Outpatient-based autologous stem cell transplantation: feasible, safe and cost effective approach

Eshrak Alshaibani

February 2018
Standard In-patient ASCT

- Hospital Days for mobilization ≈ 4-9 days
- Hospital Days for conditioning and early transplant ≈ 9-12 days
- Total ≈ 13-21 In-patient days/patient
- Direct hospital bed cost ≈ 3000 – 5000 SAR
- In-direct cost:
  - Labs
  - Hospital Staff
  - Infection complication
  - Bed priorities
  - Waiting/cancelation list
Necessity, is the mother of invention
(Plato)
Rational

- Limitation of Hospital beds and inpatient capacity
- Hospital acquired infection concerns
- Waiting time and priority lists (leukemia, aggressive lymphoma and Allo-SCT)
- Experience with HDM protocol
- Out-patient experience of other transplant centers
Attractions

• Being at home encourages activities and better oral intake

• Good calories intake and being active contribute to good treatment outcomes

• Many patients report that being with family and friends at home “NON-HOSPITAL ENVIRONMENT” is beneficial to their overall state of mind during treatment
Introduction

Autologous SCT in out patient is feasible:

- Improvements in the supportive care.
- Conditioning regimen does not require continuous infusion.

Offering benefits:

- Shorter hospitalization.
- Minimal exposure to hospital pathogens.
- Cost effectiveness.
Aim
To evaluate the
✓ Feasibility.
✓ Toxicity of out patient basis auto-HSCT.
Eligibility criteria

♦ Psychosocial evaluation.

♦ Housing within 1 hour from the hospital

♦ Caregiver availability (24/7).

♦ Patient’s compliance assessment.
  ▪ Guidelines to prevent infection.
  ▪ Adhere to a strict medication regimen.
Design of study

- The pre-transplant supportive care conditioning regimen
  Graft infusion

- The antimicrobial, antifungal and antiviral prophylaxis administered from day -2.

- Conditioning regimen HDM 200mg/m² and 140mg/m².

- Filgrastim 5mcg/kg was given from day+5 till neutrophils recovery.

- Patients were evaluated daily in the outpatient clinic.
## Methods

<table>
<thead>
<tr>
<th>Number of transplants</th>
<th>N = 31</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt; Auto</td>
<td>24</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt; Auto</td>
<td>7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of patients</th>
<th>24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median age</td>
<td>51 (25-68) ys</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Relapsed/Refractory Hodgkin’s lymphoma</td>
<td>N = 6</td>
</tr>
<tr>
<td>Multiple myeloma</td>
<td>N = 18</td>
</tr>
</tbody>
</table>
Criteria for admission:

✓ Fever >38°C.
✓ Intractable nausea/vomiting or diarrhea.
✓ Mucositis needing total parenteral nutrition.
✓ Toxicity WHO > grade 3.
## Result

<table>
<thead>
<tr>
<th></th>
<th>11 (11-18)</th>
<th>11 (0-21)</th>
<th>17/31 (55%)</th>
<th>14/31 (45%)</th>
<th>4</th>
<th>9</th>
<th>1</th>
<th>65</th>
<th>1 (0-9)</th>
<th>5 (1-9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANC &gt;1000/mm^3 recovery</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLT&gt;25000/mm^3 recovery</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete outpatient</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Admission</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FN + nausea and vomiting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor Oral Intake</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engraftment syndrome</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total hospitalization</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median (for all 31 ASCTs)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median (for admitted pts)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Safety is the key

- No organ dysfunction or any toxicity (WHO > 3)*
- No ICU admission
- No mortality
- All 24 patients are alive and well, Median F/U 11(2-36) months, Post Outpatient-ASCT.
Health Economics

- Hospital days saved
  - Conventional HSCT: $31 \times 13$ days = 403 days
  - Out patient HSCT: 65 days

- Hospital bed cost saving > $1,000,000.00 SAR

- Patients are requesting OPD transplant.
- Nursing are requesting OPD transplant.
Outpatient-ASCT is a feasible and safe.

Outpatient-ASCT offers
- Lower risk of infections
- Decrease time waiting for transplant.
- Increase the capacity for allogenic HSCT
- Significant cost saving.
- Improve patient satisfaction and QOL.