

Determination of Appropriate Deferral Time for Repeat Apheresis Platelets Concentrate Donation in Abuja, Nigeria

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INTRODUCTION

Plateletpheresis is the process by which a therapeutic adult dose of platelet concentrate is produced from a single donor using automated cell separator equipment. Recently, the demand for Apheresis Platelets concentrate transfusions has been increasing in our hospitals. This has been attributed to increased cases of malignancy associated bone marrow suppression and various other causes of thrombocytopenia and thrombopathies. The increasing use of myeloablative chemotherapy in treatment of haematological and other malignancies also results in transient severe fall in platelet count. The demand generally outstrips the supply necessitating the need to search for additional donor sources to increase the supply of platelets for transfusion. Is it therefore possible to reduce the time interval between plateletpheresis while maintaining donor safety?.

AIM

The aim of the study was to determine the platelets recovery time after platelets concentrate donation with a view to determining the appropriate deferral time for repeat plateletpheresis

METHOD

The study was an observational cross sectional prospective study of all consenting platelets donors at the National Hospital Abuja over a period of seven months .

The donors were followed up for seven days and their haematological parameters were analyzed on days 0, 2 and 7 post donation

Fifty seven healthy plateletpheresis donors who met the inclusion criteria were recruited into the study. We excluded donors whose pre-donation platelet count were less than 200 x 10⁹/L

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RESULTS

Analysis was done in only forty eight (48) donors as nine (9) participants withdrew before the end of the study. The results show there was a significant decrease in the initial platelets counts ($p < 0.001$), with subsequent good platelets recovery post donation (Pre: 259.83±44.61 x 10⁹/L; Post - Day 0: 205.29±36.77 x 10⁹/L, day 2: 216.88±32.71 x 10⁹/L and day 7: 240.3±41.83 x 10⁹/L). The apheresis donors recovered 64.29% of the lost platelets by day 2 of donation and subsequently attain 92.49% of pre-donation count within 7 days of donation. There was a statistically significant transient increase in the immediate post donation haemoglobin concentration (14.72±1.32)g/dL but this gradually reduced on day 2 (13.75±1.04)g/dL and 13.83±1.04g/dL on day 7 showing no significant difference from the pre-donation Hb of 13.96±1.02g/dL

Table 1. Platelet Recovery after Apheresis-PC Donation

Parameters	Plt Count (Mean±SD)/ Percentage Recovery
Pre Donation	
Platelets Count (x 10 ⁹ /L)	259.83 ± 44.41
Day 2 Post Donation	
Platelets Count(x 10 ⁹ /L)	216.88 ± 32.71
Platelet Recovery (%)	83.47
Day 7 Post Donation	
Platelets Count(x 10 ⁹ /L)	240.31 ± 41.38
Platelet Recovery (%)	92.49

Donor Pre-Plt Count (x 10 ⁹ /L) n = 48	Immediate Post Donation (Frequency/ Percentage)	Day 2 Post-Donation (Frequency/ Percentage)	Day 7 Post-Donation (Frequency/ Percentage)
<150	2 (4.2%)	0	0
151-200	22 (45.8%)	18 (37.5%)	9 (18.75%)
>200	24 (50%)	30 (62.5%)	39 (81.25%)

Table 2. Post donation platelets count frequency table

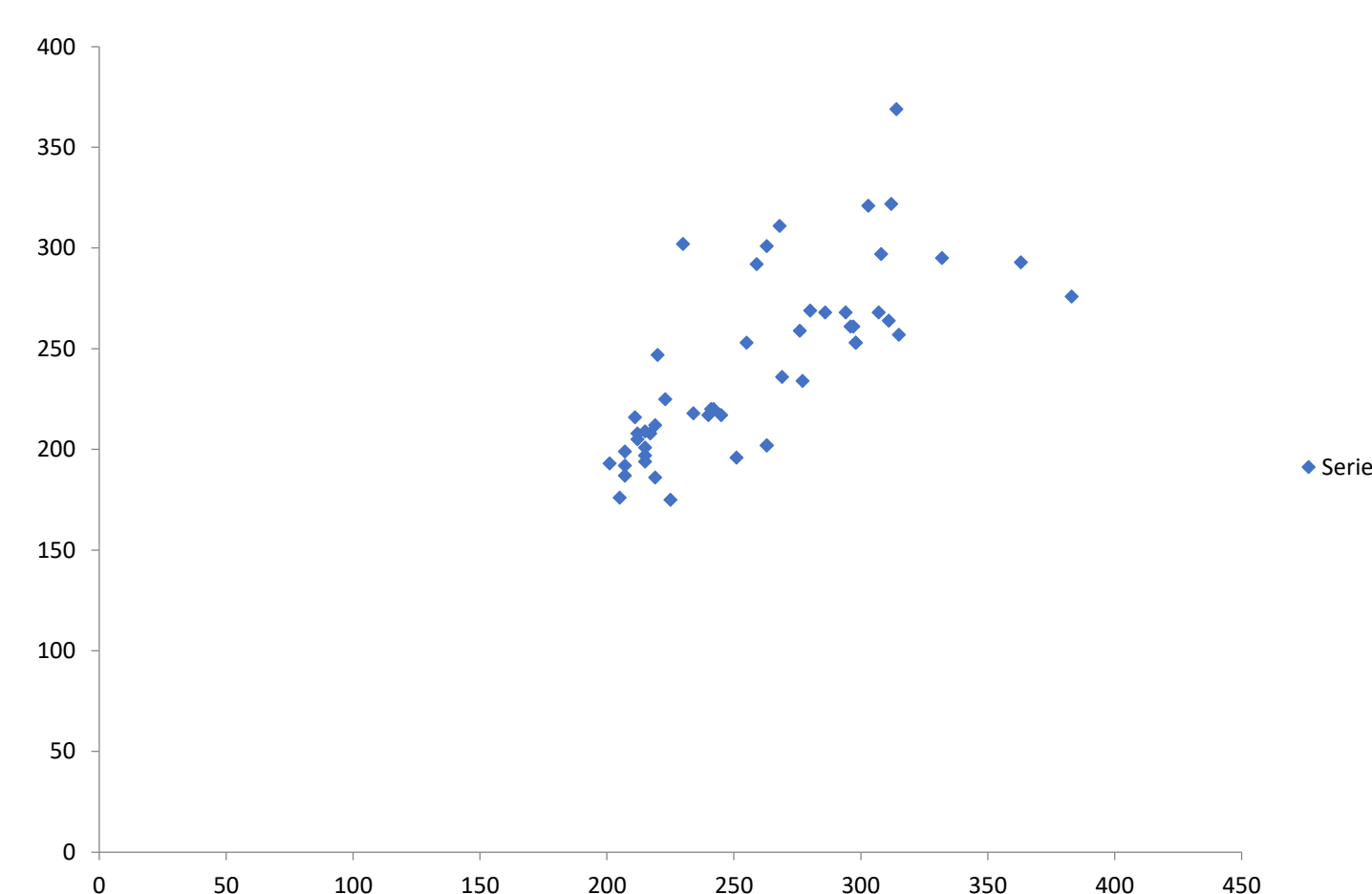


Fig. 1. showing positive linear correlation between pre donation platelets count and platelet recovery at day 7 post plateletpheresis donation

Pearson's correlation coefficient , $r = 0.73$, $p = 0.001$

CONCLUSIONS

This study has shown statistically significant platelets recovery 7 days after plateletpheresis making a 7 day deferral for repeat plateletpheresis feasible in our environment. The study also shows feasibility of a 2 days deferral as recommended by AABB. Strict monitoring and pre-donation evaluation of donors should be done to prevent any adverse events such as anaemia and thrombocytopenia

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