Pooled Solvent-Detergent plasma is associated with fewer transfusion reactions than standard fresh frozen plasma

Paula HB Bolton-Maggs1,2, Julie Ball1, Debbi Poles1 and Hazel Tinegate2. The SHOT office1, Manchester Blood Centre and University of Manchester2, UK and NHSBT Newcastle,3 on behalf of the SHOT Steering Group

Solvent Detergent plasma (SDFFP) is a pooled plasma product from up to 1520 donors, which is then subjected to a standardised viral inactivation process using a detergent. The process is accelerated by addition of a solvent. Both these reagents are removed during the purification process. This process also removes the largest von Willebrand factor molecules and for this reason, SDFFP is the replacement fluid of choice for plasma exchange in treatment of thrombotic thrombocytopenic purpura and other microangiopathies. Experience from several single-centre studies has suggested that allergic reactions are less common with SDFFP than with standard plasma.

Data and methods In the years 2010 to 2012 inclusive, 863,847 units of standard FFP, and 198,370 units of SDFFP were issued by UK blood services. The Serious Hazards of Transfusion organisation (SHOT), the UK’s independent, professionally led haemovigilance scheme, received data on 132 acute reactions associated with transfusion of standard FFP and 5 with SDFFP. These were classified, and the comparative incidence of reactions to both types of plasma per 100,000 units issued was calculated and shown below:

Results

• Allergic reactions, including anaphylaxis, were the commonest category for both types of plasma, 103 for standard plasma and 3 for SDFFP.
• There were 36 anaphylactic or severe allergic reactions to standard FFP, and none to SDFFP.
• The incidence of allergic reactions to standard FFP was significantly higher than SDFFP:
  • Standard FFP: 11.9 per 100,000 issues (95% confidence interval 9.9-14.3)
  • SDFFP: 1.5 per 100,000 (95% C.I. 0.5 to 4.4), p value <0.001. The incidence of all types of reactions is shown in the figure. There were no febrile reactions with SDFFP reported to SHOT during 2010-2012.

Discussion This analysis of three years’ data reported to SHOT is the largest retrospective study of reactions of SDFFP compared to standard FFP. There are significantly fewer acute transfusion reactions of all types reported to SHOT with SDFFP. This may be due to reduction of allergens from a particular donor within the pool, or to the effect of the solvent-detergent process on allergens. Pathogen-inactivated FFP is recommended for all children, both SDFFP and methylene blue-treated FFP are used in the UK. SDFFP is often transfused in other specific circumstances, particularly plasma exchange in thrombotic microangiopathies, which was the case for 3 of the 4 SHOT cases (all adults) for which a diagnosis was supplied. It is possible that the reaction profile may be different for these patients. However, SDFFP is increasingly being transfused to children outside this indication.

www.shotuk.org