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THE ROLE WEIGHT LOSS AND BMI PLAY IN BETTER SURVIVAL FOR CANCER PATIENTS

Nutricia presents the first in a three part series of discussions around the importance of medical nutrition as a part of supportive care in cancer. These articles will focus on the impact of weight loss and loss of muscle mass on survival and the role of medical nutrition in achieving the full benefit of the prescribed cancer treatment for patients and better patient outcome.

Already in the 1980's, studies have found weight loss in cancer patients to be associated with shorter survival. Until recently it has not been established how large the weight loss has to be before it has an impact on survival or if a high BMI has a protective effect¹ for cancer patients. Malnutrition in cancer patients can vary from 10 to more than 80% depending on the tumor type^{2,3}. Even in cancer types like breast cancer, not directly impacting the digestive tract, 2 out of 10 patients suffer from malnutrition².

In Martin L et al. 2015, a prospective international observational study with more than 8000 cancer patients, researchers have found that a weight loss > 2.5 % or BMI less than 25 is associated with shorter survival¹. This is valid for all BMI categories and the study concludes that weight stable patients or patients with BMI > 25 have the longest survival¹. The table clearly shows differences in median survival time, independently of cancer type, stage and performance status.

| Weight Loss (%) | BMI (kg/m ²) | | | | |
|-----------------|--------------------------|------|------|------|-----|
| | 28 | 25 | 22 | 20 | |
| 2.5 | 21.5 | 19.9 | 15.7 | 13.5 | 8.4 |
| 6 | 14.2 | 11.9 | 10.5 | 10.6 | 7.8 |
| 11 | 10.7 | 9.2 | 6.8 | 6.7 | 4.7 |
| 15 | 8.1 | 8.1 | 6.2 | 5.4 | 4.4 |
| | 7.1 | 4.8 | 4.7 | 3.7 | 4.1 |

Median survival months

Why do cancer patients lose weight?

Cancer patients often lose weight either as a consequence of the metabolic changes such as inflammation caused by the tumor itself that leads to increased catabolism or simply because of reduced food intake due to pain, fatigue and side effects of the cancer treatment itself^{4,5}.

Commonly reported side effects by cancer patients after start of chemotherapy and radiation include vomiting, bitter and metallic tastes in the mouth, feeling of nausea and dry mouth feeling^{7,8,9}.

Up to 70% of cancer patients experience taste changes as a side effect of the treatment⁶. This can have a negative impact on the nutritional status and lead to greater weight loss¹⁰. The weight loss in turn can lead to lower muscle mass and sarcopenia for the patient¹¹.

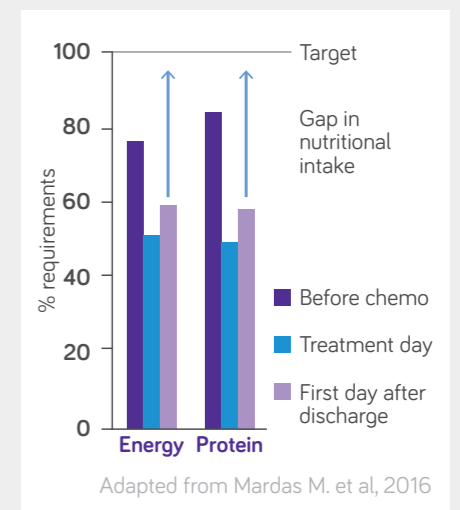
“Experts and oncology societies call for action for better integration of nutritional care in oncology.”

The challenge for cancer patients is often to close the gap between nutritional intake and recommended nutritional requirements. Studies have found protein and energy intake far from reaching the requirements during treatment¹².

A prospective observation study in ovarian cancer patients has found low energy and protein intake the day prior to chemotherapy treatment, declining further on the day

of treatment and even if the intake is somewhat increased the day after treatment the nutritional gap is still present¹².

High protein nutritional supplementation can help patients close the nutritional gap and maintain muscle mass during treatment. Maintenance of muscle mass in response leads to less dose limiting toxicities and fewer delays in the treatment plan for patients¹⁴.



Dose limiting toxicity in patients with low muscle mass

Since chemotherapy dosage is assessed based on height and weight (Body surface area), individuals with the same BMI but different muscle mass consequently receive the exact same amount of chemotherapy drug. The large individual variability in

muscle mass is often not accounted for. As the pharmacokinetics occur in the lean tissue compartment, a person with low muscle mass but high BMI will receive a large amount of drug for a small lean tissue compartment. This persons risk for developing

dose limiting toxicity increases, which can lead to treatment discontinuation, hospitalisation or in worst case even death¹³. Likewise a lean person with normal BMI but high muscle mass is likely to tolerate the treatment better due to better pharmacokinetics.

“Malnutrition is an important predictor of treatment response and toxicity in cancer¹³.”

European guidelines for nutrition recommend early screening and adequate energy and high-protein nutritional supplementation. The

protein need for cancer patients is up to twice the recommended amount of protein in comparison for a healthy person^{14,18}.

ESMO GOOD SCIENCE BETTER MEDICINE BEST PRACTICE | **ESPEN** The European Society for Clinical Nutrition and Metabolism

Recommended guideline for energy:
25-30 kcal / kg / day

Recommended guideline for protein:
1-1,5 g / kg / day

Call for action

Recent position papers and clinical guidelines are aiming to raise awareness of the role of medical nutrition in cancer, the scale of the malnutrition issue and to provide guidelines to clinicians specialized in cancer.

The European Cancer Patient Coalition (ECPC) highlights large unmet nutritional needs in cancer patients

and the need to improve nutritional care in oncology¹⁶. Research has established under use of oral nutritional supplements in cancer patients undergoing cancer treatment. Studies confirm that only one of three malnourished cancer patients receive support¹⁷, calling for an urgent need for better implementation of guidelines.

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