

# ADVERSE REACTIONS IN APHERESIS DONORS: A 10 YEAR RETROSPECTIVE ANALYSIS AT ZHBSD

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## Background

Each year, more than 20,000 apheresis procedures were made in Switzerland. Apheresis donations are considered to be safe with low incidence of adverse events. However, data reported in the medical literature are limited and contradictory [Ref. 1].

## Methods

This retrospective study involved a data review from our Blood Donation Centers (ZHBSD, see Abbr.) over a period of 10 years (January 2003 through December 2013) of 58,984 apheresis procedures. All donors met the criteria for donation. Adverse events during or after the apheresis procedures were analyzed according to 3 categories: complications related to staff procedures, complications related to donors and complications related to the apheresis device.

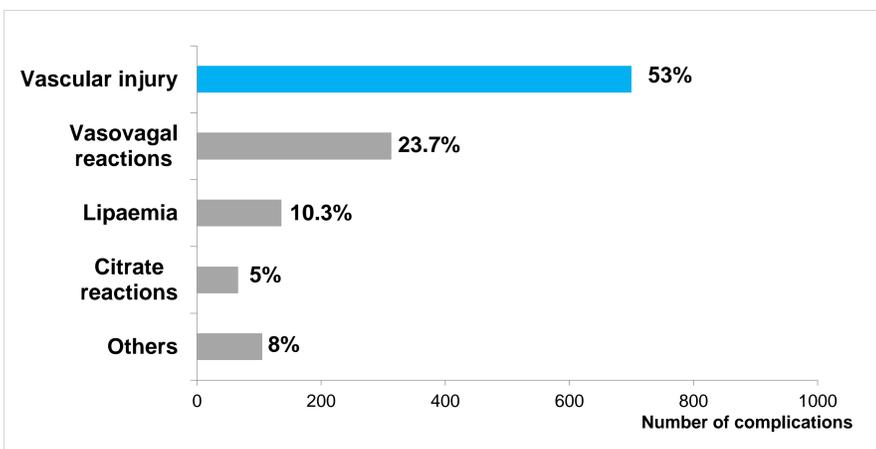


Figure 1. Number of adverse events associated with apheresis procedures related to donors ( $n=1320$ )

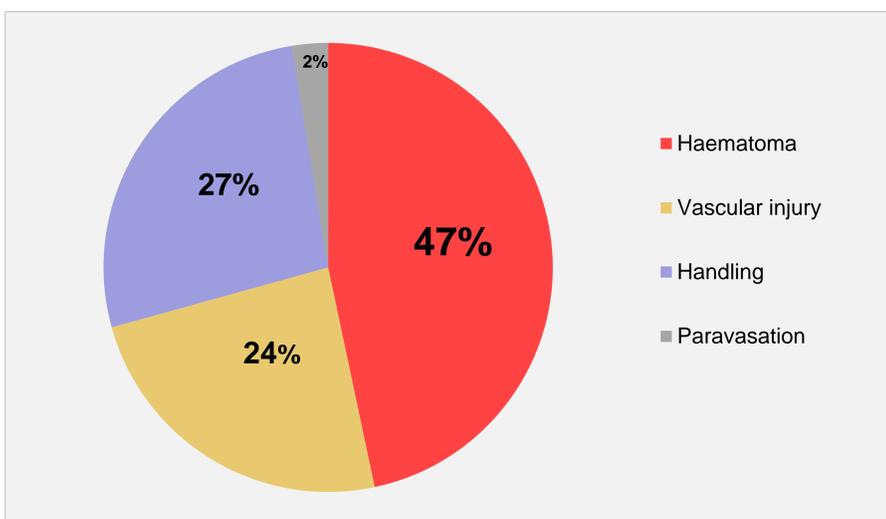


Figure 2. Type of adverse events related to staff procedures ( $n=2031$ )

## Objectives

The aim of this study was to review retrospectively the incidence of adverse events (AEs) during 58,984 apheresis procedures over a 10 year period at the donation centers of ZHBSD. Type of cell separators used were also included in the study.

## Results

A total of 7.7% ( $n=4524$ ) adverse events were recorded in 58,984 apheresis procedures. 44,9% ( $n=2031$ ) of these AEs were related to staff procedures, 29,2% ( $n=1320$ ) related to donors and 1173 (25.9%) related to apheresis devices.

Details to the subcategories are reported in Figure 1, Figure 2 and Table 1.

Type of procedure	Type of device	Number of procedures	%	Number of complications	%
Plateletpheresis	Fenwal Amicus ®	36438	61.7	496	42.3
Plateletpheresis	Trima Accel ®	15552	26.4	290	24.7
Plateletpheresis	COBE Spectra ®	1124	1.9	19	1.6
Plasmapheresis	Fenwal Autoaph. C A-201 ®	3884	6.6	336	28.6
Erythropheresis	Fenwal Alyx ®	1986	3.4	32	2.8
<b>Total</b>		<b>58984</b>	<b>100</b>	<b>1173</b>	<b>100</b>

Table 1. Devices used for apheresis donations and number of complications related to apheresis device ( $n=1173$ )

**Apheresis devices:** Out of 1173 (25,9%) apheresis device complications, 65,5% ( $n=769$ ) were associated with apheresis device and/or set defect, 12,7% ( $n=149$ ) with low final volume of product, 9% ( $n=105$ ) with repeated alarms, 8,8% ( $n=103$ ) with flow defects, and 4% ( $n=47$ ) with software defects.

**Staff procedures:** Out of 2031 (44,9%) complications related to staff procedures, 27% ( $n=542$ ) were complications occurring through device handling. In these, a total of 49% ( $n=266$ ) occurred with Fenwal Amicus device, 36% ( $n=198$ ) occurred with Trima Accel device, 11% ( $n=57$ ) occurred by Autoapheresis C A-201 Fenwal, 3% ( $n=16$ ) was by Alyx Fenwal device and 1% ( $n=5$ ) by Cobe Spectra device. Because of the different number of procedures with each device there is no significance in the percentage of device complications.

## Conclusions

The result of our retrospective 10-year analysis shows that apheresis procedures at ZHBSD are safe for the donor. There is only a low incidence of adverse events and a very low risk of serious adverse effects; the adverse reactions that did occur were rapidly resolved and had full recovery. Commonly observed adverse events in apheresis procedures were vascular injury, haematoma formation and vasovagal reactions. The last ones can be very often prevented by pre-donation information such as good hydration before and after blood donation and taking a rest of 15-20 minutes before leaving the donation center. Staff training must be appropriate including good knowledge of unit's standard operating procedures (SOPs), fluid and electrolyte balances, physiology, diseases, as well as operational details of the apheresis unit to perform correctly the procedure and reduce furthermore this source of complications [Ref. 2, 3 and 4]

## Abbreviations

1 ZHBSD: Stiftung Zürcher Blutspendedienst SRK

## References

1. Jahresbericht Blutspende SRK Schweiz, 2013
2. McLeod BC, Price TH, Weinstein R, eds. Apheresis: Principles and Practice, 2<sup>nd</sup> Edition. Bethesda, MD: AABB Press, 2003
3. Adverse Events in Platelet Apheresis Donors: A Multivariate Analysis in a Hospital-Based Program. Vox Sang 1999; 77:24-32
4. Comparison of plateletpheresis on three continuous flow cell separators. Asian J Tranfus Sci. Jul 2009; 3(2): 73-77