COMPARISON OF VENOUS ACCESS IN TWO DIFFERENT DONOR GROUPS UNDERGOING MONONUCLEAR CELL (MNC) COLLECTION USING APHERESIS

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Maria Cencerrado
Registered Nurse, Clinical Apheresis
Carter BloodCare
Dallas, TX
Clinical Apheresis
Carter BloodCare

2 types of Donor groups for MNC collections:

- Allogeneic unrelated stimulated MNC collections for National Marrow Donor Program
- Autologous unstimulated MNC for prostate cancer vaccine
In every collection, our first choice is to use *peripheral veins* over central venous catheters to avoid potential complications.

The safest and least costly access.

Risks of placing a Central Venous Catheter (CVC):

- Air embolism
- Pneumotorax
- The most common, being infection
We asked the question: Are there differences in our venous access experience and success rates between these two groups?

A retrospective analysis of demographic, clinical and procedural records in 179 collections between January and September of 2013 was performed.
There are significant differences between these two groups

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<thead>
<tr>
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<th><strong>ALLOGENEIC STIMULATED MNC COLLECTIONS</strong></th>
<th><strong>AUTOLOGOUS UNSTIMULATED MNC COLLECTIONS</strong></th>
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</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>19 - 60 years old (median 27)</td>
<td>47 – 92 years old (median 72)</td>
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<td><strong>Clinical Status</strong></td>
<td>• Healthy Donors</td>
<td>• Underlying cancer</td>
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<td>• Diabetes</td>
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<td>• Hypertension</td>
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<td></td>
<td>• Cardiac problems</td>
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<td><strong>Vein assessment</strong></td>
<td>• Performed by another group</td>
<td>• Performed by Carter BloodCare staff</td>
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</table>
✓ On the day of collection, phlebotomy is performed per our institutional policies

✓ All procedures were performed at one of our Donor Centers

✓ To follow protocol some of the donors require more than one collection
To accommodate veins, flow needs and patient comfort the needles used were:

- **For Draw:**
  - 17 Gauge steel needle

- **For Return:**
  - 17 Gauge steel needle
  - 19 Gauge steel needle
  - 18 Gauge IV Jelco
For the purpose of this study, we define unsuccessful peripheral access as follows:

1) Peripheral access was not obtained initially

2) Venous access was lost during the procedure and the product target was not met

3) After our initial vein assessment, need for Central Venous Catheter placement was identified
Procedures analyzed:
179 Collections among 103 different Donors

Allogeneic Stem Cell Collections
1-2 Collections/Donor

Autologous MNC Collections
1-3 Collections/Donor

Donors

Collections

104

52

75

51
Study Results:
Success Rate in Allogeneic Stem Cell collections
75 procedures analyzed

100 %
Study Results:
Success Rate in Allogeneic Stem Cell Collections

Of this 100%, in one case (1.3%) of the 75 collections, the procedure was ended prematurely.

Product target was met
Study Results:
Success rate in Autologous MNC collections
104 procedures analyzed

Success Rate: 95.1%
99 Procedures

Failure Rate: 4.9%
5 procedures
Study Results:
Success rate in Autologous MNC collections
104 procedures analyzed

Success Rate: 95.1 %
99 Procedures

Failure Rate: 4.9 %
5 procedures

Of these 5 failures:
- In two procedures (1.9%), the need for catheter placement was identified
- In two procedures (1.9%), failure to initiate procedure
- In one procedure (0.96%), access was lost and product target was not met
Study Results: 
*Both Groups combined*
Total of 179 Procedures

Success Rate: 97.2%
174 Procedures

2.8%
Failure Rate:
5 procedures
Conclusions

We are highly successful (>95%) in establishing and using peripheral veins in both groups.
Conclusions
For the Allogeneic Stem Cell Collections

- Even though, we do not evaluate donors
- We have had 100% success rate
Conclusions

For the Autologous MNC Collections

• We have the donor come to us prior to their first collection for vein assessment to examine for suitable peripheral access.

• Very successful: 95.1%
Conclusions

The ability to use peripheral access successfully and avoid Central Venous Catheter:

- Reduces costs
- Saves time
- Minimizes risks to the donors
Further discussion

- Number of sticks per collection: at times there is need of multiple sticks to achieve successful peripheral access

- Complications of peripheral sticks, such as bruise, or infiltration

- Operator skills influence on the peripheral access success rate
Further discussion (cont.)

For CVC’s:

- Success rate may not be 100%
- Individual lumens of the CVC aren’t always patent
- In some instances, peripheral access was used as a resource due to non working catheters for return or for draw, or instead use of thrombolytic therapy (Alteplase) was necessary
- Due to lack of education, wrong catheter was placed by other institutions
Thank you...

-Carter BloodCare Clinical Apheresis Staff
Questions?...

Thank you for your attention