



Study of Exchange Transfusion By Reconstituted Blood In Haemolytic Disease Of New-born

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BACKGROUND :

- ❖ Haemolytic disease of foetus and newborn (HDFN) is categorised by presence of IgG antibodies in maternal circulation, which causes haemolysis in foetus by crossing the placenta, sensitizing red cells for destruction by macrophages in foetal's spleen with consequent hyperbilirubinemia.(1)
- ❖ Early detection and treatment of neonatal hyperbilirubinemia is important in prevention of bilirubin-induced encephalopathy.(2)
- ❖ It is classified as RhD HDFN, ABO HDFN and HDFN due to other blood group antibodies(non ABO, non RhD) according to the specificity of causative IgG antibodies.
- ❖ Rh incompatibility is still the most common cause of HDFN, although other RBC incompatibilities are increasing in incidence.(3)
- ❖ Exchange Transfusion(ET) with/without phototherapy is one of the method of choice for treating the newborn with ongoing haemolysis.
- ❖ ET removes indirect serum bilirubin, circulating mother's antibodies and antibody coated neonate's RBCs, from the circulation and provides RBCs compatible with neonates serum and albumin with new bilirubin binding sites.(4)

AIMS :

- ❖ To find out fall of indirect bilirubin level after Exchange Transfusion in Newborn.
- ❖ To establish the role of reconstituted blood for Exchange Transfusion in Newborn.

METHODS :

- ❖ Thirty one neonates diagnosed Haemolytic disease of Newborn were selected for this study, in which Exchange Transfusion was carried out as one of the Treatments for hyperbilirubinemia.
- ❖ Out of the 31 cases, 20 were of Rhesus(Rh) Haemolytic disease of Newborn, while ABO and other blood groups constituted 8 and 3 HDFN cases respectively.
- ❖ First, the neonates and mother's blood samples were subjected to relevant investigations. after that, for neonates having Rh HDFN, O Rh negative cells suspended in AB plasma were given, O Rh positive cells suspended in AB plasma were given to ABO HDFN because of other blood group antibodies.
- ❖ The Exchange Transfusion was carried out taking all septic precautions by continuous technique with double-volume Exchange Transfusion method.

RESULTS :

- ❖ The Average post-exchange fall in serum indirect bilirubin was (53.47%) in all 31 cases, which was found to be more significant than the previous studies
- ❖ Looking into the superiority of the exchange transfusion in HDFN by reconstituted blood, the reconstituted blood can be modified and supplied as per the requirement and conditions.

Fig 1: Fall in bilirubin (mg/dl) after ET

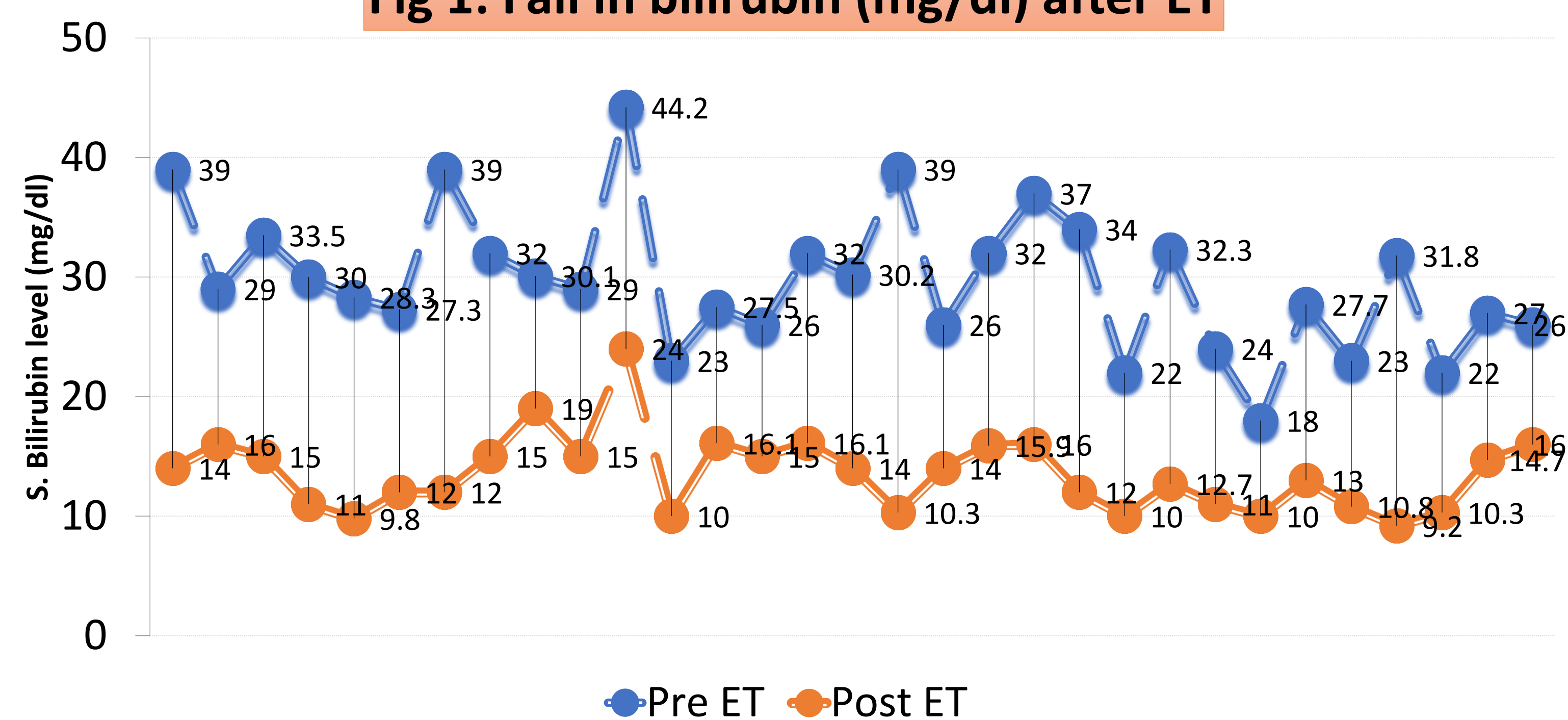
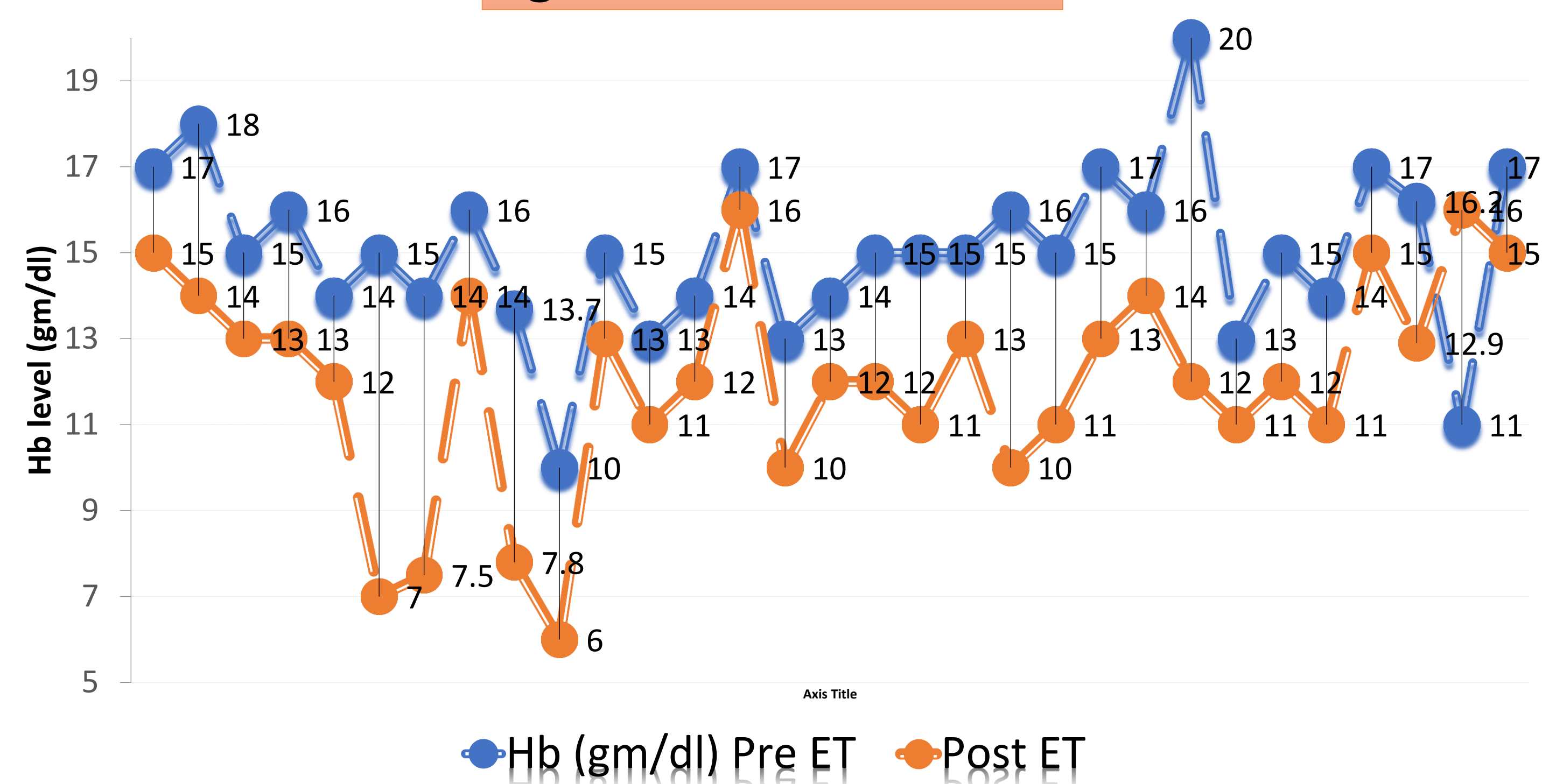


Fig 2: Rise in Hb after ET



CONCLUSION :

- ❖ From this study we concluded that reconstituted blood is immunologically much safer and better than whole blood for the purpose of Exchange Transfusion in Haemolytic disease of Foetus and Newborn because of its superiority in minimizing transfusion reactions and in achieving all the therapeutic effects of exchange transfusion in better way.

REFERANCES :

1. A. G. Hadley, "Laboratory Assays for Predicting the severity of Haemolytic Disease of The Foetus and Newborn", *Transplant Immunology*, vol. 10, no. 2-3, 2002, pp. 191-198. doi:10.1016/S0966-3274(02)00065-5
2. A. Petrova, R. Mehta, G. Birchwood, B. Ostfeld and T. Hegyi, "Management of Neonatal hyperbilirubinemia: Pediatricians Practices and Educational Needs," *BioMedCentralPediatrics*, vol. 6,2006, p.6.
3. J. M. Bowman, "Historical Overview: Haemolytic Disease of Foetus and Newborn", In: M. S. Kennedy, S. Wilson and J. G. Kelton, Eds., *Perinatal Transfusion Medicine*, American Association of Blood Banks, Arlington, 1990, p. 1.
4. K. J. Peevy and H. J. Wiseman, "ABO Haemolytic Disease of the Newborn: Evaluation of Management and Identifi-cation of Racial and Antigenic Factors", *Pediatrics*, vol. 61, no. 3, 1978, pp. 475-478.