

Benefices of placental transfusion in very preterm infants

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Introduction

Cord clamping is not a trivial process. Its timing influences the significant physiological changes involved with this nearly universal practice. While the fetal and placental blood volumes add up to 100-120ml/kg, their distributions differ between preterm and term neonates. The placenta accounts for 50% of the total blood volume in preterm infants and for only 33% in term neonates. Placental transfusion for 60 seconds increases neonatal blood volume by ± 16 ml/kg. In randomized trials, delayed cord clamping in preterm birth is associated with a more stable transitional circulation, a decrease need for inotropic support, and reduce blood transfusions, necrotizing enterocolitis, and intraventricular hemorrhages. Given those benefits, placental transfusion is integrated systematically in our management of preterm births since October 2013. This study aims to confirm expected benefits in a clinical setting.

Patients and Methods

We conducted a retro-prospective trial in a single tertiary care center. Very preterm infants (VPTi; <32 weeks GA) and VLBWi (BW<1500g) born between April 1st and September 30th 2013 were managed conventionally, with early cord clamping and constitute the control group. These data were collected retrospectively. October 2013 is the month for the new protocols implementation, and infants born this month are not included. Data from VPTi and VLBWi with delayed cord clamping or cord milking were collected prospectively from November 1st 2013 to April 30st 2014. Exclusion criteria were maternal and fetal vital emergencies, Rhesus sensitization, known major congenital abnormalities, tight nuchal cord, meconium tainted liquor, or mother infection by HIV or hepatitis.

Results

Fifty-two patients are included in the control group. In the second period, 26/49 preterm infants received a placental transfusion, including 6 with a 60 seconds delay in cord clamping and 20 with cord milking. Maternal and neonates' characteristics were not significantly different. Mean BW were 1208g in the control and 1157g in the placental transfusion groups, with mean gestational age of 28 weeks 4/7 and 28 weeks 6/7, respectively. Mean arterial pressure is significantly increased with placental transfusion (H0 33 ± 5.8 vs. 39 ± 7.2), (H12 39 ± 8.6 vs. 44 ± 7.4), (H24 41 ± 6.7 vs. 46 ± 7.3). Hemoglobin (H24 16 ± 2.6 vs. 18 ± 2.9) and hematocrit (H12 50 ± 7.3 vs. 54 ± 7.4), (H24 46 ± 8.1 vs. 52 ± 8.6) are also significantly higher. The number of transfusions per patient transfused (3 ± 2.5 vs. 1 ± 0.4) is significantly lower. No infant with a BW>950g managed with delayed clamping or cord milking did required a transfusion.

Conclusion

Placental transfusion is associated with a higher blood pressure during the first 24 hours. Placental transfusion also reduces transfusion requirements, with reduction in the number of multi-transfused patients. We found this procedure safe and did not identify short or medium term adverse effects.

For preterm infants, the third stage of labor management should evolve toward a more physiological practice, with systematic placental transfusion.