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50 Years Ago in *The Journal of Pediatrics*

Early Success of Exchange Transfusion in Treating Neonatal Disseminated Intravascular Coagulation; How Far Have We Come?

Gross S, Melhorn D. Exchange transfusion with citrated whole blood for disseminated intravascular coagulation. J Pediatr 1971;78:415-9.

In 1971, Gross and Melhorn reported successful use of whole blood exchange transfusion for neonatal disseminated intravascular coagulation (DIC). Exchange transfusion was introduced in the 1940s for the treatment of hemolytic disease of the newborn. By 1970, exchange transfusion also had been adapted to treat hyperbilirubinemia. At that time, DIC in neonates was an evolving disease entity that was challenging to both diagnose and treat. Limited information was available about normal coagulation in the neonate and about neonatal coagulation during DIC. The mortality rate was high, and treatment relied heavily on treating the underlying illness, which in contemporary reports was largely idiopathic respiratory distress syndrome or sepsis. In that context, this series of 4 neonates and one 4-year-old child who had survived DIC after receiving exchange transfusions of citrated whole blood was remarkable. However, this was a small retrospective study that would need to be validated in a randomized controlled study.

Eleven years later, a randomized controlled trial compared exchange transfusion vs plasma and platelets vs no coagulation-directed therapy. No differences were noted in survival between the 3 groups. The results were not supportive of any benefit of using exchange transfusion (or plasma and platelet transfusion) in neonatal DIC. However, there were only 11 patients in each arm, and no power calculation was reported. It remains unclear whether the study was powered to show any difference between the treatment arms.[1]

Fifty years later, whole blood has fallen out of favor as a transfusion product, to be replaced by separated blood components (packed red blood cells, plasma, platelets, cryoprecipitate). Currently, whole blood exchange transfusion does not have a role in managing neonatal DIC. In addition, exchange transfusions for approved indications are now carried out with blood components rather than with whole blood. Separated and processed blood components (plasma, cryoprecipitate, and platelets) as replacement products are used for treating neonatal DIC. In this regard, although we possess much more knowledge about neonatal coagulation, management of neonatal DIC still relies on resolving the underlying illness and replacement of blood products as needed.

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