The role of SHOT in leading improvements in blood safety

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SHOT has include TRALI since 1996

ACUTE DYSPNOEAE WITH HYPOXIA AND BILATERAL PULMONARY INFILTRATES OCCURRING DURING OR IN THE 24 HOURS AFTER TRANSFUSION, WITH NO OTHER APPARENT CAUSE (6 hours since 2006)
One proposed mechanism of TRALI

1. HLA/HNA antibodies in donor plasma

2. Adherence of neutrophils to pulmonary endothelium or epithelium
   - cell membrane permeabilisation
   - lung oedema
   - Secretion of IL-1β, TNFα, IL-8 may amplify the reaction

HLA/HNA
C5
C5a
chemotactic factor

Blood Transfusion

Endothelial Cell

ICAM-1
LFA-1

Lungs

SHOT Symposium 30th June 2009
Main source of HLA/HNA antibodies is donor plasma

A male (or female) donor with a history of blood transfusion

A female donor with history of pregnancy - antibodies in 10-15%

SHOT Symposium 30th June 2009
TRALI cases analysed by SHOT
1996-2007 (n= 252)
TRALI risk reduction project 2003: entirely based on SHOT data

- Donor HLA/HNA antibodies accounted for 50% of TRALI cases
- Highest risk components are FFP and platelets - x 5-7 greater than red cells
- All antibody positive implicated donors were previously pregnant women
- Looked for ways to reduce antibody-positive TRALI
October 2003

‘Male plasma as far as possible’.

- Male donations marked M - to FFP
- Female donations marked F- to ’plasma discard’ (no swap out of stock)
- Imported male plasma for children
- Imported pooled solvent-detergent FFP for TTP since 2004
- Platelet pools in male plasma
Was male plasma feasible?

- **England:**
  - FFP >95% male- 100% by Aug 09
  - Platelet pools >95% male; 100% by Aug 09
  - Cryoppt: 50% male:100% by March 2010
  - Apheresis platelets: recruitment geared to males; rolling out HLA/HNA antibody screening of new female donors

- **Wales, Scotland, N Ireland = 100%**
TRALI cases analysed by SHOT
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SHOT TRALI data has influenced TRALI practice internationally

- Male plasma now preferred in many EU countries
- USA: AABB standard is for male FFP
- Platelet donor screening beginning to be adopted in other countries.
SHOT data have resulted in peer reviewed publications


Editorial Comment:
‘Since its inception, SHOT has remained among the leading systems worldwide’
‘Authors, UK Blood Service and SHOT are to be congratulated for their important contribution over the last decade’
‘SHOT data (+American Red Cross) convinced AABB to issue guidance re avoidance of antibody-positive plasma’