International Journal of Science and Research (IJSR)
ISSN: 2319-7064
Impact Factor 2024: 2.102

Adverse Donor Reactions - The Retrospective Study at 250 Bedded Hospital

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Abstract: ***Introduction: Whole blood donation is generally considered a safe method, but sometimes weight differences that may occur during or at the end of the collection process may have adverse effects. The aim of this study is to estimate the frequency and type of adverse events that occur during blood donation and to evaluate practices that may help reduce adverse events. Materials and methods: At Rukmani Birla Hospital, Jaipur, Rajasthan the hospital based blood centre retrospective study was conducted at a regional multispeciality hospital center from January 2024 to december2024. All blood donations to the center are screened and in the study we recorded all adverse events occurring during or after donation. Results: Overall 11 adverse events were reported in relation to 2400 donations, resulting in an overall adverse event rate of 0.45%, that is, an incidence of 1 in every 200 donations. Presyncopal symptoms - vasovagal reactions of mild intensity, were the most commonly observed adverse reactions which accounted for approximately 70% of all adverse reactions noted. Conclusions: Only 0.5% of blood donations were complicated by adverse events and most of these events were presyncopal symptoms. Blood donation is a very safe procedure which could be made even more event - free by assuring and tactful practices.***

Keywords: blood donation, adverse events, vasovagal reaction, complication, side effect.

1. Introduction

Blood transfusion is considered a vital component of any health care system, saving millions of lives worldwide every year. Approximately with a demand of around 40.9 million units per year of the total Indian population, has had to receive blood or blood products at some point in their lives. Although blood donation is a very low - risk procedure, some side effects are inevitable, which are the most important factor that discourages donors from donating again. This is an obstacle to a healthy and sufficient blood supply, therefore eliminating or reducing these factors through prevention will help achieve this goal. Various side effects can occur after blood donation and are divided into two categories: local and systemic reactions - Local reactions include hematomas, bleeding, bruising, and associated inflammation.

Systemic reactions, on the other hand, involve dizziness, hyperventilation, facial pallor, bruising, and similar symptoms.
The occurrence of side effects during blood donation depends on many factors, but they are:

The gender distribution of the donor and donors. The most influential factors are type of donation (first - time donor, regular donor) and race. Our study systematically reviewed the frequency of adverse events associated with blood donation in the 250 bedded multispeciality hospital and examined the frequency and participation rates of women and first - time donors.

2. Materials and Methods

This is a single - center retrospective study of all adverse events associated with all consecutive whole blood donations from January 2024 to December 2024. And donations were collected using a 16 - gauge needle inserted within antecubital vein. Strict asepsis was maintained by washing the venipuncture site sequentially with Savron, Betadine, and alcohol. The minimum body weight required for donation was 50 kg at our centre, and the minimum acceptable hemoglobin concentration was set at 12.5 g/dl. For whole blood donations, 350 ml of whole blood was collected from donors weighing 50–55 kg, and 450 ml of whole blood was donated from donors weighing more than 55 kg.

It is always recommended to provide a friendly, warm and comfortable atmosphere for the donor engaging them in conversation during the donation to distract donors who are especially anxious. It is also very important to respond immediately to the first complaints of dizziness, lightheadedness or pallor, immediately discontinuing the donation and elevating the donor's legs (anti - shock position), because pallor, sweating and restlessness are precursors of a vasovagal reaction in severe conditions. It may be preventable by taking appropriate measures at the onset of symptoms. The donor is given something refreshing and kept in the recovery room for at least 30 minutes until discharge.

The classification scheme used to record adverse events is proposed by the American Red Cross Hemovigilance Program and classifies complications into defined categories, with severity ratings (mild/severe) for specific reaction types 1, 2. Presyncope symptoms include pallor, sweating or lightheadedness without loss of consciousness. What are called syncope complications?

Classified as mild if loss of consciousness occurs temporarily and Duration is less than 1 minute, but loss of consciousness continues for a longer period. If it lasts more than 1 minute or there are complications, Bow/bladder control, seizures, and convulsions are considered serious complications of syncope.

Local side effects include:

Small hematomas (<25.8 mm2) or large (>25.8 mm2) Bruising, infiltration, possible allergic reactions
Tingling or burning sensation.

3. Results

A total of 2400 whole blood donations (350 ml/450 ml) were recorded during the study period, of which were 2376 from men and 24 from women. Donations were made by 1680 first - time donors and 720 repeat donors. There were 111 willing donors and rest alternative donors. A total of 11 adverse events were reported in association with the 2400 donations, corresponding to an overall adverse event rate of 0.5%.

Presyncope, i. e. mild vasovagal reactions, was the most frequently observed adverse event, accounting for approximately 70% of all reported adverse events. They affected 0.41% of the donors (10/2400). Major syncopal complications/severe adverse reactions were very rare, as they occurred in relation to 0.005% (01/2400) of all donations; none necessitated hospitalisation of the donor. The frequency distribution of the various types of adverse reactions that occurred in donors during the study period is presented in Table I.

Table I: Frequency of various types of adverse reactions occurring in the donor population

Type of Adverse Reaction	Number of Donors	Percentage Affected
Systematic Complications		
Presyncopal Symptoms	11	0.45%
Syncopal Complications (minor)	10	0.41%
Syncopal Complications (major)	1	0.041%
Local Complications		
Haematoma	0	0
Numbness/ tingling/ soreness of arm	0	0

4. Discussion

Blood donation centers have a dual responsibility to provide sufficient blood components for the communities they serve and to ensure the safety and welfare of donors. The most common systemic and donation - related complications associated with blood donation (presyncope, small hematomas) are unpleasant for the donor but are not medically significant. However, the importance of these minor complications lies mainly in the observation that any complication, even if minor, reduces the likelihood of repeat donation. Whole blood donation is considered safe, but reports in the medical literature on the frequency of adverse events during blood donation show great heterogeneity. The aim of this study was to determine the frequency of different types of adverse events associated with blood donation and to evaluate measures that can help prevent or reduce the occurrence of these events. Donor - related adverse events were recorded according to standardized criteria from the American Red Cross Hemovigilance Program 1 In our study, 0.45% of whole blood donations complicated by adverse events.

As part of the study, we also investigated certain practices that can help minimize adverse events associated with blood donation.

- Providing a friendly, warm and comfortable atmosphere for the donor and to engage them in a conversation during the donation to distract donors, especially those who feel anxious.
- It is also very important to respond quickly to the first complaints of dizziness, lightheadedness and pallor by immediately stopping the donation and elevating the donor's legs (anti - shock position), since pallor, sweating and restlessness are precursors of a vasovagal reaction in a severe condition. It can be prevented by taking appropriate measures as soon as symptoms appear.
- Donors are given light snacks and stay in the recovery room for at least 30 minutes before being sent. In other words, donors are provided with a hospitable environment that guarantees a safe donation and motivates them to donate further.

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