

Multimodal Nutritional Intervention Protocol for Cancer Patients Counseled in Our Centers

Horatiu Albu¹; Andrea Crăciunescu²; Elena-Aliona Albu³; Lorena Crișan⁴;

¹"Columna" Medical Center, Bucharest ²"Neolife" Medical Center - Oncology, Bucharest; ^{3,4}Center for Dietetics, Integrative Nutrition and Complementary Medicine "Dr. Albu" - Bucharest (www.nutritieintegrativa.ro)

Abstract

Oncology is a medical area where progress can improve the outcomes for patients, but the presence of malnutrition in cancer patients can limit the response to the best and most recent therapies.

In Western Europe, just over 30% of patients with cancer who were at risk of malnutrition actually received nutritional support (oral nutritional supplements and/ or parenteral nutrition and/ or enteral nutrition).

In Romania, far too little attention is paid to the timely detection and control of malnutrition, cachexia and neoplastic sarcopenia and our centre is trying to cover this gap by promoting and using the European Society for Clinical Nutrition and Metabolism ESPEN recommendations.

Our protocol follow a succession of several steps out of which we enumerate: nutritional risk screening for all patients from the beginning, dynamic evolution of the nutritional status parameters and calculation of GPS (Glasgow Prognostic Score), elaboration of individual nutritional intervention.

The roles of our staff are to give the patient the reasons and objectives for nutritional recommendations and to inform the patient/ family/ oncologist that the worsening of cachexia with increased inflammation already requires special nutritional adjustments, which cannot be made with regular foods.

Introduction

Oncology is a medical area where progress can improve the outcomes for patients, but the presence of malnutrition in cancer patients can limit the response to the best and most recent therapies. The nutritional problems of these patients should be managed appropriately (1).

Patients with cancer are at high risk for malnutrition as both the disease and the treatments threaten their nutritional status. Up to 20% of cancer mortality can be attributed to the effects of malnutrition rather than the disease itself. Thus, nutrition is an important aspect of multimodal cancer care. In Europe, just over 30% of patients with cancer who were at risk of malnutrition actually received nutritional support (oral nutritional supplements and/ or parenteral nutrition and/ or enteral nutrition) (2).

Methods and Materials

A clinical guide on nutrition in cancer patients, as well as a new recommendation for action against malnutrition related to cancer were published by ESPEN in 2016 and 2017, respectively (3).

The protocol of our Center for Dietary and Nutritional Care of the Cancer Patient is based on:

1. Our 20-year experience in the micronutrition study of the cancer patient.
2. Coordination of several clinical trials on immunoregulation in cancer and infectious diseases.
3. The clinical experience of 14 years of counseling of neoplastic patients in medical centers in Bucharest.
4. Using in our decisions most of the documentation used by ESPEN in producing their guidelines.
5. The most recent ESPEN documents (2,3).

At our center, we follow 3 key steps in the care of each cancer patient.

1. Nutritional risk screening for all patients from the beginning, regardless of the evolution of the Body Mass Index (BMI) and the percentage of Weight Loss (%WL).
2. Dynamic evaluation of other nutritional status parameters such as: energy intake, body composition, inflammatory biomarkers such as C-reactive protein and albumin levels needed for the calculation of GPS (Glasgow Prognostic Score).
3. Using multimodal nutritional interventions with individualized plans, including care focused on increasing nutritional intake, lessening inflammation and hypermetabolic stress (3).

Results

The compilation of the multimodal nutritional intervention plan starts from these steps, but all of the above-mentioned parameters are taken into account only strictly in relation to the oncological treatment stage of the patient at that time.

Discussions and Conclusions

Dietary counseling is the most widely used method of intervention for nutritional management of cancer patients with functional gastrointestinal tracts. The specialist personalizes the counseling based on the patient's particularities, food preferences, the severity of symptoms such as anorexia, nausea, dysphagia, diarrhea, constipation etc., as well as the treatment stage they are in.

The dietitian-nutritionist should:

1. Give the patient the reasons and objectives for nutritional recommendations (2).
2. Motivate the patient to adapt to the altered diet (2).
3. Raise awareness with the patient/ family/ oncologist on the fact that the multimodal nutritional intervention depends both on the patient's condition and the treatment stage they are in.
4. Inform the patient/ family/ oncologist that the worsening of cachexia with increased inflammation already requires special nutritional adjustments, which cannot be made with regular foods.

References

1. Preiser JC, Schneider SM. ESPEN disease-specific guideline framework. *Clinical Nutrition* 2011;30:549e52.
2. Arends J et al. ESPEN guidelines on nutrition in cancer patient. *Clinical Nutrition* XXX(2016) 1-38.
3. Arends J et al. ESPEN expert group recommendations for action against cancer-related malnutrition. *Clinical Nutrition* XXXVII(2017) 1187-1196.
4. Heys SD, Schofield AC, Wahle KW. Immunonutrition in clinical practice: what is the current evidence? *Nutr Hosp*. 2004 Nov-Dec; 19 (6): 325-32.
5. Raffaghello L, Lee C, Safdie FM, Wei M, Madia F, Bianchi G, et al. Starvation dependent differential stress resistance protects normal but not cancer cells against high-dose chemotherapy. *Proc Natl Acad Sci U. S. A* 2008;105: 8215e20.
6. Lee C, Raffaghello L, Brandhorst S, Safdie FM, Bianchi G, Martin-Montalvo A, et al. Fasting cycles retard growth of tumors and sensitize a range of cancer cell types to chemotherapy. *Sci Transl Med* 2012;4:124ra27.
7. Safdie F, Brandhorst S, Wei M, Wang W, Lee C, Hwang S, et al. Fasting enhances the response of glioma to chemo- and radiotherapy. *PLoS One* 2012;7:e44603.
8. Caffa I, Longo VD, Nencioni A. Fasting plus tyrosine kinase inhibitors in cancer. *Aging (Albany NY)* 2015;7:1026e7.
9. Laviano A, Rossi Fanelli F. Toxicity in chemotherapy when less is more. *N Engl J Med* 2012;366:2319e20.
10. Safdie FM, Dorff T, Quinn D, Fontana L, Wei M, Lee C, et al. Fasting and cancer treatment in humans: a case series report. *Aging (Albany NY)* 2009;1: 988e1007.
11. Prevost V, Grach MC. Nutritional support and quality of life in cancer patients undergoing palliative care. *Eur J Cancer Care* 2012;21:581e90.
12. Bozzetti F. Home total parenteral nutrition in incurable cancer patients: a therapy, a basic humane care or something in between? *Clin Nutr* 2003;22(2):109e11.
13. Bozzetti F, Cologni P, Lo Vullo S, Pironi L, Giardiello D, Mariani L. Development and validation of a nomogram to predict survival in incurable cachectic cancer patients on home parenteral nutrition. *Ann Oncol* 2015;26:2335e40.

Table 1. Treatment in the hope of healing.

TREATMENT IN THE HOPE OF HEALING		
CANCER DIAGNOSIS	STANDARD TUMORICIDAL TREATMENT	POST-THERAPEUTIC FOLLOW-UP
DIETARY STAGE: IMMUNONUTRITION to increase: 1. Total number of T Lymphocytes. 2. Number and activation of T Lymphocytes. 3. Percentage of T helper cells. 4. Number and activation of Natural Killer (NK) cells. 5. Circulating levels of IgG, IgM and IgG 6. Circulating levels of interferon gamma. 7. Phagocytosis (4)	DIETARY STAGE: Prevent and compensate for potential side effects on the nutritional status of the tumor treatment. Short term therapeutic fasting. Short courses of ketogenic diet. (1, 5, 6, 7, 8, 9, 10)	DIETARY STAGE: Maintaining BMI and body composition within normal limits. Ensuring a diet corresponding to associated pathologies. (1)

Table 2. Incurable disease

INCURABLE DISEASE			
DIAGNOSIS OF METASTATIC RELAPSE	STANDARD TUMORICIDAL TREATMENT	NEW TREATMENTS	TERMINAL PATIENT
DIETARY STAGE: IMMUNONUTRITION to increase: 1. Total number of T Lymphocytes. 2. Number and activation of T Lymphocytes. 3. Percentage of T helper cells. 4. Number and activation of Natural Killer (NK) cells. 5. Circulating levels of IgG, IgM and IgG 6. Circulating levels of interferon gamma. 7. Phagocytosis (4)	DIETARY STAGE: Prevent and compensate for potential side effects on the nutritional status of the tumor treatment. Short term therapeutic fasting. Short courses of ketogenic diet. (1, 5, 6, 7, 8, 9, 10)	THE SUPPORTIVE DIETARY STAGE for: Preservation of BMI Reduction of % WL Reduction of inflammatory biomarkers. Frequent monitoring to combat malnutrition, pre-cachexia, cachexia, sarcopenia, and sarcopenic obesity in time. (1, 2)	DIETARY STAGE: Caloric and micro-nutritional support for palliative care. (1, 2, 11, 12, 13)

Contact Information

Dr. Horatiu Albu
Center for Dietetics, Integrative Nutrition and Complementary Medicine "Dr. Albu"
Email: dr.albu@naturomedica.ro
Website: www.nutritieintegrativa.ro
Phone: +40 722 200 657

Acknowledgements

This study was partially supported by the Center for Dietetics, Integrative Nutrition and Complementary Medicine "Dr. Albu" and A&A Naturomedica Bio-Dietetic Groups S.R.L. (Bucharest, Romania).