Annual SHOT Report 2013 – Supplementary Information

Chapter 24: Transfusion-Related Acute Lung Injury (TRALI)

Additional Tables – not included in the main 2013 report

Table 1: Patient characteristics and component details

Case number	Sex/age	Diagnosis	Reason transfused	Transfused components				Implicated component (concordant antibody)	Interval between transfusion and symptoms
				RBC	Plt	FFP	Cryo/ other		
1	M/23	Tetralogy of Fallot, redo RV PA conduit and PA patch repair	Surgical blood loss	2	1	2	0	RBCOA	1 hour
2	F/60	pancytopenic after MTX for psoriatic arthritis	Thrombocytopenia and sepsis	0	1	0	0	None identified	1 hour
3	F/46	Breast cancer, mastectomy and reconstruction	Post-operative bleed	4	0	4	0	None confirmed	1 hour
4	M/59	Acute myeloid leukaemia	Chemotherapy induced anaemia	1	0	0	0	None identified	During transfusion
5	F/20	Post natal E Coli septicaemia, and anaemia	Asymptomatic anaemia	2	0	0	0	RBCOA	90 minutes
6	M/56	Lymphoma, sepsis	Chemotherapy induced anaemia and immune thrombocytopenia	1	2 (aph)	0	0	RBCOA	10 minutes
7	F/72	Ruptured abdominal aortic aneurysm	Acute blood loss	9	4 (2 aph, 2 BC)	8	0	None identified	2-6 hours
8	F/72	Metastatic pancreatic carcinoma	Chemotherapy	2	0	0	0	RBCOA	Immediately after second unit
9	M/63	MDS transforming to acute myeloid leukaemia	Chemotherapy induced anaemia	3	1	0	0	None identified	13 hours
10	F/39	Splenic artery haemorrhage ? cause	Acute blood loss	5	0	0	0	In progress	8 hours

Table 2: Clinical characteristics and radiological features of cases reported as TRALI

TRALI case number	TRALI probability	Other risk factors	Symptoms/signs					
			Fever or rigors	Reduced blood pressure	Dyspnoea or tachypnoea	Signs of heart failure	Reduced pO2	Chest X ray
1	Highly likely	Cardiac surgery.	N	N	Y	Y	Y	Cardiomegaly, new perihilar consolidation consistent with pulmonary oedema
2	Unlikely	Sepsis, ischaemic heart disease	N	N	Y	N	Y	'bilateral haziness and raised right hemidiaphragm, 4 days later increasing bilateral consolidation
3	Probable	Haemorrhage	N	Y	Y	N	Y	Extremely rapid development of wide spread air space shadowing bilaterally, small pleural effusion on right
4	Unlikely	Gram negative septicaemia	Y	N	Y	N	Y	Bilateral pulmonary infiltrates
5	Probable	Sepsis, positive fluid balance	Y	N	Y	N	Y	Minor bibasal changes
6	Probable	Sepsis, pulmonary haemorrhage	N	N	Y	N	Y	Bilateral extensive airspace opacification
7	Unlikely	Hypotension, massive transfusion	NR	NR	Y	NR	Y	Patchy bilateral infiltrates
8	Probable	Respiratory infection	N	N	Y	N	Y	Ct scan-progression of ground glass shadowing
9	Unlikely	Atrial fibrillation, peripheral oedema, ?PCP	Y	N	Y	Y	Y	CXR: bilateral perihilar shadowing HRCT: diffuse ground glass shadowing with sparing of peripheries? PCP. ? evidence of mild COPD
10	Unlikely	Haemorrhage	N	N	Y	N	Y	Bilateral mid to lower zone consolidation may be infection or pulmonary congestion

Table 3: Treatment, outcomes, investigation results and likelihood of case being TRALI

	TREATMENT				TRALI INVESTIGATION RESULTS				
TRALI case number	Treatment	ITU admission	Ventilation (number of days)	Outcome (imputability)	Donors	Patient	White Cell cross match	Reason given by reporter for suspecting TRALI	Likelihood of case being TRALI
1	Oxygen, diuretics	Y	Y (8)	recovered	RBCOA unit F donor concordant HLA-DR15 abs	HLA-DR15 positive	ND	Not typical LVF. Acute transient drop in neutrophil and monocyte count-	HIGHLY LIKELY
2	Oxygen, diuretics	Y (already on ITU)	N	recovered	Donor of transfused platelets was male and negative for HLA and granulocyte abs	ND	ND	because symptoms developed within 2 hours of platelet transfusion	UNLIKELY
3	Adrenaline, bronchodilators	Y	Y (2)	recovered	4 F RBCOA donors: 1 Anti-HNA-2, 1 HLA Class I antibody no spec reported, 4 male FFP donors not tested	ND	ND	Thought TACO was unlikely and suspected TRALI but were unsure of diagnosis	PROBABLE
4	Oxygen by rebreather mask	Y	N	recovered	1 F RBCOA donor had HLA class I specific antibodies but none was concordant with patient	ND	ND	Very little transfused and recovered without diuresis	UNLIKELY
5	Oxygen, iv fluids	N (admitted HDU)	N	recovered	F donor of 1 unit RBCOA had multispecific HLA class I and class II abs with concordant anti-HLA-DR17	HLA-DR17 positive	ND	No circulatory overload clinically or on the chest x-ray	PROBABLE
6	Oxygen, steroids, diuretics	Y	Y(23)	Died (possibly related 1)	F donor of RBCOA had multispecific HLA class abs with concordant anti-HLA-A24 and –B51	HLA-A24 and B51 positive	ND	No sign of peripheral oedema, normal JVP, no response to furosemide and normal LV function.	PROBABLE

	TREATMENT				TRALI INVESTIGATION RESULTS				
TRALI case number	Treatment	ITU admission	Ventilation (number of days)	Outcome (imputability)	Donors	Patient	White Cell cross match	Reason given by reporter for suspecting TRALI	Likelihood of case being TRALI
7	Oxygen	Y (already on ITU)	Y (5)	recovered	Only 2 FFP within 6 hours. Both tested and negative for HLA and gran abs	ND	ND	Not reported	UNLIKELY
8	Oxygen	N	N	Died (unlikely related to TRALI Imputability 0)	F donor RBCOA had multispecific HLA class I abs with concordant HLA-B57	ND	ND	No response to diuretic	PROBABLE
9	Steroids, diuretics, adrenaline, bronchodilators, IV fluids	Y	N (CPAP)	recovered	Not investigated re TRALI expert panel advice	ND	ND	Timing of onset, negative lavage for PCP	UNLIKELY
10	Oxygen	Y	N	recovered	Not investigated, event commenced more than 6 hours post transfusion. Positive fluid balance + 3.4 L	ND	ND	Not reported	UNLIKELY

Transfusion-Related Acute Lung Injury (TRALI) - Previous Recommendations

Year first made	Action	Recommendation
2012	**Hospital Transfusion Teams and Reporters**	Reporters are asked to provide as much of the information requested on the SHOT pulmonary questionnaire as possible. There is significant overlap between categories of pulmonary complications and clinical detail is essential to allow accurate assessment of these cases
2012	**Hospital Transfusion Teams and Reporters**	Transfusions should only take place where there are facilities and staff trained to recognise and manage adverse incidents
2011	**Hospital Transfusion Teams (HTTs)**	If it has been concluded, following hospital case review, that a case reported to SHOT as transfusion related acute lung injury (TRALI) would be better categorised in an alternative category (e.g. transfusionassociated circulatory overload (TACO), transfusion-associated dyspnoea (TAD), acute transfusion reaction (ATR) please inform the SHOT office
2010	**UK Blood Services**	Robust systems must be put in place to prevent issue of female FFP or platelet pools suspended in female donor plasma
2010	**UK Blood Services**	A risk assessment should be conducted of screening existing female platelet apheresis donors for HLA and granulocyte antibodies, and for retesting for these antibodies after subsequent pregnancies
2010	**HTTs**	Transfusion-related respiratory events that occur later than the accepted 6-hour definition for TRALI should be reported to SHOT in another category (e.g. TAD).
2008	**UK Blood Services**	UK Blood Services that have not yet achieved 100% male FFP and plasma to platelet pools must make this a priority. Exchange of male FFP for previously issued female FFP should be undertaken whenever feasible.
2006	**UK Blood Services**	UK Blood Services should continue to investigate and apply methods to reduce the continuing risk of TRALI associated with apheresis donations, reducing the number of female donors on the panel, and testing those

		remaining for HLA antibodies. This year only 1 case involved an apheresis donor with a concordant antibody but this recommendation remains relevant.
2005	**HTTs**	Hospital staff should continue to be aware of TRALI and report possible cases to the local Blood Centre to facilitate investigation. Detailed clinical information is needed to allow accurate clinical assessment of these cases. Blood samples (clotted and EDTA) from affected patients should be sent promptly for laboratory investigation. Continued education of all relevant staff about this condition is encouraged.
2005	**Clinical users of blood and consultant haematologists with responsibility for transfusion**	Cases should be evaluated early by the consultant(s) involved and prompt discussion with the Blood Service is helpful. A team approach including the haematologist and chest physician and/or ITU consultant is recommended.
2005	**Blood Services, clinical users of blood and consultant haematologists with responsibility for transfusion**	Case 3 from the 2005 report emphasises the importance of avoiding transfusing whole blood