

# Study of Adverse Donor Reaction of Plateletpheresis in a Tertiary Care Centre of North India.

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## ABSTRACT

**Background:** Plateletpheresis is a lifesaving procedure in preventing and treating serious complications from bleeding and haemorrhage in patients having disorders manifesting as thrombocytopenia like in dengue patients, ITP, aplastic anemia and chemotherapy for leukaemia. **Methods:** In this study 100 healthy voluntary donors were enrolled after taking the informed written consent and adverse donor reactions of plateletpheresis were noted. **Results:** It was observed that out of 100 donors, only two donors had adverse effects during plateletpheresis. Citrate toxicity was seen in one donor (1%) and one donor (1%) had bruising on the arm at venipuncture site during phlebotomy. **Conclusion:** Plateletpheresis is one of the safest procedure in which adverse effects were managed conservatively and rarely donor need hospitalisation.

**Keywords:** Adverse events, Plateletpheresis, Thrombocytopenia.

## INTRODUCTION

Plateletpheresis is a procedure where the whole blood is processed from a donor and the platelets are separated and the remaining blood components are returned back to the donor. As nearly all red blood cells (RBC) and white blood cells (WBC) can be returned to the donor, it is common practice to repeat apheresis donations at close intervals.<sup>[1]</sup> Increased demand for platelet transfusion implies the need to recruit greater numbers of donors and ensuring the safety of donors is a crucial factor in recruitment.<sup>[2-4]</sup> The various types of adverse events as hypotension during apheresis donation can result due to many causes but the most common is vasovagal reactions and citrate toxicity and include light headache, hot flashes, pallor, nausea, vomiting, decreased heart rate and decreased blood pressure.<sup>[5]</sup> Donors undergoing plateletpheresis, transient and insignificant decrease in complete blood counts may occur.<sup>[6,7]</sup> Recently the utilization of single donor platelet (SDP) concentrated and grew steadily due to its usage in thrombocytopenia like in dengue patients, ITP, aplastic anemia and chemotherapy

protocols. This was especially due to lower alloimmunization and transmission of viruses to patients afforded by reduced donor exposure.<sup>[8]</sup>

### Aim

To study the adverse effect of plateletpheresis procedure on the donor during and after donation.

## MATERIALS AND METHODS

This prospective, observational, non blinded study included a total of 100 healthy voluntary donors after taking informed written consent. Donor undergoing an occasional apheresis procedure must meet the same criteria as a whole blood donation as per Director General Health Services guidelines.<sup>[9]</sup>

1. Age 18-60 years
2. Platelet count greater than or equal to  $150-200 \times 10^9/L$
3. Haemoglobin levels greater than or equal to 12.5 g/dl and donor body weight greater than or equal to 60 kg
4. No consumption of non-steroidal anti-inflammatory drugs and acetyl salicylic acid in the last 3 days with absence of any illness
5. Time lapse of at least 3 months since last whole blood donation and time lapse of at least 3 days since last plateletpheresis donation.
6. Adequate venous access
7. Written informed consent will be obtained before the procedure.

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8. Tests for Haemoglobin, ABO Rh and TTI (Human immunodeficiency virus (HIV) 1, 2 antibodies and hepatitis B surface antigen, hepatitis C antibody, malaria and syphilis).

During and after plateletpheresis procedure following adverse reactions [5] was noted:

- Hypotension
- Vasovagal reaction
- Citrate reactions.

Citrate reactions are the most common adverse effects and symptoms include citrate effect and Citrate toxicity.

Citrate effect - numbness and tingling sensation around the mouth

Citrate toxicity - muscle cramps, shivering, nausea, vomiting and tetany.

- Hematoma and Infiltrations.
- Loss of Consciousness and Seizures.

## RESULTS

**Table 1: Adverse Effects of Plateletpheresis Procedure on Donors.**

Adverse effect	No. of donors (%)
Hypotension	0 (0%)
Vasovagal	0 (0%)
Citrate toxicity	1 (1%)
Haematoma	1 (1%)
Loss of consciousness and seizures	0 (0%)
Total	2

During donation it was observed that out of 100 donors, only two donors had adverse effects during plateletpheresis. Citrate toxicity was seen in one donor which may be due to the reason that platelet count of the donor was  $250 \times 10^9/L$  and platelet yield was set as  $6 \times 10^{11}$  platelets per unit on Trima accel. So, with respective platelet count and platelet yield, more amount of whole blood has to be processed so more ACD run in the blood circulation which caused citrate toxicity as tingling sensation around the mouth. Another donor had bruising on the arm at venipuncture site due to phlebotomy done by untrained staff. Both of these were managed conservatively and none of the donor needed hospitalization as in [Table 1].

## DISCUSSION

**Table 2: Comparison of adverse effect of plateletpheresis donation with other studies**

Sr No.	Study	No. of donors (%)
1.	Joseph et al[10] (2013)	90 out of 3367 (2.67%)
2.	Dogra et al[11] (2016)	80 out of 1740 (4.59%)
3.	Kajal et al[12] (2017)	4 out of 66 (6%)
4.	Present study(2017)	2 out of 100 (2%)

In the present study, the adverse effect on donors during plateletpheresis was 2% which is similar to

study done by Joseph et al,<sup>[10]</sup> (2.67%). While the studies conducted by Dogra et al,<sup>[11]</sup> and Kajal et al,<sup>[12]</sup> had 4.59% and 6% adverse effect during plateletpheresis donation which is higher than present study.

## CONCLUSION

Plateletpheresis is a safe procedure and reactions are less acute than whole blood donation and rarely need hospitalisation. The adverse events during plateletpheresis can be reduced by meticulous donor-vigilance, superior training of technical personnel.

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