Impact of Nutritional Assessment and Intervention on the Nutritional Status of Bone Marrow Transplant Patients

By
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In this presentation..

- Introduction
- Review of literature
- Objectives
- Methodology
- Result
- Discussion
What is Bone marrow transplant (BMT)?

A procedure in which bone marrow that is diseased or damaged is replaced with healthy bone marrow. The bone marrow to be replaced may be deliberately destroyed by high doses of chemotherapy and/or radiation therapy.

BMT today includes grafting with allogeneic and autologous stem cells derived from bone marrow, peripheral blood and cord blood.

Murray SM, Pindoria S. Nutrition support for bone marrow transplant patients. *Cochrane Database of Systematic Reviews* 2009, Issue 1
The replacement marrow may be the patient's own marrow or it may come from another person. If the marrow comes from the patient, it is called an autologous bone marrow transplant.

If the marrow is from an identical twin, it is termed a syngeneic transplant and if the marrow is from a donor who is not an identical twin, the procedure is an allogeneic bone marrow transplant. Most bone marrow transplants today are allogeneic.

Murray SM, Pindoria S. Nutrition support for bone marrow transplant patients. *Cochrane Database of Systematic Reviews* 2009, Issue 1
Data basis MEDLINE, EMBASE and CINAHL in November 2000 and subsequently June 2006 concluded:

- Efficacy of EN and PN support for patients BMT
- RCTs that compared different types of nutrition support with another, for BMT.
- 29 studies searched.
- LOS may be increased for those who receive PN - 0.22 days (95%CI (1.29 to 1.72).
- Two other studies reported that N-73 receiving PN plus glutamine had reduced incidence of positive blood cultures (OR 0.23, 95%CI 0.08 to 0.65, P = 0.006) compared to those receiving standard PN.
P.Harsly et al conducted study ....

- Nutritional status prior to BMT and its impact on LOS.

- The nutritional status of 66 patients (46 M:20 F); and the mean age 59 yrs.

- Nutrition screening... was performed using PG-SGA.

- 73% were well nourished, 23% moderately malnourished and 4% severely malnourished.

- There was a significant difference in post transplant LOS (mean difference 7 ± 2.1 days) b/w well-nourished and malnourished patients.
Background of study…

- **BMT established** in 2003 at AKUH.
- **Dietitian Role**… Part of multidisciplinary round, patient visitation within 24 hours of admissions.
- **Follow-ups** after every 3 days or as per patient requirement till patient discharge with discharge diet plan.
- **During treatment of BMT**…. poor appetite, mucositis and GI failure, leading to malnutrition.
PN support is often first choice but is associated with increased risk of infection. EN is an alternative, as is addition of substrates.

This provoke our interest to conduct this research.
Title: Impact of Nutritional Assessment and Intervention on the Nutritional Status of Bone Marrow Transplant Patients.

- \( n = 73 \)
- **Study design:** Observational (Retrospective)
- **Variables:**
  - **Anthropometric:** Wt (Kg), ht (m\(^2\)), (BMI kg/m\(^2\))
  - **Biochemical:** Serum albumin (gm/dl) under nourished (<2.5gm/dl)
  - **Nutrition focused physical findings.** (Mucocitis, nauseas, vomiting).
  - **Diet history:** 24 hours diet recall
Inclusion criteria: Randomly selected hospitalized patients admitted to BMT unit.

Exclusion criteria: Palliative care.

Duration of study: 5 yrs. (January 2008-13).

Allocation: Allogeneic (58%) and Autologous (42%)

Nutritional intervention: Oral supplement support (Ensure plus and Forticare 1.5cal/ml each) before and after transplant.

Statistical analysis: Descriptive statistic were calculated using SPSS 20.

Mean was calculated for continuous variable, frequency and proportion for categorical.

Follow up: Every 3rd day, BM, N/V, daily weight monitoring, dietary intake, (Albumin).
## Results

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<th>Allogeneic BMT n=43</th>
<th>Autologous BMT n=30</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age groups</strong></td>
<td>11-51yrs (Mean=21.2) (Median=22)</td>
<td>11-51yrs (Mean =30.2) (Median=29)</td>
</tr>
<tr>
<td><strong>Genders (n=%)</strong></td>
<td>Female n= 30% Male n=69%</td>
<td>Female n=26% Male n=50%</td>
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<td><strong>LOS</strong></td>
<td>Mean 30days</td>
<td>Mean 37 days</td>
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<tr>
<td><strong>BMI</strong></td>
<td>&lt;19kg/m²</td>
<td>&lt;19kg/m² (18.5–24.9 kg/m²) (normal range for BMT)</td>
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<tr>
<td><strong>Mucositis</strong></td>
<td>67%</td>
<td>81%</td>
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<tr>
<td><strong>Serum albumin</strong></td>
<td>56% (&lt;2.5)</td>
<td>25% (&lt;2.5) (Normal range: 3.5-5.2gm/dl)</td>
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The requirement for TPN was reduced in 38% patient with early nutritional interventions those who received oral supplements.
Discussion

- TPN high cost as compare to EN.
- TPN didn’t maintain gut flora.
- EN maintain gut flora.

Limitations:
- Serum albumin was taken as parameter however it has short life.
- Skin fold measurement is a good indicator for muscle wasting, however we didn’t measure.
- One method of diet assessment was used.
Conclusion

- Nutritional assessment and intervention is an important consideration in BMT.
- EN more cost effective.
- TPN… Expiry 24 hours.
- High cost…..
- Less availability.

Further studies are needed to focus on specific dietary management.
Acknowledgement

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Thank you

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