

## Articolo originale - Original article

# Home parenteral nutrition in advanced cancer patients with intestinal obstruction or dysfunction. A single-institution experience

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**ABSTRACT:** When we take care of advanced cancer patients our goals are to relieve their symptoms, allow them to stay at home as long as possible, and sometimes to prolong life. Whether a terminal cancer patient should be actively fed (enterally or parenterally) or simply hydrated (preferably per os) is a matter of continuous controversy. Cancer has become the main diagnosis in patients receiving Home Parenteral Nutrition (HPN) both in Europe and the United States.

**Objective:** To review our experience in HPN in advanced cancer patients.

**Design:** Demographic data, complications of HPN, outcome and performance status at the beginning of HPN were recorded retrospectively in all the patients included in the HPN program since 1993.

**Patients:** Twenty adult patients received HPN during this period. Nine (45%) were cancer patients with bowel obstruction (n:9) or high output fistula (n:2).

**Methods:** Cancer and non-cancer patients were compared. Statistical analysis was performed using, when appropriate, Student's t-test and chi<sup>2</sup> test. Probabilities of less than 0.05 were accepted as significant.

**Results:** 5 men and 4 women with advanced cancer received HPN for a mean length of 104.0 (SD: 97.5) days vs. 844.5 (SD: 773) days in the 11 non-cancer patients (p<0.05). Mean age was 58.4 (SD:9.7) years vs. 37.3 (SD:17.2) in non-cancer patients (p<0.05). The number of catheter-related infections was slightly higher in the cancer group (0.2 episodes/patient/year vs. 0.05 in the non-cancer group). At the moment of the study, only 2 of the cancer patients remained on HPN. Median length of HPN was 60 days (range 5 to 290 days). Only two patients needed to be admitted because of an HPN-related complication. Performance status was similar in both groups at the beginning of HPN. Daily cost of HPN in Spain is about 60 Euro while daily hospitalization cost is about 390 Euro at a tertiary care level.

**Conclusions:** HPN offers the advantage of terminal care at home for those patients with advanced cancer and unrelieved bowel obstruction with costs that are obviously lower than hospital costs and with minimal complications. Nevertheless, any decision involving active nutrition in this type of patient should be made on an individualized basis and periodically revised. (RINPE 2001; 19: 28-31)

**KEY WORDS:** Home parenteral nutrition, Cancer, Bowel obstruction, Ethics

**PAROLE CHIAVE:** Nutrizione Parenterale Domiciliare, Tumore, Occlusione intestinale, Etica

## INTRODUCTION

Artificial nutrition is a partial or complete substitute of inefficient or impossible oral feeding which could be considered as a supportive/palliative mode of treatment.

Although the 1993 ASPEN recommendations on ar-

tificial nutrition highlighted the lack of benefit from parenteral nutrition in patients with progressive disease unresponsive to specific treatments (1), cancer patients represent about one third of home parenteral nutrition (HPN) patients in the United States (2) and approximately 40% in Europe (3). In addition, up to 75% of

these patients have loco-regional and/or metastatic progressive disease (4).

It is generally agreed that home artificial nutrition is no longer appropriate when a patient enters the terminal phase of the disease. Nevertheless, it seems to be a different case when we consider a patient with advanced cancer who is not in his/her terminal phase. What can we do for a patient with gastrointestinal dysfunction or obstruction unresponsive to chemotherapy or radiation therapy but who is otherwise clinically stable, functional, aged 50, 40 or even younger?

In order to point out the important ethical, moral and economical issues that HPN in advanced cancer patients implies, we reviewed our experience during the period 1993-2000.

## PATIENTS AND METHODS

### Patients

Twenty adult patients received HPN during this period. Nine of them (45%) were cancer patients with bowel obstruction (n:9) or high output fistula (n:2). Demographic data, complications of HPN, outcome and performance status at the beginning of HPN were recorded retrospectively in all the patients (Tab. I).

### Methods

Cancer and non-cancer patients were compared. Statistical analysis was performed using, when appropriate, Student's t-test and  $\chi^2$  test. Probabilities of less than 0.05 were accepted as significant. Performance status was evaluated at the beginning of HPN (Tab. II) (5).

## RESULTS

HPN cancer patients were significantly older than non-cancer patients and the mean length of HPN was significantly shorter. Median length of HPN in cancer patients was 60 days (range: 5 - 290). An implantable port was the central venous access most commonly used since most of these patients had previously received chemotherapy through this type of vascular access. If elective venous access was to be obtained, our group preferred tunnelled catheters, as shown in the non-cancer group. In our experience, catheter-related infections are less frequent in tunnelled catheters than in ports and, if present, they are easier to solve without removing the catheter.

The number of complications was low. Only two

**TABLE I - DEMOGRAPHIC DATA OF HPN PATIENTS**

	Cancer patients (n:9)	Non-cancer patients (n:11)
Gender (M/F)	5/4	4/7
Mean age (SD), years	58.4 (9.7)	37.3 (17.2)*
Total HPN days	936	9286
Mean length (SD), days	104 (97.5)	844.5 (773)*
Central venous catheters (tunnelled/port)	2/7	8/3*

M = male, F = female; \* p<0.05

**TABLE II - PERFORMANCE SCALE (From Weiss et al)**

Grade	Characteristics
0	Fully active, able to carry on all predisease activities
1	Restriction in physically strenuous activity but ambulatory and able to carry out work of a light or sedentary nature
2	Ambulatory and capable of all self-care but unable to carry out any work activities. Up and about more than 50% of waking hours
3	Capable of only limited self-care, confined to bed or chair 50% or more of waking hours
4	Completely disabled; cannot carry on any self-care; confined to bed.

**TABLE III - OUTCOME OF HPN PATIENTS**

	Cancer patients (n:9)	Non-cancer patients (n:11)
Catheter-related infections (episodes/patient/year)	0.2	0.05
Performance scale (0-4)	2.7 (0.7)	2.6 (1.0)
On HPN/deceased/cured	2/7/0	5/2/4

patients needed to be admitted because of an HPN-related complication (infection); the overall incidence rate of catheter-related infection was slightly superior in the cancer group (Tab. III). The quality of life measured by the performance scale was similar in both groups: moderate incapacity as an average. While nearly 90% of the patients in the non-cancer group either survived on HPN or were weaned, most of the cancer patients died from the underlying disease. All the deceased patients were on HPN until one week prior to death; HPN was stopped in all these cases because of clinical deterioration.

The Spanish National Health Service covers all the disease-related costs through public funding. Average

daily cost of HPN is approximately 60 Euro, while daily hospitalization cost in a tertiary hospital is approximately 390 Euro.

## DISCUSSION

During the last 10 years specific recommendations on artificial nutrition in cancer patients have been developed (1,6). Research is currently directed toward the impact of pharmaconutrition on the clinical outcome of cancer patients, considering overall cost-benefit ratio and the effect on length and quality of life. There is far less information related to the efficacy, safety and appropriateness of utilizing HPN for patients with incurable cancers.

Two possibilities arise for managing this kind of patient: those who follow the principle "don't expect too much from artificial nutrition if the underlying medical condition is not amenable with specific therapies" (7); and others who consider home artificial nutrition as a maintenance therapy in patients with normal needs where the oral route is not available (8). Perhaps this may explain the huge differences within European countries in providing HPN to advanced cancer patients (main indication in the Netherlands 60%, Italy 50% or Spain 39% vs 5% in UK or 8% in Denmark) (3,4).

Intestinal obstruction in patients with previously treated cancer is a particular condition where HPN could be considered. A majority of cancer patients may have their obstruction due to a benign cause, a resectable or easily bypassed local recurrence or a potentially curable new primary tumor (9,10). Nevertheless, some patients either failed medical therapy and did not undergo surgery, or failed surgical therapy. In these patients, HPN may have a role. Several groups have reported that HPN is a viable option in gynecological cancer patients (11) as well as in other cancers (4,12,13).

Acute starvation in previously healthy fasters leads to death in 60 to 70 days; it is speculated that this time is closer to 35 or 40 days in patients with inoperable malignant bowel obstruction (12). Therefore, an important criterion for selecting patients for HPN is an estimated survival time longer than 40 days. Median length in our cancer patients was 60 days, in the range of larger published reports (from 28 days in King's study to 120 in Cozzaglio's) (4, 11,12,14). We should point out that physicians are overly optimistic in predicting survival of terminally ill patients, the more expertise they have the more accurate they are (15). Only in two of our patients did HPN last less than the average: one patient, suffering from a gastric carcinoma, died 5 days after dis-

charge; the other was our last patient included in the program who, at the moment of the report, was alive 23 days after starting HPN.

The other selection criterion is physical and psychological well-being. When the Karnofsky performance status is used (a 10-step scale ranging from 0 - death- to 100 -asymptomatic-), the best results are obtained when the score is > 50 (4,11). When we compared the performance status of our patients with a similar scale at the beginning of HPN, the results did not differ from those of the non-cancer group.

The number of treatment-related complications is low. Only two of our patients needed to be treated as in-patients because of an HPN-related complication. We consider that complications may be managed in some cases on an out-patient basis, e.g. febrile episodes (16).

Most authors concur that, in carefully selected patients, HPN can offer palliation in inoperable malignant bowel obstruction (4,9-4,17). Even in a series that does not report improvement either in outcome or in quality of life (18), the authors recognize subjective reasons for giving HPN to these patients, including compassion or facing ethical, religious, or emotional problems. Parenteral nutrition may allow certain patients with terminal disease to spend their final days more comfortably and economically at home rather than in the hospital.

A comment on the cost of HPN in these cancer patients: if palliative therapy is undertaken, it is less expensive to do so in an out-patient setting. According to our data, a week of HPN is as expensive as 1 day of hospitalization.

HPN requires the active participation of the patient, the patient's family and even the patient's primary physician. HPN offers the advantages of terminal care at home for those patients with advanced cancer and unrelieved bowel obstruction with costs that are obviously lower than hospital costs and with minimal complications. However, not all cancer patients are candidates for HPN. Patients with expected limited survival (less than 40 days) and poor performance status would probably benefit as much from hydration and pain control (19).

If patients are sent home on HPN, several aspects need to be clear prior to discharge, including the necessity of increased nursing support, pain therapy and social support if the patient deteriorates; the nutrition support clinician must stay actively involved in the therapeutic process to help the patient and their family decide when to stop active nutrition support treatment (20).

Any decision involving active nutrition should be taken on an individualized basis and periodically re-

vised. The assessment of whether active nutrition or simply hydration could better help reach the goals of treatment in advanced cancer patients (palliation of symptoms, discharge from hospital) is difficult and will require, as proposed by Bozzetti, "prospective protocols aimed at evaluating under strictly controlled scientific conditions, the impact of nutrition and/or hydration on the quality and quantity of life" (21).

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