PLATELETPHERESIS DONOR REGISTRY FOR INDIA

Prashant Pandey
Jaypee Hospital, Noida
INDEX

✓ SDPC vs. RDPC
✓ Why plateletpheresis(PP) donor registry required in India
✓ Global and Indian perspective
✓ Jaypee hospital registry (strategy and management support)
✓ Encouraging results inspite of Common impediments
✓ Conclusion
**Source-SDPC and RDPC**

<table>
<thead>
<tr>
<th>Blood Component</th>
<th>Storage Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red Blood Cells</td>
<td>42 days in the refrigerator or 10 years in the freezer</td>
</tr>
<tr>
<td>Fresh Frozen Plasma</td>
<td>1 year in the freezer</td>
</tr>
<tr>
<td>Concentrate of Platelets</td>
<td>5 days at room temperature</td>
</tr>
<tr>
<td>Cryoprecipitate</td>
<td>1 year in the freezer</td>
</tr>
</tbody>
</table>

- **Red Blood Cells**: To increase the amount of red blood cells after trauma or surgery or to treat severe anemia.
- **Fresh Frozen Plasma**: To correct a deficiency in coagulation factors or to treat shock due to plasma loss from burns or massive bleeding.
- **Concentrate of Platelets**: To treat or prevent bleeding due to lowplatelet levels. To correct functional platelet problems.
- **Cryoprecipitate**: To treat fibrinogen deficiencies.
**Plateletpheresis (PP)**

- Specialized procedure - 10-15 yrs ago. (PP:WB ratio = 1:50-1:100)
- Present scenario - routine blood bank procedure (1:10-1:20).
- Seasonal effect - Number of procedures vary significantly during dengue epidemics
SDPC....a product of choice?

SDPC surely reduces donor exposure 4-6 times
NEED TO CREATE PP DONOR REGISTRY

Growing demand of PP in India

1. Increasing Awareness among the clinicians (specificity of comp. therapy/safety/quality)
Transfusion support to Dengue patients in a hospital based blood transfusion service in north India

*Rajendra Chaudhary, Dheeraj Khetan, Seema Sinha, Pratul Sinha, Atul Sonker, Prashant Pandey, Sudipta Sekhar Das, Prashant Agarwal, Atul Sonker, Prashant Agarwal, Vijaylaxmi Ray*

*Transfusion and Apheresis Science*  
*Volume 35, Issue 3*, December 2006, Pages 239–244

Role of platelet transfusion in the management of dengue patients in a tertiary care hospital

*R. N. Makroo, V. Raina, P. Kumar,* and *R. K. Kanth*


3. Dengue epidemics/non-dengue viral thrombocytopenia have played vital/crucial role in creating awareness about plateletpheresis
3. INDIA.......A Global Health Destination

Recession free, one of the fastest growing industries in India
4. Tremendous advancement in the tertiary healthcare practices in India

- SOTs (Liver/kidney/Pancreas)
- Advanced cancer Care/BMTs
- Cardiac Surgery (adult/pediatric)
A prospective quality evaluation of single donor platelets (SDP) – An experience of a tertiary healthcare center in India

Prashant Pandey *, Aseem Kumar Tiwari, Jyoti Sharma, Mukesh Bikram Singh, Surbhi Dixit, Vimarsh Raina

Department of Transfusion Medicine, Medanta-The Medicity, Sector-38, Gurgaon-122001, India
Laboratory Services and Transfusion Medicine, Medanta-The Medicity, Sector-38, Gurgaon 122001, India

<table>
<thead>
<tr>
<th>Category of deferral</th>
<th>Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temporary</td>
<td>223 (82.3)</td>
</tr>
<tr>
<td>Pre-procedure platelet count below 1.5 lac/μl</td>
<td>80 (29.5)</td>
</tr>
<tr>
<td>Preprocedure low hemoglobin below 12.5 g/dl</td>
<td>25 (9.2)</td>
</tr>
<tr>
<td>Poor venous access</td>
<td>27 (10)</td>
</tr>
<tr>
<td>Antibiotic and other Medication</td>
<td>27 (10)</td>
</tr>
<tr>
<td>High blood pressure</td>
<td>25 (9.2)</td>
</tr>
<tr>
<td>Fever and other systemic problem</td>
<td>16 (5.9)</td>
</tr>
<tr>
<td>Weight less than 50 kg</td>
<td>15 (5.5)</td>
</tr>
<tr>
<td>Whole blood donation within last 3 months</td>
<td>4 (1.5)</td>
</tr>
<tr>
<td>Typhoid within 12 months</td>
<td>4 (1.5)</td>
</tr>
<tr>
<td>Permanent</td>
<td>48 (17.7)</td>
</tr>
<tr>
<td>Seroreactivity during TTD screening</td>
<td>48 (17.7)</td>
</tr>
</tbody>
</table>

A total of 2558 donors were registered

**INTRODUCTION:** This study reports the frequency and nature of plateletpheresis deferrals and evaluates donors with low platelet count and hemoglobin levels so as to assess the possibility of reentry without hampering donor safety. **MATERIALS AND METHODS:** Three-year retrospective data of plateletpheresis deferral was collected. Data from actual procedures was also reviewed to analyze the safety of performing plateletpheresis in donors with low hemoglobin and platelet values. **RESULTS:** 416 donors were deferred for various reasons among 1,515 screened (27.5%), of which 69.7% deferrals were because of low platelet count (55.8%) and less hemoglobin levels. **Among the low platelet count donor group,** 20.3% had a count between 141 and 149 x 10(9)/L and 41.8% below 120 x 10(9)/L. Of the 14% donors deferred for low hemoglobin, 62.1% had values in the range of 11.5-12.4 g/dL with normal mean corpuscular volume and red cell distribution width in most (86.2%) of them. Expected blood loss in each procedure varied between 20 and 30 mL, whereas RBC contamination in the product varied from 0 to 1.6 mL in 538 procedures. There were 176 donations with predonation platelet count <180 x 10(9)/L (32.7%). None of the 14 procedures performed on donors with platelet count of 150 x 10(9)/L showed evidence of thrombocytopenia or donor reaction.
Donor Deferral Characteristics for Plateletpheresis at a Tertiary Care Center in India- A Retrospective Analysis

ABSTRACT
Background: The demand for plateletpheresis is increasing day by day due to its many merits over random donor platelets. However, in our country, there is a dearth of apheresis donors due to greater devotion and time required for the procedure and lack of awareness.

Aim: The aim of the present study is to analyse the reasons for deferral of apheresis donors at a tertiary care center.

Materials and Methods: This retrospective analysis was conducted to study the causes, frequency and the type of plateletpheresis donor deferral at regional blood transfusion center, Lady Harding Medical College and associated Shrimati Sucheta Kriplani Hospital and Kalawati Saran Childrens’ Hospital. The study was undertaken over a period of two years (from January 2010 to December 2011).

Results: Out of a total of 343 donors screened, 87 donors were deferred, the overall deferral rate being 25.36%. The most frequent cause of deferral was a low platelet count accounting for 43.5% of all the causes followed by a low hemoglobin level (27.05%). Among the donors deferred for anaemia, 15 out of 23 (65.2%) had hemoglobin in the range of 11.5-12.4gm%, representing 17.2% of all deferrals.

Conclusion: Based on these findings and the scarcity of apheresis donors in our country, we are of the opinion that the selection criteria for plateletpheresis donors should be revised to accommodate more donors and reduce deferral rate without compromising on the health of the donors.
SCENARIO IN NE INDIA

Harris Platelet syndrome
• Incidence-30%
• Mild to severe thrombocytopenia
• no bleeding and normal platelet aggregation study
• AD inherited giant platelet disorder

Asymptomatic constitutional macrothrombocytopenia among West Bengal blood donors.
Naina HV, Nair SC, Daniel D, George B, Chandy M.
Peripheral blood film examination a necessity for plateletpheresis in eastern India

After 598 screenings, 406 plateletpheresis procedures were performed and 192 donors were deferred (poor venous access, medical history, anemia, thrombocytopenia). Among the 406 donors who underwent apheresis, 298 had an initial PLT count of less than $1.5 \times 10^9/L$ on the cell counter. Blood film examination revealed that 194 of 298 (65%) had giant PLTs, 75 of 298 (25%) had PLT clumps, and 29 of 298 (10%) had both features. When we correlated the PBF findings with PLT volume histogram and PLT count, these 298 donors with thrombocytopenia qualified for SDP procedure as the revised PLT counts were greater than $1.5 \times 10^9/L$. Such donors accounted for 73% of total SDP procedures.

This unique observation among blood donors of West Bengal (India), characterized by mild thrombocytopenia, giant PLTs (MPV > 10 fL) with normal PLT function is referred to as asymptomatic constitutional macrothrombocytopenia or Harris PLT syndrome.\(^7\) Hence it is our

Supriya Dhar, MD\(^1\)  
Sabita Basu, MD\(^1\)  
e-mail: drsabitabasu@gmail.com  
Deepak Mishra, MD\(^2\)

\(^1\)Department of Transfusion Medicine  
\(^2\)Department of Laboratory Medicine  
Tata Medical Center  
Kolkata, West Bengal, India
Global Perspective- PP Donor Registry

- USA- 10 million PP procedures
- China- tremendous improvement of vol. apheresis donation during last 2 decades
- Srilanka- PP procedures recently started


The voluntary non-remunerated blood donation campaign in Shenzhen, China, was launched in 1993 and the smooth change from paid donors to unpaid took only a decade. In the first half the volunteer donation system and a sufficient blood supply was promoted and this paved the way for further development in the second half during which the non-remunerated donation system became substantial and integral due to recruitment for plateletpheresis and peripheral stem cells donation as well as whole blood donations. Ninety percent of the donors registered for plateletpheresis do donate and none of the twenty-three non-related donors with matched HLA genotypes broke their promise to donate their peripheral stem cells.
Current Scenario in India

1. Ignorance in promotion of PP donation
2. Promotion to voluntary WB donation only ..............
3. WB- 80% from vol donors
   While >95% PP procedures are done on family members/relatives.
Current scenario in India

• Routine vs. urgent PP?
• No uniformity in Testing methodology- Rapid/ELISA/ECI...........NAT(WB- NAT testing but SDPC is rapid card tested)
• No uniformity in baseline platelet count- what it should be?
• Group specific/non-group specific?
Jaypee Donor Registry?
Before approaching outside, first we started motivating our in-house hospital employees for vol. blood donation

“Paid off” - One day leave

“Family health first” - health checkup package

“Hepatitis B free employees/family” - free Hep B vaccination and antiHBS titer facility
# Phase 1: Promotion of Voluntary Blood Donation

<table>
<thead>
<tr>
<th>FOR JAYPEE HOSPITAL EMPLOYEES</th>
</tr>
</thead>
<tbody>
<tr>
<td>On every unit of blood donation in Jaypee hospital (apheresis platelets and whole blood)</td>
</tr>
<tr>
<td>a. Voluntary <em>blood donation card</em> - valid for one year</td>
</tr>
<tr>
<td>b. <em>One day leave</em></td>
</tr>
<tr>
<td>c. <em>Certificate of appreciation</em> with serological test reports (HIV I/II, Hepatitis B, Hepatitis C based on chemiluminescence and ID- NAT, Syphilis and malaria)</td>
</tr>
<tr>
<td>d. Complete <em>blood count</em></td>
</tr>
<tr>
<td>e. <em>Token</em> of appreciation</td>
</tr>
<tr>
<td>f. <em>Privilege card</em> (20% DISCOUNT)</td>
</tr>
</tbody>
</table>

On more than or equal to four donations in a year in Jaypee hospital

Above all with

a. *Hepatitis B vaccination* (if previous dose is complete, anti-HBs titer and depending on titer re- vaccination).

b. *Health check-up package worth of 3000/=* for him/herself or any other family member.
# Club Membership

**Club 10:** (Those who have donated for more than 10 and less than 20 times in Jaypee hospital)

Above all with

- a health check up package worth of Rs 6000/= for oneself or any other family member (once)

**Club 20** (Those who have donated for more than 20 and less than 30 times in Jaypee hospital)

- **Club 20** (Those who have donated for more than 20 and less than 30 times in Jaypee hospital)

Above all with

- a health check up package for complete family (husband/wife and 2 children)- once

b. *Hepatitis B vaccination/antiHBs titer* as per guidelines
Phase 2: Sensitization WB donors for plateletpheresis...challenging task

- Lack of awareness
- Time consuming procedure
- Return back of remaining blood components was a big concern
- Citrate toxicity/complications/other complications
Recruitment (focus on AB group donors) - till October 2015

<table>
<thead>
<tr>
<th>Group/category</th>
<th>B +/-</th>
<th>O +/-</th>
<th>A +/-</th>
<th>AB +/-</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOL WB DONORS</td>
<td>242/15</td>
<td>230/12</td>
<td>100/05</td>
<td>45/02</td>
</tr>
<tr>
<td>VOL PP DONORS</td>
<td>35/02</td>
<td>40/01</td>
<td>15/01</td>
<td>30/01</td>
</tr>
<tr>
<td>CONVERSION RATE(%)</td>
<td>14.4</td>
<td>17</td>
<td>15.2</td>
<td>66</td>
</tr>
</tbody>
</table>
Phase 3: call for apheresis during dengue (Aug to mid Nov. 2015)

<table>
<thead>
<tr>
<th>Group/parameters</th>
<th>B +/-</th>
<th>O +/-</th>
<th>A +/-</th>
<th>AB +/-</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOL PP DONORS</td>
<td>37</td>
<td>41</td>
<td>15</td>
<td>31</td>
</tr>
<tr>
<td>Actual VOL PP donation</td>
<td>12</td>
<td>18</td>
<td>4</td>
<td>22</td>
</tr>
<tr>
<td>Response RATE(%)</td>
<td>32.5</td>
<td>43</td>
<td>27</td>
<td>71</td>
</tr>
</tbody>
</table>

No. of repeat donors(2-6)= 12

Among the total of 570 procedures done during this period 102 procedures were done on hosp. vol PP donors(18%)
CONCLUSION

• Inspite of sharp rise in SDPC requirement, there is no effective national donor registry for plateletpheresis
• High time to convert voluntary WB donors to PP donor
• The first step in creating an apheresis donor registry to create our own guidelines for selection/deferral/use (ABO mismatch vs. ABO matched) of SDPC
• Repeat WB donors can be easily convinced for PP registry
• Involving clinicians, especially major users (clinical hematologist, transplant surgeons) is of paramount importance in creating guidelines
• Nonmonetary benefits/ family health slogans helped us excellently in creating our own pool of PP donors
• Make AB group donor, feel proud for being universal platelet donor
FUTURE STRATEGIES......

- Plateletpheresis donor registry TO "Apheresis donor registry"
- Providing HLA typed SDPC to alloimmunized pts.
THANKS.....