Adverse Events in Plateletpheresis Procedures in a Tertiary Care Centre In Vadodara, Gujarat

Dr. Jhalak Patel1*, Dr. Milind Dighe2, Dr. Farzana Kothari3, Dr. Rahul Rajvanshi4
Ex. Senior Resident1,4, Ex. Professor and Head2, Associate Professor and Head3
Department of Immunohematology and Blood Transfusion; Government Medical College, Baroda.

Corresponding Author:
Dr. Jhalak Patel
Ex. Senior Resident, Department of Immunohematology and Blood Transfusion; Government Medical College, Baroda.

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ABSTRACT

Background: Increasing demand of platelet transfusions for patients has led to a trend in the increased use of automated blood collections. These share many of the same reactions and injuries seen with platelets obtained from whole blood donation but also have unique complications.

Materials and Method: This is a retrospective study of all adverse events occurring related to plateletpheresis donation procedures done between June 2015 to June 2018 in Department of IHBT; Government Medical College, Vadodara, Gujarat, India which is a tertiary care hospital.

Results: Overall, 250 plateletpheresis were performed during our study period. Out of these 18 adverse events were recorded; overall adverse event rate of 7.2% occur.

Conclusion: The AEs of plateletpheresis donation are relatively mild and easily treated. Meticulous donor vigilance, superior technical personnel training, and experienced transfusion medicine specialist's supervision will make donors' experience more pleasant, thereby promoting and preparing a voluntary apheresis donor pool in India.

Keywords: Plateletpheresis, Apheresis, Adverse events

INTRODUCTION

Platelet concentrates, prepared from whole blood are generally referred to as random donor platelets to distinguish them from single donor platelets produced by apheresis. The process of selectively removing platelets from the blood is termed as plateletpheresis. Routinely the number of platelets in an apheresis product is equivalent to 6-10 random platelet concentrates and contains at least $3.0 \times 10^{11}$ platelets. [1] Platelet transfusion has been shown to prevent major hemorrhage and improve survival in thrombocytopenic patients. [2] Plateletpheresis should be performed in a specific area and under the guidance and supervision of a physician. [3] Apheresis procedures are usually well tolerated. Adverse events (AE) of variable severity may occur during or after the procedure. Adverse events that occur in donors can be divided into local reactions and systemic reactions.

AIM:

To study adverse events (AE) in plateletpheresis procedures in relation to donors

MATERIAL AND METHOD:

This is a retrospective study of all adverse events occurring related to platelet apheresis donation procedures done between June 2015 to June 2018 in Department of IHBT; Government Medical College, Vadodara, Gujarat, India which is a tertiary care hospital.
procedures done between June 2015 to June 2018 was conducted at a S.S.G hospital, blood bank; Department of Immunohematology and Blood Transfusion, Government Medical College, Baroda, Gujarat, India which is a tertiary care hospital. A total of 250 plateletpheresis procedures were performed during our study period on Comtec cell separator (Fresenius Kabi). Comtec is single needle intermittent flow type of cell separator. All procedures were done with all aseptic conditions. Donors were selected as per the set criteria for plateletpheresis donations according to Director General Health Services guidelines:

- Weight 55 Kg or more.
- Age between 18 to 60 years.
- Hb-12.5 gm/dl.
- Donors who have taken aspirin containing medication within 72 hours are usually deferred.
- Interval between two platelet donations should be at least 48 hours. A donor shall not undergo platelet donations more than 2 times in a week and or 24 times in a year.
- Platelet count >1.5 lakhs.
- Absence of any illness.
- Negative test for transfusion transmitted infections like HIV, HBV, HCV, Syphilis and Malaria.
- ABO identical donor for the patient.
- Adequate venous access.
- Informed consent was taken for the procedure.

Adverse events occurred during the procedure were intervened, treated and documented.

The classification of adverse events was based on the clinical manifestations presented by the donor. The following criteria were used:

1. Mild clinical complications: vasovagal reactions (syncope, malaise, dizziness, sweating), paresthesia, tingling sensation in perioral area, headache and paleness.

RESULT:
Overall, 250 plateletpheresis were performed during our study period. Out of these 18 adverse events were recorded; overall adverse event rate of 7.2% occur.
18 adverse events were recorded out of which, (Table-1)

- 16 (88.89%) donors suffered from mild reaction; in which 12 experienced tingling sensation in perioral area and 4 donors experienced dizziness; that is vasovagal reaction of mild intensity.
- 02 (11.11%) had suffered from moderate adverse event with one having hematoma formation and other having vomiting.

All the adverse events reported during the study period were of mild and moderate intensity. No severe reactions were reported in this procedure. Total 18 adverse events were reported during our study period. Out of these 18 donors, 10 (55.56%) of them were first time donors and 8 (44.44%) were repeat donors.

DISCUSSION:
Modern blood transfusion advocates use of every blood donation by way of blood component preparation.

While plateletpheresis shares many reactions and injuries with whole blood donation because of differences unique complications exist. The adverse events during plateletpheresis procedures have been broadly divided into:

- Venipuncture related.
- Syncope, sweating, dizziness (vasovagal reactions).
- Citrate reactions.

Pain in the site of venipuncture is more common because the same vein in one arm is used for inflow and return, resulting in trauma and hematoma of vein. Citrate is used as a primary anticoagulant in apheresis
procedures. [9] The anticoagulant effect of the citrate results from its ability to chelate calcium ions resulting in the calcium ion being unavailable to participate in biological reactions such as the coagulation cascade. The non-availability of the calcium ion hinders the coagulation cascade. This produces signs and symptoms of citrate toxicity including paresthesia, perioral tingling sensation. [10] In our study calcium supplements were given to donors when the complain about tingling or numbness sensations. All these reactions were mild. There was no severe form of reaction noted in our study.

In our study the vasovagal reaction occurred in the form of dizziness, sweating. This can be attributed to apprehension. At times it can be due to hypocalcemia. [7] Hypovolemia and vasovagal reactions are treated similarly. The procedure should be temporarily stopped and fluid infusion should be started.

The overall rate of adverse reactions among donors undergoing plateletpheresis procedures in our study was 7.2% (18/250). Frequency of mild, moderate and severe reactions were 6.4%, 0.8% and 0% respectively. (Table-1, Table-2) This was almost equal to study done by other like Kajal et al (6.06%) and Dogra et al (5.86%). [5,11] A study done by Joseph et al [12] and Disha et al [13] had observed a less frequency of adverse events compared to our study 2.67% and 4.36% respectively. On contrary Patidar et al [14] and some studies reported higher frequency of adverse events (18%).

CONCLUSION:
Overall apheresis donations performed on cell separator are safe and have acute reaction rate less. The adverse events of apheresis donations are relatively mild and easily treated. And this lower adverse reaction rate associated with this procedure encourages safety of donors and is important in recruitment of new donors.

REFERENCES:


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