



RETROSPECTIVE ANALYSIS AND AUDIT OF SINGLE DONOR PLATELET APHERESIS IN TERTIARY CARE HOSPITAL OF RAJASTHAN.

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ABSTRACT

Platelet transfusions are indicated in patients who are bleeding or at increased risk of spontaneous bleeding. SDP has numerous advantages over RDP. An Audit of single donor platelet pheresis (SDP) was done at GMC, Kota to assess the demographic profile of the donors, ABO and Rh (D) group profile, Serological markers, mean platelets count of donors, Voluntary or replacement donation and maximum no of SDP issued. Platepheresis is a safe procedure when proper selection criteria is employed and can be tolerated by majority of the donors as no major adverse reactions were noted. In our study, blood donation was highest among younger people. If donors are continuously motivated, the percentage of voluntary blood donation can be increased. Our data showed increasing trend of donation from 2015 till October 2017 and hence the effectiveness of plateletpheresis and increasing awareness among clinicians and patients for its use with fewer side effects.

KEYWORDS : Aphaeresis, Demography, single donor platelets.

Introduction: Platelets play a very important role in hemostasis. They are needed for transfusion either prophylactically or therapeutically in cases of severe thrombocytopenia. The American Association of Blood Banking defined plateletpheresis as a method used to remove platelets from the body either from random volunteer donors, patient's family members or HLA matched donors. In SDP, blood is drawn from a donor in an anticoagulant solution and separated into components. Platelets suspended in small amount of plasma are retained as end product and the remaining components are returned to the individual. SDP has numerous advantages over RDP .There is decreased risk of TTI's, decreased risk of bacterial contamination, decreased risk of alloimmunisation due to reduced donor exposure, and higher platelet count yield. Platelets can be prepared from fractionation of whole blood or through the apheresis (plateletpheresis) using cell separators.

MATERIAL AND METHODS: Audit of single donor platelet pheresis (SDP) was done in government medical college, Kota. Primary Aim of this study was to assess the Demographic profile of the donors ,ABO and Rh (D) group profile, Voluntary or replacement donation ,Serological status of donors and Maximum no of SDP issued .Secondary Aim was to document any complications during the procedure. The study was conducted retrospectively from September 2015 to October 2017. Data was collected from the records of MBS blood bank, Government Medical College, Kota Rajasthan. Platelet Apheresis procedures were performed using Fresenius Kabi COM.TEC apheresis machine. The procedure was continuous and automated with blood pump speed of 60-80 ml/min⁴. Blood pressure (BP) and pulse were monitored at frequent intervals and donors were closely observed for development of any complications and overall status. Our selection criteria for SDP donation include all the parameters similar to routine blood donation and:

1. Adequate venous access
2. Donor age > 18 years.
3. Donor weight > 60 kgs.
4. Platelet count > 2 lakhs/ul.
5. A gap of 3 months from the last whole blood donation or three days from the last platelet pheresis.
6. Negative serology for HIV, HbsAg, HCV, Malaria ,VDRL.

Result: Total of 1262 SDP were issued with highest incidence of 874 issue in the year 2017(Figure 1). Out of all the donors, only 3 donors were female corresponding to 0.2 % of the total donors. Youngest donor was of the age of 18 years and oldest donor being of 55 years (

Figure 2). Most common platelet count range of the donors was 1.8-2.6 lakhs/cu mm (36.29%)(Figure 3). Looking at the ABO and Rh group, Blood group B had the highest incidence of donation while AB being the lowest among all with Rh negative being only 5 % of the total donation. While comparing weight of the donors the mean weight of patient was 59.2 kgs with Maximum weight being 102 kgs. No major adverse effects were seen in the donors except for few having peri-oral paraesthesia.

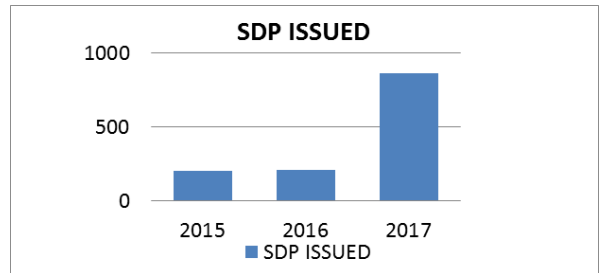


FIGURE 1

Age (years)	Number of SDP donors	Percentage %	Predominant age range
18-25	295	23.0	83.3 %
26-30	579	45.1	
31-35	197	15.2	
36-40	111	8.6	
41-45	65	5.0	
46-50	30	2.3	
51-55 >	4	0.3	

FIGURE 2

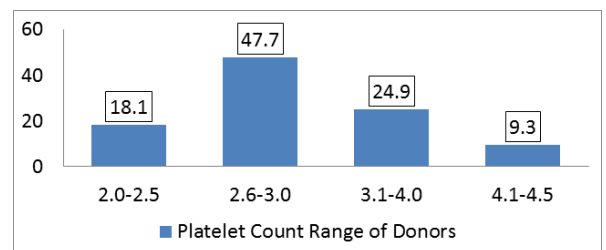


Figure 3

Discussion: Platelets are essential for the formation of primary haemostatic plug and maintenance of haemostasis. Generally in patients either 4-6 units of random donor platelet or 1 unit of SDP is

transfused¹. One unit of SDP should contain a minimum of 3×10^{11} platelets as per American Association of Blood Bank (AABB) guidelines¹. This will give an increment of 30,000 to 60,000/ μ L. Nowadays, SDP units are the main source of platelets in many countries. Different trials have shown that transfusion of high platelet doses could reduce number of platelet concentrates required by patients even in cases with adverse clinical factors in which refractoriness to transfusion is common. Nevertheless, there are very few studies related to donor clinical and laboratory factors that may influence number of platelet yield. Identification of these factors would allow for better selection of donors resulting in higher platelet yield and consequently a lower number of donor exposures to the patients. In our study, blood donation was highest among younger people which is similar to study done by Arun *et al*² in 2013 and Suresh *et al*³ in 2014. Our data showed increasing trend of donation from 2015 to 2017 and hence the effectiveness of plateletpheresis and increasing awareness among clinicians and patients for its use with less side effects. In our study 47.7 % of the donors had platelet count between 2.6-3.0 lakhs / μ L compared to 36 % donors in the study done by Vujhini SK *et al* in 2017. Moreover increase trend of SDP donation and utilization during September and October 2017 correlates well with seasonal fever (dengue) incidence. Regular audit of SDP is an important and beneficial as it provides a good opportunity for finding strategies in improving the blood bank services with appropriate and safe use of platelets and it also helps in assessing the trend and thereby preparation for seasonal fever outbreak.

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