19. Autologous Transfusion

Definition

Any adverse event or reaction associated with autologous transfusion including intraoperative and postoperative cell salvage (washed or unwashed), acute normovolaemic haemodilution or preoperative autologous donation.

DATA SUMMARY

Total number of cases	**14**	*Implicated components*		*Mortality/morbidity*	
		Autologous Red cells	**14**	Deaths due to transfusion	**0**
		FFP		Deaths in which reaction was implicated	**0**
		Platelets		Major morbidity	**0**

Gender		*Age*		*Emergency vs. routine and core hours vs. out of core hours*		*Where transfusion took place*	
Male	**5**	18 years+	**13**	Emergency	**2**	ED	
Female	**2**	16 years+ to 18 years	**1**	Routine	**11**	Theatre + ITU/NNU/	
Unknown	**7**	1 year+ to 16 years	**0**	Not known	**1**	HDU/Recovery	**6**
		28 days+ to 1 year	**0**			Wards	**8**
		Birth to 28 days	**0**	In core hours	**5**	Community	
				Out of core hours	**1**	Other	
		Total	**14**	Not known/applicable	**8**	Not known	

Fourteen questionnaires were received; none was withdrawn or transferred to another section and 7 were transferred in from other categories. This section describes the main findings from 14 completed questionnaires.

There were no reports submitted during this reporting period relating to adverse events while undertaking acute normovolaemic haemodilution (ANH) or preoperative autologous donation (PAD). Both these techniques are rarely undertaken and their use is not routinely recommended. There is a reduction in the number of reports compared with last year (2008) when a pilot was undertaken as a joint initiative between SHOT and the UK Cell Salvage Action Group. However, cell salvage adverse events are now part of the SHOT system and as such should be reported through the new online reporting system.

Adverse events by specialty

Orthopaedic – 10 events; general surgery – 2 events; urology – 1 event; obstetrics – 1 event.

Adverse events by type of autologous transfusion

Intraoperative cell salvage (ICS) – 6; postoperative cell salvage (PCS) – 8.

PCS incidents *n = 8*

- 1 system not assembled correctly
- 1 wrong infusion set used
- 5 pyrexia, rigor or bradycardia
- 1 excessive time to transfuse

ICS incidents *n = 6*

- Operator errors
  - Heparinised saline used in wrong bag, 1 case
- Machine errors
  - Faulty optic – red cells spilled into waste bag, 2 cases
- Clinical adverse events
  - Hypotension, 3 cases

Case 1

Hypotension

Patient had massive transfusion due to acute haemorrhage for placenta accreta. Allogeneic (donor) blood and intraoperative salvaged blood were transfused. Cell salvaged blood was administered and 5–10 minutes after this, the patient developed hypotension, with BP dropping from 88/25 to 61/28. The transfusion was stopped and BP returned to 90/30. Transfusion restarted and BP dropped to 66/34, with complete resolution when transfusion was again stopped. The patient had been given 3500 mL crystalloid and 4 units of allogeneic blood. Patient also had 2 or 3 episodes of hypotension prior to this event due to hypovolaemia.

This year there were 5 cases of adverse reactions reported to postoperative, unwashed autologous transfusion. Previous reports to SHOT on this type of event have been sporadic but with the advent of the online reporting system it is envisaged that these reports may be a feature of future reports.

In 2009 there were 3 reports of hypotension related to the reinfusion of cell salvaged blood. While an attempt has been made to analyse the clinical scenarios of each report the common factors, certainly in 2 cases, appear to be:

- Use of ACD as an anticoagulant
- Use of a leucodepletion filter (LDF) during the reinfusion of autologous washed red cells.

There are a number of other clinical issues:

- Use of bedside LDF, which is known to cause hypotension when used with allogeneic blood as previously recognised.[54]
- These patients may be hypovolaemic and therefore more susceptible to the effect of reinfused vasoactive cytokines.
- All patients experienced transient but clinically significant hypotension, a blood pressure drop of 20% or more from the starting value, corrected by the cessation of infusion and/or vasopressors.
- No long term sequelae of this hypotension were noted.

These phenomena will require further in-depth analysis to fully understand the consequences of such incidents. At this stage it is important to recognise this as a possible adverse event and treat by discontinuation of the infusion of salvaged red cells and with appropriate vasopressors.

RECOMMENDATIONS

There are no new recommendations for this year.

Recommendations still relevant from last year

Year first made	Recommendation	Target	Progress
2008	All cell salvage operators must undertake initial and regular update training and be assessed as competent. There should be documented evidence of competence in the form of a training record. Competency-assessment workbooks are available for both ICS and PCS at www.transfusionguidelines.org.uk	**Cell salvage leads /HTT**	Online survey currently being undertaken by the UK Cell Salvage Action Group, asking about training and competency. Education workbook produced and available on the website.
2008	All ICS and PCS related adverse events should be reported to SHOT.	**Cell salvage leads /HTT**	There is a specially designed section of the new web-based SHOT reporting system to facilitate this.
2008	Monitoring of patients is as important for the reinfusion of red cells collected by ICS or PCS as it is for allogeneic red cells.	**Cell salvage leads /HTT**	
2008	Cell salvage machines are classified as Medical Devices, so all adverse events attributable to machine errors and failures should be reported to the MHRA as well as SHOT.	**Cell salvage leads /HTT**	