Effect of Packed Red Blood Cell Transfusion on IL-8 and sICAM-1 in Premature Neonates at Different Postnatal Ages

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Abstract

Background: Transfusion-related immunomodulation (TRIM) has been described in adults; however, its existence in neonates is not confirmed. The generation of TRIM is attributed to increased concentrations of IL-8, sICAM-1 and other pro-inflammatory cytokines. This study aimed to monitor changes in IL-8, sICAM-1 as markers for TRIM in premature infants at different postnatal ages.

Methods: Preterm infants with a gestational age between 28 and 32 weeks who were receiving PRBC transfusion during the first 28 days of life were included in the study. Infants were stratified into two groups according to their postnatal age: Group 1 with postnatal ages of (0—14) days and Group 2 of (15—28) days. The concentrations of IL-8 and sICAM-1 were measured by enzyme-linked immunosorbent assay (ELISA) before transfusion, 6 hours after the end of transfusion and in the donor's PRBCs bag immediately before infusion into the baby.

Results: IL-8 concentration in the PRBCs bags correlated with post-transfusion level in Group 2 (r = 0.59, p = 0.002) but not in Group 1 (r = 0.39, p = 0.06). sICAM-1 concentration in the bag correlated with infants' concentrations in neither group. In Group 1, pre-transfusion concentrations of both cytokines (IL-8 and sICAM-1) did not correlate whereas post-transfusion concentrations did correlate (r = - 0.09, p = 0.68 and r = 0.4, p = 0.05 respectively). In Group 2, the concentrations of both cytokines did not correlate with each other during pre-transfusion (r = 0.11, p = 0.58) as well as post-transfusion (r = 0.12, p = 0.56). There was no significant increase in either cytokines after transfusion in each group.

Conclusion: This study showed positive correlation between IL-8 concentration in the transfusion bag and post transfusion in Group 2 infants which could be attributed to passive transmission from the bags. This study does not support an immune modulatory effect for packed RBC in preterm infants.

Key words: Blood transfusion, Cytokines, Interleukin 8, Preterm, Transfusion-related immunomodulation

Professional Biography

Prof. Hala Youssef has supervised on more than 4 Master thesis & 2 Doctoral thesis.
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