



Contemporary management of fetal anemia due to red cell alloimmunisation: factors affecting perinatal outcome

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Objective

To evaluate the efficacy of contemporary management of fetal anemia due to red cell alloimmunisation by fetal intravascular blood transfusion To identify factors that are associated with perinatal loss in such fetuses.

Methods

Retrospective cohort of fetuses diagnosed with anemia that received intravascular blood transfusion between January 2010 through December 2016 at a single tertiary level fetal medicine centre in South India. The transfusion factors, perinatal outcome and survival plots were compared between hydropic and non-hydropic fetuses (at presentation). Cox regression analysis was performed to identify factors (gestational age at diagnosis, standardised hemoglobin deficit [Z Hb], hematocrit increment [Hct - I], volume per kilogram estimated fetal weight [volume index], transfusion rate) significantly associated with perinatal loss.

Results

Eighty six Rhesus alloimmunised pregnancies received 136 transfusions. The intrahepatic portal vein was accessed in 83% of these. Sixty eight fetuses were non-hydropic and 18 were hydropic at presentation. Hydropic fetuses presented earlier (25.2 vs 28.6 weeks), had a lower baseline hematocrit (8.3 vs 20.3%), volume index (107.8 vs 66.4 ml/kg) and higher Z - Hb (-9.8 vs -6.6 SDs). The hematocrit increment index (increment in hematocrit / pretransfusion hematocrit) was significantly higher than in non-hydropic fetuses (6.3 vs 1.8 times) [all $p < 0.001$]. The rate of transfusion (6.3 vs 4.8 ml/kg/min) and post transfusion hematocrit (43.5 vs 46.4 %) were not significantly different between hydropic and non-hydropic fetuses. There were no cases of intraprocedural fetal distress. There were 2 perinatal losses in hydropic (2 stillbirths) and 3 in non-hydropic (2 stillbirths and 1 neonatal loss) [$p = 0.2$]. Cumulative survival analysis show no perinatal loss beyond day 50 post transfusion among non-hydropic babies. Cox regression did not show any significant association between survival and any of the above mentioned factors. The maximum number of transfusions in-utero required in each group was 3. The gestational age delivery (33.1 vs 34.8 weeks) and birthweight (2109 vs 2393 g) did not differ significantly between the two groups.

Conclusion

Contrary to previous publications, our results show that high volume transfusions (target Hct of about 45%) are equally efficacious in hydropic as well as non-hydropic fetuses. In addition to this our series shows that perinatal outcome is unaffected by volume of transfusion and related factors.