

Assessment of Nutritional Status in Cancer Patients in Osijek Health Area Center

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ABSTRACT

The aim of this research was to perform the nutritional screening and clinical assessment of malnutrition and of cachexia as well as the need for enteral nutritional support. We used an international questionnaire for nutrition screening and clinical assessment of malnutrition. 103 cancer patients participated in the research. The results indicate that 80 patients (78%) have recently unintentionally lost weight in the last six months. Of those 80 patients 12 (15%) have lost more than 15 kilograms. Three patients (3%) suffer from hunger because of their inability to eat. Presence of multiple (3 or more) symptoms (nausea, vomiting, diarrhea or anorexia) was reported by 11 patients (11%). Severe work dysfunction was found in 28 patients (27%). 14 patients (14%) experience significant loss of musculature (musculus quadriceps femoris, musculus deltoideus). The obtained results indicate that 15 patients (14%) are severely, and 39 patients (38%) are moderately undernourished. This survey confirmed the significance of nutritional screening in cancer patients, as it detected 30 patients (29%) who required introduction of enteral nutrition.

Key words: cachexia, malnutrition, malignant diseases, enteral nutrition

Introduction

Cancer is the second leading cause of death in high income countries of the world as well as in Croatia and it is considered that every fourth person dies of it¹. In Croatia according to the our national cancer registry in 2009. There were 21199 new cancer cases (the incidence and mortality statistics includes all invasive types of cancer except skin cancer) and 13315 people died of it¹. Same year nearly 12.7 million new cancer cases and 7.6 million cancer deaths occurred worldwide².

Malnutrition and cachexia are most commonly seen in cancer patients with some types of solid tumors, various chronic diseases, as well as in older persons and young children³⁻⁷. One of the most important contributors to cancer related mortality are malnutrition and cachexia, also referred to as anorexia-cachexia syndrome. While term »malnutrition« simply stands for condition of

energy, protein and/or nutritive deficiency, »cachexia« (or wasting syndrome) is well defined clinical condition characterized by loss of weight, muscle atrophy, fatigue, weakness, impaired performance status and significant loss of appetite in someone who is not actively and consciously trying to lose weight. In majority of cases, cachexia is accompanied with anorexia (loss of appetite) and malnutrition. Presence of one or both nutritive deficiencies have negative influence on treatment duration and outcome, number and severity of complications, length of hospital stay, treatment costs, quality of life and mortality rate³⁻⁷.

Presence of malnutrition and especially cachexia should always induce suspicion of malignant growth. Tumors of the upper gastrointestinal tract and lung are most frequently associated with weight loss⁵⁻⁷.

Besides cachexia, malnutrition is a common problem in cancer patients as well as a problem of chronic and incurable diseases. However, the problem of malnutrition and cachexia can be reduced by a well-timed assessment followed by an adequate nutritional intervention. Optimal approach is introduction of early initial nutritional assessment of cancer patients, conduction of further regular nutritional screening and possible initiation of nutritive support in order to prevent further deterioration and negative effects on disease outcome^{4,6,8-10}.

The simplest way for early recognition of malnutrition and cachexia is to carry out the assessment of nutritional status as a routine method for all patients who are in an increased risk of malnutrition and cachexia. The aim of such assessment is to introduce an adequate nutrition intervention on time^{8,10,11}.

The aim of our study was:

1. To carry out nutrition screening and clinical assessment of malnutrition in patients suffering from malignant diseases using Malnutrition Screening Tool (MST) and Global Assessment (SGA) questionnaires.
2. Determine the presence of malnutrition and cachexia in cancer patients treated at their home, after they underwent hospital oncological treatment, as well as category (severity) of malnutrition based on personal history, physical examination, amount of lost weight, presence of gastrointestinal symptoms, functional status and amount of fat and muscle tissue loss.
3. Determine the necessity for enteral nutritional support introduction adapted for the needs of cachectic cancer patients.

Patients and Methods

In the study we used MST (Malnutrition Screening Tool) – an international questionnaire for nutritive screening of cancer patients¹² and SGA (Subjective Global Assessment) – a questionnaire for clinical assessment of malnutrition in patients suffering from malignant diseases^{13,14}. The questionnaire was approved by Croatian Society of Oncology and Croatian Society of Parenteral and Enteral Nutrition¹⁵. The MST questionnaire consists of three questions for nutritive screening of cancer patients, on the basis of which a diagram of further procedures is made (new screening, nutritive assessment or introducing enteral nutrition). SGA questionnaire estimates nutritional status of patients with malignant disease based on personal history information and physical examination. With further data analysis nutritional status of each examinee is individually determined.

As a support to statistical calculations and data analysis software package SPSS Statistic 17.0.

The research was carried out by nurse visits from Health Centre Osijek who interviewed cancer patients treated at their home, after they underwent hospital oncological treatment). The research included 103 cancer patients who live in the Osijek Health centre area; 48 (47%) men and 55 (53%) women and it was done in the

second half of the year 2011. Median age of the patients was 64.96 years (range 48–77 years).

Results

In the last six months 80 patients out of 103 (78%) have experienced unintentional loss of weight and 23 (22%) patients maintained their usual body mass. The percentages reached statistical significance ($\chi^2=31.544$, $p=0.000$, $df=1$).

Furthermore, 60 patients (58%) state that they have been eating poorly because of a decreased appetite and 43 patients (42%) have not experienced changes in their appetite.

Of 80 patients who experienced weight loss, 12 patients (15%) have lost more than 15 kilograms, 19 patients (23%) lost between 11 and 15 kilograms, 24 patients (30%) lost between 6 and 10 kilograms and 25 patients (32%) have lost 5 kilograms or less (Table 1).

After nutritional screening, 30 patients (30%) had MST score (weight loss and decreased appetite) of 4–5 (it is necessary to introduce enteral nutrition), 37 patients (35%) had MST score 2–3 (further clinical assessment of malnutrition is carried out), while 36 patients (35%) had MST score 0–1 (which requires repeated screening) (Table 2).

Subjective Global Assessment (SGA) questionnaire has established that 29 patients (28%) suffer from weight loss of more than 10%, in 24 patients (23%) weight loss

TABLE 1
QUANTIFICATION (AMOUNT) OF WEIGHT LOSS IN THE LAST SIX MONTHS

	Number of patients	%
1–5	25	32
6–10	24	30
11–15	19	23
>15	12	15
Total	80	100

TABLE 2
NUTRITIONAL SCREENING – MALNUTRITION SCREENING TOOL (MST)

MST score	Number of patients	%	Remark
5	12	13	Enteral nutrition required
4	18	17	
3	18	17	Clinical assessment of malnutrition required
2	19	18	
1	17	17	New screening required
0	19	18	
Total	103	100	

was 5–10%, while 50 patients (49%) did not have significant weight loss (Table 3).

3 patients (3%) experience hunger because they cannot eat, 43 patients (42%) have meager food intake with improvements or borderline food intake with deterioration, and 57 patients (55%) do not have any significant changes in their food intake (Table 4).

11 patients (11%) have daily presence of 3 or more symptoms (nausea, vomiting, diarrhea or anorexia) that lasted at least 2 weeks, 37 patients (36%) have 1 or 2 of those symptoms and 55 patients (53%) did not experience any of the mentioned symptoms (Table 5).

28 patients (27%) suffer from severe work dysfunction as well as dysfunction in activities of daily living, 40 patients (39%) have a mild dysfunction while 35 patients (34%) maintained normal work and everyday functioning. Altogether, 66% of the patients suffer from (mild or severe) dysfunction at their workplace and/or in activities of daily living, which showed statistical significance ($\chi^2=2.117$, $p=0.347$, $df=2$) (Table 6).

23 patients (22%) have high nutritive demands due to complications of the primary disease (inflammation, diarrhea, vomiting etc.), in 35 patients (34%) demands are low to moderate, while in 45 patients (44%) no increase in nutritive demands was observed (Table 7).

TABLE 3
SGA-AMOUNT (PERCENTAGE) OF WEIGHT LOSS

	Number of patients	%
No significant weight change	50	49
Weight loss of 5–10%	24	23
Weight loss of more than 10%	29	28
Total	103	100

TABLE 4
FOOD INTAKE CHANGES

	Number of patients	%
No significant changes	57	55
Meager intake with improvements or borderline intake with deterioration	43	42
Hunger, inability to eat	3	3
Total	103	100

TABLE 5
PRESENCE OF EVERYDAY SYMPTOMS IN DURATION OF MORE THAN 2 WEEKS

	Number of patients	%
No symptoms	55	53
1–2 symptoms	37	36
3 or more symptoms	11	11
Total	103	100

In order to determine the status of musculature and subcutaneous fat tissue, clinical evaluation was carried out, according to the guidelines (quoted) at the end of the questionnaire. 14 patients (13%) experienced severe subcutaneous fat loss in m. triceps brachii and chest area and in 41 patients (40%) there were only mild to moderate changes in the test results and in 48 patients (47%) the results were no abnormality detected (NAD).

14 patients (14%) had severe loss of muscle tissue, in 38 patients (37%) the loss of musculature was mild to moderate, while in 51 patients (49%) muscle loss wasn't observed (the results are NAD) (Table 8).

6 patients (6%) have severe perimalleolar edema; mild to moderate presence of perimalleolar edema has been established in 19 patients (18%) and in 78 patients (76%) the results were NAD. Number of patients without edema is statistically significantly higher compared to the number of patients with perimalleolar and presacral edema and ascites (Chi-squared ($\chi^2=85.767$, $p=0.000$, $df=2$)).

Based on the obtained results it has been established that 15 patients (14%) are severely undernourished (SGA C), 39 patients (38%) are moderately undernourished (SGA B), while 49 patients (48%) are well-nourished (SGA A) (Table 9).

TABLE 6
DAILY ACTIVITY PERFORMANCE STATUS

	Number of patients	%
No dysfunction	35	34
Mild dysfunction	40	39
Severe dysfunction	28	27

TABLE 7
NUTRITIVE DEMANDS CONSEQUENT TO DISEASE COMPLICATIONS

Metabolic demands	Number of patients	%
Without	45	44
Low to moderate	35	34
High	23	22
Total	103	100

TABLE 8
MUSCLE TISSUE LOSS (M. QUADRICEPS FEMORIS, M. DELTOIDEUS)

	Number of patients	%
No abnormality detected (NAD)	51	49
Mild to moderate loss	38	37
Severe loss	14	14
Total	103	100

TABLE 9
CATEGORIES OF SUBJECTIVE GLOBAL ASSESSMENT (SGA)
SCORING SYSTEM

	Number of patients	%
Well nourished (SGA A)	49	48
Moderately undernourished (SGA B)	39	38
Severely undernourished (SGA C)	15	14
Total	103	100

Discussion

The research results indicate that 60 patients (58%) out of 103 patients did not eat enough due to decreased appetite and, which is very alarming considering the fact that appetite, weight loss and cachexia are often signs of a malignant disease^{6,7}. Also, 80 patients (78%) out of 103 patients have recently lost weight without trying. 31 of 80 patients or 39% have lost more than 10 kilograms, which is significantly higher compared to a study where only 6.5% of the patients lost more than 10 kilograms (PG-SGA test used)¹⁶. Conversely, in a Norwegian study 82% of cancer patients (with an advanced disease) have unintentionally lost weight and 63.15% have lost more than 10 kilograms¹³. Weight loss of more than 10% is related to higher morbidity and mortality. Thus, in cancer patients regular body mass measurement is an essential element of healthcare¹³.

Total number of patients with changes in their diet routine in our survey is 45% (of which 3% suffers from hunger due to almost complete inability to eat and 42% has moderate decrease in food intake). These numbers match the results of some similar studies where appetite problems were reported in 48–72% of the patients^{14,16,17}. Some authors recognized anorexia to be one of the main problems in 42% of cancer patients¹⁶.

In 12 patients (12%), after nutrition screening of cancer patients with Malnutrition Screening Tool the MST score was 5, and 18 patients (17%) had MST score 4. According to the diagram of procedure, both of the categories (MST 4 and 5) indicate the need for urgent introduction of enteral nourishment as well as a consult with clinical nutrition specialist. 37 patients (35%) reached MST score 2 or 3, which according to the procedure diagram requires further clinical assessment of malnutrition¹⁸.

Treatment modalities in oncology: surgery, chemotherapy and radiotherapy have negative influence on patient's nutritional status, which is very variable depending on the individual treatment option⁹. In our survey, based on the method of Subjective Global Assessment (SGA) of the patients, 48% of the patients is well nourished with normal parameters of nutritional assessment (SGA A), 38% is moderately undernourished (SGA B), while 14% of the patients suffers from severe undernourishment (SGA C).

A study conducted on the Vukovar Health Center Area showed that 26.09% had severe (SGA C), and 43.48% of the patients had moderate undernourishment (SGA B). The same study showed that 19.23% of the patients used Ensure Plus, 11.54% used Megostat, 7.69% used Prosure, 3.84% used some other product, while 57.7% of the patients didn't use any additional products as a nutritional support¹⁸. These facts indicate insufficient implementation of Croatian guidelines for the treatment of tumor cachexia, taken into account that megestrol-acetate and enteral high-protein nourishment with increased intake of eicosapentaenic acid (EPA), have a proven positive effect on the appetite, calorie intake, body weight and feeling of well-being.

Other studies showed diverse results. A research from Malaysia where patients treated at home have been given PG-SGA questionnaire showed that more than 85% of the patients was moderately to severely undernourished¹⁹. Our research results are similar to results reported by Segura et al.¹⁶ where 52% of the examinees was undernourished (40.4% moderately and 11.8% severely), as well as Bauer¹⁴, who found 75% of the patients to be undernourished (59% moderately and 16% severely). Montoya et al.²⁰ carried out a research in a hospital on Philippines using SGA questionnaire. They found 47.7% of the cancer patients to be undernourished (43.2% moderately and 4.5% severely). A Brazilian research using SGA questionnaire discovered undernourishment in 77.08% of cancer patients²¹ with similar results in an Australian study¹⁷: 76% of the patients was undernourished according to SGA¹⁴.

Nutritional status considerably correlates with quality of life, psychophysical, functional and social/spiritual domain of an individual¹⁹; patients with poor nutritive status consequently have lower life quality¹⁷. An interesting information from Segura's study: 52% of the patients are moderately to severely undernourished, albeit 97.6% of the patients need some form or nutritional intervention or consult¹⁶. It is important to educate cancer patients and offer them more information and advice about maintaining optimal food intake.

Some studies show that nutritional interventions significantly improve individual nutritional status¹⁷. High prevalence of malnutrition and cachexia in cancer patients treated at home after they underwent hospital treatment who were enrolled in our research, indicates the necessity of enteral nutritional support introduction in all proven cases of malnutrition/cachexia. The type and extent of the nutrition backup depend, apart from the nourishment status (SGA category) and the nature of the disease, on planned diagnostic and therapeutic procedures, as well as on planned and anticipated length of treatment²². A study with pancreatic cancer patients showed that enrollment of nutritive and pharmacological support results with transitory slower weight loss and increased appetite²³.

In this research 11 patients (11%) had everyday presence of 3 or more symptoms (fatigue, vomiting, diarrhea, anorexia) in a period of more than 2 weeks, a duration

which is considered significant²⁴. Pereira Borges et al.²¹ reported that 70% of cancer patients of one Brazilian hospital had mentioned gastrointestinal symptoms. On average, cancer patients experience 11 symptoms²⁵. Treating symptoms is one possible way for prevention of malnutrition^{6,8,13}.

To determine objective prevalence of malnutrition it is important to obtain nutritional status of every patient, which should include detailed personal history, prior medication, physical, anthropometrical and biochemical parameters^{6,8,10,13}.

Conclusions

The research on the prevalence of malnutrition and cachexia at the Osijek Health Center Area in patients suffering from malignant diseases who are treated at home has shown that 58% out of 103 patients ate meagerly due to appetite loss, and 80 patients (78%) out of 103 patients lost weight without trying. Surprisingly, 31 out of 80 patients that lost weight (39%) have lost more than 10 kilograms.

3% of the patients are suffering from hunger, 42% have moderately decreased food intake. 27% suffer from severe and 39% from moderate work dysfunction. 12% of

the patients are in need for enteral nutritional support due to deterioration of the disease. 14% have severe loss of subcutaneous fat tissue, and same amount of patients have severe loss of musculature.

Based on the questionnaire results for the clinical assessment of malnutrition in patients with a malignant disease, 38% of patients are moderately undernourished (SGA B) and 14% of patients are severely undernourished (SGA C).

The research indicates the importance of early nutritive screening of patients with a malignant disease, as well as the assessment of their nutrition status and higher presence of nutritive therapy, because in 31 patients (29%) after nutritive screening there was the need for urgent implementation of enteral nutrition and nutrition consulting.

The application of the questionnaire in direct medical practice has proved to be of great quality, simple, quick and acceptable screening method of malnutrition and cachexia in patients suffering from malignant diseases with the final aim of introducing enteral nutrition as early as possible, because that way we influence the improvement of the quality and prolongation of patients' lives.

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OCJENA NUTRITIVNOG STATUSA KOD PACIJENATA OBOLJELIH OD RAKA NA PODRUČJU DOMA ZDRAVLJA OSIJEK

SAŽETAK

Cilj ovog istraživanja bio je izvršiti prehrambeni probir i kliničku procjenu malnutricije uzrokovane kaheksijom, kao i potrebu za enteralnom prehranom. Koristili smo međunarodni upitnik za probir prehrane i kliničku procjenu pothranjenosti. U istraživanju su sudjelovala 103 oboljela od raka. Rezultati pokazuju da je 80 bolesnika (78%) nedavno nenamjerno izgubilo na tjelesnoj težini u posljednjih šest mjeseci. Od tih 80 bolesnika 12 (15%) ih je izgubilo više od 15 kilograma. Tri bolesnika (3%) gladuju zbog nemogućnosti uzimanja hrane. O postojanju 3 ili više simptoma (mučnina, povraćanje, proljev ili anoreksija) se izjasnilo 11 bolesnika (11%). Teška radna disfunkcija je pronađena je u 28 bolesnika (27%). 14 bolesnika (14%) imalo je značajan gubitak mišićne mase (*m. kvadriceps femoris*, *m. deltoideus*). Dobiveni rezultati pokazuju da je 15 bolesnika (14%) teško, a 39 bolesnika (38%) umjereno pothranjeno. Ovo istraživanje potvrdilo je važnost prehrambenog probira u pacijenata oboljelih od raka, budući da je otkriveno 30 bolesnika (29%) kod kojih je potrebno uvođenje enteralne prehrane.