data analysis. Data were compared by chi-square test, LSD or Tamhane's T2 of one-way analysis of variance, the receiver operating characteristic (ROC) curve or binary logistic regression analysis.

Results: There were no significant difference in the PDW, MPV, and P-LCR in the first 24 hours of life among three groups ($P>0.05$). The smaller the gestation age, birth weight, PLT, and PCT ($P=0.033, 0.000, 0.000, 0.000$, respectively) in the first 24 hours of life were, and the higher incidence of PDA in preterm infants would be. The area under the ROC curves of PLT and PCT in the first 24 hours of life for prediction of hsPDA in preterm infants was 0.718 (95% CI: 0.671–0.768, $P=0.000$), 0.757 (95% CI: 0.712–0.814, $P=0.000$), respectively. The best cutoff values of PLT and PCT in the first 24 hours of life were $207.5 \times 10^9/L$ (sensitivity was 71.4%, specificity was 63.2%), 0.178% (sensitivity was 75.7%, specificity was 71.9%). The PLT $<207.5 \times 10^9/L$, $<150 \times 10^9/L$, $<100 \times 10^9/L$, and PCT $<0.178\%$, 0.09% in the first 24 hours of life are associated with 1.796, 2.324, 6.217, 1.828, and 5.579-fold increase in the risk of hsPDA in preterm infants when compared to the PLT $\geq 207.5 \times 10^9/L$, $\geq 150 \times 10^9/L$, $\geq 100 \times 10^9/L$, and PCT $\geq 0.178\%$, $\geq 0.09\%$. Logistic regression analysis identified the gestation age and PLT in the first 24 hours of life not to be the independent correlations of hsPDA in preterm infants ($P=0.932, 0.384$). The birth weight and PCT in the first 24 hours of life were independent risk factors for the occurrence of hsPDA in preterm infants ($P=0.000, 0.000$). The risk of hsPDA in preterm infants will be increased by 3.279-fold (95% CI: 2.369–4.479) when PCT in the first 24 hours of life is decreased by 0.10%.

Conclusions: The decreased PCT, rather than PLT, in the first 24 hours of life was independent risk factors for the occurrence of hsPDA in preterm infants at the 4–7 days after birth.

Keywords: Platelet count (PLT); plateletocrit (PCT); patent ductus arteriosus (PDA); preterm children

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