Palliative Medicine Grand Round

Parenteral Nutrition in Malignant Bowel Obstruction: An Ethical Dilemma in Palliative Care

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ABSTRACT

Provision of parenteral nutrition in patients with advanced malignancy is always an ethical dilemma. It involves careful discussion with patients regarding the possible benefits of improved energy level and possibly survival, together with the numerous side effects and prolonged hospital admission for TPN administration. We reported a lady with malignant bowel obstruction secondary to metastatic carcinoma of unknown origin, who had received TPN at her final 2 months which benefited her from improved energy level with her life business settled. Her improved physical condition in final stage of life also provided chance for our palliative team in fulfilling her psychological and spiritual needs.

HKSPM Newsletter 2010 Apr Issue No.1 p30-32.

Introduction

Parenteral Nutrition allows the provision of nutrients via the vein, bypassing the requirement for gastrointestinal absorption. Its use in patients with advanced malignancy is always a controversial issue. Patients with malignant bowel obstruction may suffer malnutrition due to prolonged suboptimal oral intake. The administration of parenteral nutrition should be considered on an individual basis. This article would present a lady with malignant bowel obstruction who had received parenteral nutrition in our palliative medical unit, which provided her good energy level and time to settle her important life matters.

Case History

A 58 year-old lady who suffered from metastatic carcinoma of unknown primary presented in January 08 with malignant pleural effusion. Pleural tapping and biopsies failed to confirm the primary malignancy, while she received Talc-pleurodesis with good control of her pleural effusion. She had further imaging studies including PET-CT scan and screening of tumour markers. Pathologist failed to ascertain the primary of origin and she was treated as primary CA lung with carboplatin and pemetrexed (Alimta) and maintained on erlotinib (Tarceva) in the private sector. She remained relatively asymptomatic until March 09.

She developed malignant ascites in March 09 requiring repeated abdominal tapping. However she developed malignant intestinal obstruction in April 09, with CT-scan confirming small bowel distension and local segmental thickening at duodenal-jejunal junction. The surgical team performed gastro-jejunostomy on her and retrieved samples for lymph nodes and bowel biopsies. Post-operatively, patient required 2 weeks of intensive care unit care. However the biopsy samples and further PET-CT imaging still failed to confirm her primary malignancy origin.

She had recurrence of malignant intestinal obstruction in July 09 and unable to undergo further palliative surgery. Bowel decompression by Ryles tube was performed. She was started on intravenous metoclopramide and dexamethasone but her intestinal obstruction failed to respond.

She further consulted private surgeon and oncologist, and agreed that her condition was not amendable to further surgical debulking or chemotherapy. Parenteral feeding as a possible option was introduced and patient insisted to proceed. Therefore, Hickman catheter was inserted and patient was started on parenteral nutrition. She was transferred to our Palliative Medical ward in July 09.

She appeared anxious upon arrival and worried about the treatment that we could prescribe, with particular concern on continuation of her TPN treatment. On further questioning, she expressed that her two major concerns are the school-bus business and the forth coming birth of her grandchild. She accepted the possible complications of parenteral nutrition including line sepsis, cholestasis and immobility during the...
Her performance status was satisfactory, and she was able to walk independently indoor and under supervision outdoor. After careful discussion, we maintained on her Nutriflex Lipid-Peri 1250ml daily, with her body weight and serum albumin being monitored regularly. Despite her slow deterioration in body weight and serum albumin level (Table 1), the initial 2 months of activity level remained satisfactory. She showed acceptance to her terminal illness and enjoyed day-centre events and home leave during weekend. She witnessed the birth of her grandson and even attended the feast held for celebration. She had her school-bus business handled to her son. She attended religious activities held by our hospital chaplain and was baptized. She was much more prepared for her death under good care of our multi-disciplinary team. TPN was withheld few days prior to her death in view of clinical deterioration and was well accepted by family members. Patient finally succumbed after 3 months of care in our unit.

**Discussion**

**TPN Usage in Terminal Illness**

Use of parenteral nutrition was first reported in infants as an alternative to oral feeding in year 1969. Since then its application has increased considerably to include use in patients with post-operative high-output fistulas, necrotizing pancreatitis, as well as inflammatory bowel disease. Its use in patients with advanced malignancy had been reported, but clinical evidence is still lacking.

Patients suffering from advanced cancer usually have significant weight loss due to cancer cachexia. Cachexia is a complex syndrome characterized by a chronic, progressive, involuntary weight loss which is poorly or only partially responsive to standard nutritional support. It is usually attributable to two main components, namely a decreased nutrient intake, which may be due to critical involvement of the gastrointestinal tract by the tumour, or to cytokines and similar anorexia-inducing mediators; as well as metabolic alterations due to the activation of systemic pro-inflammatory processes.

<table>
<thead>
<tr>
<th>Date</th>
<th>23/7</th>
<th>30/7</th>
<th>7/8</th>
<th>13/8</th>
<th>20/8</th>
<th>27/8</th>
<th>2/9</th>
<th>9/9</th>
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<tbody>
<tr>
<td>Body Weight(Kg)</td>
<td>33.0</td>
<td>31.3</td>
<td>30.7</td>
<td>30.5</td>
<td>30.6</td>
<td>30.3</td>
<td>29.7</td>
<td>29.5</td>
<td>Death</td>
</tr>
<tr>
<td>Albumin (g/L)</td>
<td>32</td>
<td>30</td>
<td>-</td>
<td>28</td>
<td>-</td>
<td>23</td>
<td>27</td>
<td>26</td>
<td>Death</td>
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There are no randomized controlled trials evaluating the effectiveness of TPN in incurable cancer patients, because randomization between TPN and no TPN is not normally ethically acceptable in such conditions. Furthermore, it is hard to consider TPN as a palliative treatment aiming to relieve symptoms, without addressing the basic disease, because often these patients are anorexic and there is no evidence that parenteral nutrition improves this or associated anemia.

The main rationale for giving TPN in cancer patients is the awareness that survival of healthy individuals submitted to total macronutrient starvation, hardly exceeds 2 months. Besides, in patients with malignant bowel obstruction without nutritional support the mean survival is around 48 days. In contrast, 20-50% of advanced cancer patients selected for TPN is alive at 6 months.

Two clinical practice guidelines were identified that met the inclusion criteria specifically on the use of parenteral nutrition in palliative care. In general, these guidelines based on the principal on risks and benefits, recommending TPN use only in selected patients with malignant obstruction precluding oral intake who have an expected prognosis of at least a month and a Karnofsky performance status exceeding 50.

**Clinical Dilemmas**

Even if clinical guidelines exist and the success of TPN is documented in selected patients, the decision to institute TPN is fraught with dilemmas. One of these is that ongoing evaluation of nutritional status is required. This includes regular monitoring of body weight, anthropometry, as well as regular blood tests for nutritional status and liver function surveillance. It is estimated that total daily energy expenditure in cancer patients would be similar to healthy subjects, 20-25kcal/kg/day for bedridden and 25-30kcal/kg/day for ambulatory patients.

We must always balance possible adverse events associated with TPN which includes line sepsis, fluid overload, cholestasis, reduced mobility related to the TPN set and financial constraints. The common TPN formula used in clinical practice (e.g. Structo-kabivent 1477ml, Vitrimix 1L) costs around HKD$250 to 300 per day.
Criteria for initiation of TPN based on life expectancy imply the possibility of highly accurate survival prediction. The difficulty of accurately predicting survival is acknowledged as one of the most difficult aspects in choosing appropriate patients for nutritional support.

**Conclusion**

Provision of TPN in advanced cancer patients aims at improving the functional status and possibly survival outcome by preventing and treating under-nutrition or starvation. As with all cancer treatments, in some situations there may also be psychological benefit to the patient or family in providing feeding even when there are no medical benefits. We must take into deep consideration of possible risks associated with TPN, and strike a balance between prolonged hospital stay for TPN administration and happy moments spent with family.

Feeding is a fundamental element in human relationships and culture, and health professionals need to approach these discussions with sensitivity for concerns about starvation and abandonment and families desire to provide love and care. From a palliative care worker point of view, TPN could never replace good psychosocial support and multidisciplinary team work approach in helping our terminally ill patients. However, it does certainly potentiate selected patients performance status and time in receiving good palliative care, as shown in the reported case.

References

10. Hospital Authority Drug Formulary Dec 2009, Hong Kong Special Administrative Region.

Table 2. Published Clinical Practice Guidelines for Use of Parenteral Nutrition in Terminally Ill Cancer Patients

<table>
<thead>
<tr>
<th>Year</th>
<th>Guidelines</th>
<th>Source Description</th>
<th>Summary of Key Recommendations</th>
</tr>
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<tbody>
<tr>
<td>2001</td>
<td>Palliative or terminal nutrition in adults with progressive cancer</td>
<td>French National Federation of Cancer Centers</td>
<td>Indications for enteral and parenteral nutrition May be beneficial in patients with bowel obstruction or other sources of food intolerance Not recommended in patients with prognosis &lt;3 months or Karnofsky score &lt;50% Risks need to be considered</td>
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<tr>
<td>2005</td>
<td>Parenteral nutrition in advanced cancer</td>
<td>Capital Health Home Parenteral Nutrition Program, Edmonton, Canada</td>
<td>Criteria for home parenteral nutrition when enteral nutrition is not an option Criteria include: -Potential survival benefit -Duration expected &gt;6 weeks -Karnofsky score &gt;50% and supportive home environment</td>
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