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Definitions and Tools to Assessing Cancer Cachexia: a Review

Definições e Ferramentas para Avaliar a Caquexia no Câncer: uma Revisão

Definiciones y Herramientas para evaluar la Caquexia en el Cáncer: una Revisión

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Abstract

Introduction: Weight loss is the main feature in cachectic cancer patient leading a significant muscle mass and adipose tissue depletion which have being increasing mortality. Actual interest in cancer cachexia has caused a development of different tools, scores or criteria used to assessing the staging of malnutrition and/or weight loss cachexia related. **Purpose:** This review aims to show new cachexia definitions and tools that have been discussed to determinate cachexia in cancer. **Method:** It was performed a literature review of definitions and tools to determine and/or diagnose cancer cachexia. Articles published from January 2000 until August 2013. The base data used was the PubMed/Medline (www.ncbi.nlm.nih.gov/pubmed). **Results:** Recently three cachexia definitions have been published by Society for Cachexia and Wasting Disorders, European Palliative Care Research Collaborative; Special Interest Group on Cachexia and Anorexia of the European Society for Enteral and Parenteral Nutrition. Many tools to determine cancer cachexia are useful like weight loss, body mass index, nutritional screening and Body composition (Bioelectrical Impedance), Image tools (Dual energy X-ray absorptiometry, Computed tomography and Magnetic Resonance) and Combining assessment with inflammatory markers. **Conclusion:** Studies had been considered clinically important weight loss (varying from 5% to 20% or more) and this are correlated with increased morbidity and mortality. Weight loss is the main symptom reported by cancer patients leading to cachexia and it is too critical for disease progression, therefore, clinicians should be watchful to this complaint.

Key words: Neoplasms; Cachexia; Weight Loss; Nutrition Assessment; Body Composition

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INTRODUCTION

Excessive and involuntary weight loss in advanced cancer patient is the main feature of cachexia, resulting of malnutrition and starvation, caused by a decline of food intake and consequently a restrictive caloric consumption. Cachectic patient experiencing a reduction of protein and energy body reserves, inducing significant muscle mass and adipose tissue depletion, have increased mortality[1,2], and during the diagnosis cancer patients, thirty percent of them have weight loss of > 5% of their usual body weight and one-fifth of deaths are in related cancer in a straight line caused by malnutrition and cachexia[3].

Cancer-associated cachexia is a paraneoplastic syndrome and the etiology is multifactorial involving different mechanics. Systemic inflammation is related to driven cachexia by raised inflammatory cytokines (interleukin (IL) 6, IL-1, IL-2, inteferon γ, tumor necrosis factor α (TNF-α), and hepatic acute phase protein C-reactive, protein (CRP). Another effect on metabolism is the activation of the hypothalamic–pituitary–adrenal (HPA) axis (cortisol or noradrenaline) and the sympathetic nervous system (SNS) and tumor itself can express procachectic factors that not only have direct catabolic effects. It have been related with weight loss, muscle and/or fat loss, anorexia, anemia, insulin resistance, sarcopenia, and hypercatabolism with increased resting energy expenditure (REE) reflecting an increased on basal metabolic rate in 25% to 30%.[1,3-7].

There is still no fully accepted definition for cancer cachexia, in the use of diagnostic criteria or parameters to determine when and to what degree is cachexia present. Many cachexia definitions have been published by SCWD, Society for Cachexia and Wasting Disorders[8], EPCRC, European Palliative Care Research Collaborative[9]; SIG-ESPEN, Special Interest Group on Cachexia and Anorexia of the European Society for Enteral and Parenteral Nutrition[10].

Recently, an international consensus comparing 3 different concepts, expert group came to general an understanding that the 3 definitions can be used and they are not common in only minor threads. The end point about in this definitions was a common target in muscle mass loss and differences between them, that is necessary to provide a generic or disease specific definition and cachexia assessment criteria[11].

Actual interest in cancer cachexia has caused a development of different tools, scores or criteria used to assessing the staging of malnutrition and/or weight loss cachexia related. Cancer patients need an ongoing assessment for risk or cachexia progression, and this varying and depends on factors such as: cancer type and stage, amount or percentage of weight loss, low food intake, the presence of widespread inflammation, and absence of response to anticancer treatment. This review aims to show new cachexia definitions and tools that have been discussed to determinate cachexia in cancer.

METHOD

It was performed a literature review of definitions and tools to determine and/or diagnose cancer cachexia. The inclusion criteria of the search was: restricted to publications in English language and developed over a time period between January 2000 until August 2013; the base data used was the PubMed/Medline (www.ncbi.nlm.nih.gov/pubmed) and the terms used were cancer, cachexia, weight loss, nutrition screening, body mass index (BMI), and nutritional assessment; body composition, consensus, bioelectrical impedance analysis (BIA), bioelectrical impedance vector analysis (BIVA), dual energy X-ray absorptiometry (DEXA), Magnetic Resonance Imagery, and computed tomography (CT). Table 1 shows the search strategy, result number and the articles used per combined terms.

RESULTS AND DISCUSSION

The search identified publications showed in the Table 1 and the text analysis included all papers that had the terms "cancer and caquexia" and terms added to search. The most important reviews to key words "weight loss" and "body composition", "nutritional assessment" and "nutrition screening" and "BMI" (Search #13 and #14) were found fourteen and excluded 2 and 3 articles respectively for the search. To the term "concensus" all paper published after 2008 were included and sixteen were excluded. We also included all paper after published the cutoffs for cancers to "bioelectrical impedance analysis (BIA), bioelectrical impedance vector analysis (BIVA), dual energy X-ray absorptiometry (DEXA), Magnetic Resonance Imagery and Computed Tomography (CT)", or after were correlated to these cutoffs. The Table 2 shows a short description of the articles used in this current review.

a) Weight Loss in Cancer Cachexia

Weight loss is a peculiar and relevant prognostic factor for time survival in cancer. A higher extent of weight loss is correlated with shorter lifetime, affecting patients food prognosis, length of hospital stay, health-care costs, quality of life, and survival[5,12].

The stages and classification include: a) Pre-cachexia, as a circumstance associated with or very small weight loss (less than 5% of body weight loss in 6 months) associated with occult chronic disease and is characterized by anorexia, inflammation, and/or metabolic alterations. b) Cachexia would be determinate using the criteria that is a Patient who have more than 5% loss of stable body weight

Table 1. Search strategy for PubMed/Medline

Search	Most recent issues	Result	Graded
#14	Search "cancer" and "cachexia" and "weight loss" and "body composition" and "nutritional assessment"	14	12
#13	Search "cancer" and "cachexia" and "weight loss" and "nutrition screening" and "BMI"	14	11
#12	Search "cancer" and "cachexia" and "bioelectrical impedance vector analysis"	1	1
#11	Search "cancer" and "cachexia" and "bioelectrical impedance"	15	15
#10	Search "cancer" and "cachexia" and "dual energy x-ray absorptiometry"	22	7
#9	Search "cancer" and "cachexia" and "magnetic resonance"	35	8
#8	Search "cancer" and "cachexia" and "computed tomography"	53	6
#7	Search "cancer" and "cachexia" and "consensus"	24	7
#6	Search "cancer" and "cachexia" and "BMI"	62	
#5	Search "cancer" and "cachexia" and "nutritional assessment"	116	
#4	Search "cancer" and "cachexia" and "nutrition screening"	144	
#3	Search "cancer" and "cachexia" and "body composition"	155	
#2	Search "cancer" and "cachexia" and "weight loss"	1437	
#1	Search "cancer" and "cachexia"	2053	

Table 2. Details and description of all studies (n=35)

Ref	Methods	Results
1	Review	Cachexia pathophysiology - major cause appears to be cytokine excess
2	Review	Cancer cachexia mechanisms - systemic hypermetabolism and hypercatabolism syndrome
3	Review	Anorexia, cachexia and malnutrition; negative nitrogen and energy balance, loss of lean body mass and adipose tissue. Metabolic change: pro-inflammatory cytokines and neuroendocrine stress response
4	Review	Pathogenetic mechanisms. Interaction between tumor and host: catabolic mediators and aberrant metabolic response and patient factors: age and levels of physical activity; mechanics of protein metabolism
5	Review	Physiological review, weight loss, reduced quality of life, shortened survival time, increased resting energy expenditure
6	Review	Energy regulation in physiological processes via neuroendocrine pathways; circadian rhythms and in chronic inflammatory diseases there was a disturbed vast fuel consumption of an activated immune system
7	Systematic review	Mechanisms, definition and classification of cancer-related anorexia/cachexia. Domains associated with involuntary weight loss in cancer
8	Opinion paper	Cachexia consensus and definition
9	Systematic review	Cachexia consensus, definitions and classification systems
10	Opinion Paper	Consensus and definition of cachexia, pre-cachexia and sarcopenia. Knowledge on the basic and clinical aspects
11	Editorial	Cachexia consensus and definition.
12	Original article	Head and neck cancer. Patients receiving Chemoradiation (n=25) or radiation therapy (n=13). Intake/weight declined and CRP increased respectively in patients during posttreatment
13	Review	Cancer cachexia definition and classification, it was weight loss greater than 5%, or weight loss greater than 2% in individuals already showing depletion, according to current bodyweight and height (BMI <20 kg/m^2)

Table 2. Continuation

Ref	Methods	Results
14	Original article	Respiratory and colorectal, 250 patients. Links body composition to sarcopenic obesity. CT of the lumbar (L3) skeletal muscle index has been linked with mortality. Stratification of cutoffs for men and for women; patients below these values were classified as sarcopenic
15	Original report	Breast, GI, Genitourinary, Hematology, Lung and Other cancers, 1164 patients. Reporting shortened survival was associated with weight loss or weight gain compared with stable weight
16	Review	Grade nutritional status and the reference standard are clinically important for human bodyweight classification
17	Research article	Breast cancer, 368 patients. Women (63.3%) had weight gain rather than weight loss (36.7%) with a higher percentage (47.8%) having at least 5% weight gain (47.8%) rather than weight loss (22%), respectively
18	Original article	Esophagus and Stomach, 43 patients. Relationship between subjective global assessment (SGA) and the severity of inflammation, as defined by Glasgow prognostic score (GPS)
19	Systematic review	Not one single screening or assessment tool is capable of adequate nutrition screening as well as predicting poor nutrition related outcome
20	Original article	Advanced colorectal carcinoma, 77 patients. Associations between different assessments and overall survival in stage IV cancer. CCSG's cachexia score was the best prognostic factor for overall survival
21	Special article	Consensus of sarcopenia and cachexia disorders. Cutoffs of dual energy x-ray absorptiometry, computed tomography, magnetic resonance imagery, ultrasound, and bioelectrical impedance to determinate sarcopenia
22	Review	Cachexia definition, detection, mechanisms, treatment, and therapy
23	Original article	55 patients. Patients BMI was <25 kg/m2 and least common (13%) in patients who were not sarcopenic and/or overweight or obese. BMI < 25 kg/m2 with diminished muscle mass is a predictor of toxicity
24	Review	ESPEN guidelines. Use of bioelectrical impedance analysis (BIA) allows the determination of the fat-free mass (FFM) and total body water (TBW) in subjects without significant fluid and electrolyte abnormalities
25	Review	Several factors limit use of BIA. Increased amount body water and a relative increase in extracellular water result, in an underestimation of the percentage of body fat, and an overestimation of fat-free mass
26	Review	Consensus and cachexia definition, treatments involving different combinations anticatabolic, aim fat and muscle catabolism, and an anabolic objective leading to the synthesis of macromolecules
28	Editorial	Involuntary weight loss is primary clinical sign of cachexia, cannot be reversed by nutritional support alone. Needed precise measures of body composition. Three phases: pre-cachexia, cachexia, and refractory
29	Review	Phase Angle (PhA) differs with age and sex, reduction in reactance and is described as a predictive tool in several clinical diseases outcomes and mortality
30	Review	PhA and raw parameters of BIA has gained attention by body composition estimate in diseases. Investigates the clinical relevance and applicability of PhA and Bioelectrical Impedance Vector Analysis (BIVA)
30	Original article	Colorectal cancer, 52 patients, stage IV. Cutoff higher to PhA had a median survival bigger than who's had lesser
31	Original article	Pancreatic cancer, 58 patients, stage IV. Cutoff higher to PhA had a median survival bigger than who's had lesser
32	Original article	Breast cancer, 259 patients. Cutoff higher to PhA had a median survival bigger than who's had lesser
33	Original article	Lung cancer, 165 patients, stages IIIB and IV. Cutoff higher to PhA had a median survival bigger than who's had lesser
34	Original article	Breast cancer (n=34) and 34 healthy volunteers. Mean vectors breast cancer versus the healthy women groups were characterized by a slight increase of the normalized resistance and reactance components
35	Original article	Weight loss, low food intake or systemic inflammation, might relate better to the adverse functional or prognosis. Factors profile identifies patients with both adverse function and prognosis

over the past 6 months, or a body mass index (BMI) less than 20 kg/m^2 and ongoing weight loss of more than 2%, or sarcopenia and ongoing weight loss of more than 2%. c) Refractory cachexia. The cachexia can be clinically refractory as a result of very advanced cancer (preterminal) or the presence of rapidly progressive cancer unresponsive to anticancer therapy[13]. Another argument was focus on cachexia severity staging based on the amount of weight loss, using cutoffs for mild, moderate, and severe cachexia of 5%, 10%, and 15 (or 20)% weight loss in the previous 12 months or since disease start[11].

In cancer obese patients the weight change is insufficient to detect abnormalities and withal survival was not affected by weight loss ≥10% in sarcopenic obesity in cancer patients[14]. However, not only the weight loss is associated with a worse prognostic of lifetime in advanced cancer, but the relationship of the percentage weight change with survival of cancer patients are related by Martin et al.[15], reporting that shortened survival was associated with two categories of weight loss (≥2.0% to ≤13.9%; 2.9 months and ≥14.0%, 2.3 months) or weight gain (≥ 2.0%; 3.1 months) compared with stable weight (± 1.9%; 4.7 months).

b) Body Mass Index (BMI)

Body mass index (BMI) is largely used to grade nutritional status and the reference standard are clinically important for human bodyweight classification: ≥40.0 morbid obesity, 35.0-39.9 class II obesity, ≥30.0 class I obesity, 25.0-29.9 overweight, 24.9-18.6 eutrophic, and ≤18.5 underweight[16]. WHO grade ignore the proportions in fat and lean tissue, mainly skeletal muscle mass. BMI is an imperfect criterion for obesity estimation and it is important in clinical practice and, particularly in oncology, patients are not broadly recognized[14].

Nevertheless, advanced cancer obese patients (BMI <30 kg/m^2) was correlated with longer survival[15], but weight gain and thus increasing BMI was a poor prognostic sign in specific types of cancer, including breast cancer[17]. Another anthropometric indicators are commonly and routinely used in clinical practice because of the cost benefit triceps skinfold, mid-arm circumference, mid-arm muscle circumference and a functional test of the skeletal muscles, handgrip strength has received attention from because functional indicators are related to malnutrition[18].

c) Nutritional Screening Tools

Nutritional risk screening is the first step to identification of the patient for recognize malnutrition, starvation, weight loss, dietary intake, gastrointestinal symptoms etc, to assess and/or forecast poor clinical nutritional status associated, as complications of treatment, length of hospital stay and mortality[19].

European Society for Clinical Nutrition and Metabolism (ESPEN) recommend the use of MUST (Malnutrition Universal Screening Tool), Nutritional Risk Screening (NRS-2002) or MNA-SF (mini nutritional assessment - short form), but these tools have been indicated for elderly[19]. Patient-generated Subjective Global Assessment (PG-SGA) is a validated nutritional screening tool developed to cancer patients that is based on patient-reported features and adopt by Oncology Nutrition Dietetic Practice Group of the American Dietetic Association[15]. Subjective Global Assessment (SGA) is a convincing tool in assessing nutritional status in patients with advanced cancer too[20].

d) Image Tools and Bioelectrical Impedance

Important approach in cancer is a concept of sarcopenia, a depletion of skeletal muscle which can occur irrespectively of adipose tissue. Sarcopenia may be defined as being age-related muscle mass loss below 2 standard deviations of mean for young persons[2]. The cutoff index to evaluated sarcopenia have been determinate by using different tools under graduating levels, by criteria of skeletal muscle obtained by images: Dual energy X-ray absorptiometry (DEXA) [muscle mass (kg) divided by stature squared) <7.26 kg/m^2 for men and <5.45 kg/m^2 for women; Computed Tomography (CT) for males <52,4 cm^2/m^2 and females <38,5 cm^2/m^2,[14] Magnetic Resonance Imagery for men < 176 cm^3 and women <93 cm^3; Ultrasound for males <11 mm and females <10 mm, and Bioelectrical Impedance analysis (BIA) for men <14 kg/m^2 and women <11.4 kg/m^2,[21] or using too anthropometric measures: mid-upper-arm muscle area for men <32cm^2 and women <18 cm^2 [22].

In obese cancer patients this sarcopenic obesity (severe obesity and low muscle mass) was associated with low physical ability and mortality. In CT of the lumbar (L3), skeletal muscle index has been linked with mortality by optimum stratification, which was 52.4 cm^2/m^2 for men and 38.5 cm^2/m^2 for women; patients below these values were classified as having sarcopenia[14].

Sarcopenic patients receiving anticancer drugs have a high level of cytotoxic effects because a reduction of lean body mass would result in a disproportionately drug distribution when the chemotherapeutic dose administered is calculated using their bodyweight, body-surface area[23]. Bioelectrical Impedance Analysis (BIA) has been used to body composition assessment by estimating body compartments. BIA is not a direct method, but inexpensive and non-invasive method and measuring whole-body impedance, using the opposition of body to alternating current consisting of two components: resistance (R) and reactance (Xc)[24]. Patient who have fluid imbalance, like disturbed hydration or altered distribution of extra and intra-cellular water, often present limited use method e.g., in liver cirrhosis, renal failure, cardiac insufficiency[15], obesity[25], and cancer when there

is an increase in body fluid and fat during the treatment causing a false weight gain[26] and, for this reason, BIA is well-known to yield results considerably disparate in patients with cancer, it is not an applicable choice[27].

Another tools derived by BIA using electrical properties of tissues applying a raw of bioelectrical impedance measurements, R and Xc can be expressed as a ratio - Phase Angle (PhA) or as a plot - Bioelectrical Impedance Vector Analysis (BIVA).

Phase Angle differs with age and sex, reduction in reactance which parallels the loss of muscle mass and an increase in resistance due to the declining proportion of body water. Phase Angle is described as a predictive tool in several clinical diseases outcomes and mortality[28]. It can be calculated with de formula (Xc/R) x 180°/π and expressed by a cellular health indicator where elevated score predict higher cellular measure, function and membrane integrity. A typically healthy subjects phase angle has between 5 to 7°[29]. As an indicator of worse nutritional status and prognostic survivor on advanced cancer in colorectal patients with a phase angle ≤5.57° had 4.7 times less months survival, compared to those with values above this cutoff[30]; in pancreatic cancer PhA <5.0° had a median survival time of 6.3 months, while those with phase angle >5.0° had a median survival time of 10.2 months[31]; in breast cancer patients with phase angle ≤ 5.6° had a median survival of 23.1 months, while those >6° had 49.9 months[32], and in lung cancer Patients with phase angle ≤ 5.3° had a median survival of 7.6 months, while those with >5.3° had 12.4 months[33]. In head and neck cancer, patients phase angle was 4.67°, significantly different from healthy subjects ($p<0.0001$)[34].

Bioelectrical Impedance Vector Analysis (BIVA) applies a plot of normalized parameters impedance (resistance (R) and reactance (Xc)) per height in RXc graph with a bivariate vector. Height normalization permits for the length of the conductor and provides a soft tissue qualitative quantify that does not depend on body size. Vector length and position and length make available information about hydration status, body mass and integrity cell. A vector migration to the sides due lower or higher reactance is a sign of reduce or enhance of dielectric mass (membranes and tissue interfaces) of soft tissues. Vector length point toward hydration status from fluid excess (decreased resistance, short vector) to exsiccosis (increased resistance, longer vector)[29].

BIVA has been used to allow detection, monitoring and control of hydration and nutrition status in healthy subjects and in many diseases including cancer[29]. Malecka-Massaska et al.[34] observed a different vector displacement distribution characterized by a reduced Xc component in head and neck cancer patients group, as compared with healthy subjects matched by sex, age and BMI.

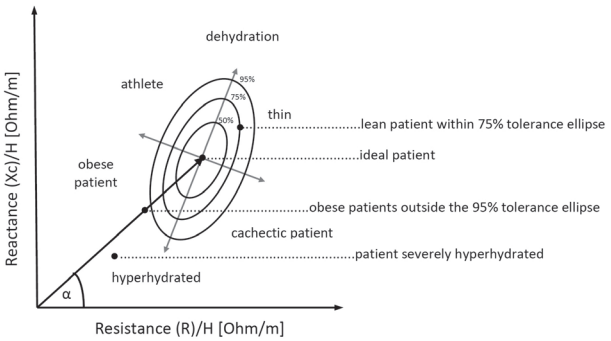

Figure 1. Different positions of the vector in the RXc graph indicating different body composition can theoretically produce comparable phase angles (α). Longitudinal changes in hydration and cell mass are therefore interpreted more reliably by BIVA than phase angle alone. Adapted and modified from Norman K. et al (2012)

e) Combining Cachexia Assessment Tools

A study identified tree factors for cancer cachectic profile: a decreased food intake (≤1,500 kcal/day), jointly with weight loss (≥10% or greater), and a systemic inflammatory response (C-reactive protein (CRP), ≥10 mg/l or higher) are important variables to identify cancer patients with both adverse function and prognosis, whereas weight loss only was not a prognostic variable[35].

Diagnostic criteria of cachexia (Table 1) besides weight loss* alone, can be used at least three of these: Anorexia**, a reduction of voluntary food intake is a predictor of consequent weight loss by muscle mass and fat reduction, accelerated protein degradation in muscle are decreased muscle strength***. It may be measured by handgrip strength, Low fat-free mass index**** and fatigue*****, and biochemical abnormalities******, characteristic of inflammation, anemia or hypoalbuminemia[8].

Table 3. Combining diagnostic criteria for cachexia

* Weight loss of at least 5% in 12 months or less in the presence of underlying illness - In cases where weight loss cannot be documents a BMI <20.0 kg/m² is sufficient
** Limited food intake (i.e. total caloric intake less than 20 kcal/kg body weight/d; <70% of usual food intake) or poor appetite
*** Decreased muscle strength (lowest tertile)
**** Lean tissue depletion (i.e. mid upper arm muscle circumference <10th percentile for age and gender; appendicle skeletal muscle index by DEXA (kg/m²) by DXA <5.45 in females and <7.25 in males
***** Fatigue is defined as physical and/or mental weariness resulting from exertion; an inability to continue exercise at the same intensity with a resultant deterioration in performance
****** Abnormal biochemistry
a) increased inflammatory markers CRP (>5.0 mg/l), IL-6 (>4.0 pg/ml)
b) Anemia (<12 g/dl)
c) Low serum albumin (<3.2 g/dl)

Inflammatory markers of CRP and albumin has been used in Glasgow prognostic score (GPS) to grade the measure of inflammation based on these two markers with scores from 0 to 2. Cancer patients with elevated CRP levels are at a higher risk of treatment-induced toxicity and patients with a low score (0) present with better survival than patients with a score of 1 or 2[18].

Distinct criteria to define cachexia could be use based by Cancer Cachexia Study Group (CCSG) and European Palliative Care Research Collaborative (EPCRC). The first is based on criteria, in which the patients are indicated as undergo from cachexia when two of the following factors were performed: CRP ≥10 mg/L, weight loss ≥10%, or energy intake ≤1500 kcal/d. The second one, and more recent, was based on the patients criteria are defined as having cachexia, either when they express a weight loss ≥5% during the last 6 months, or a weight loss 2% e 5% in association with a BMI <20 kg/m^2, or a weight loss of 2% e 5% together with the presence of sarcopenia[20].

CONCLUSION

This paper broached many different criteria and tools that are used to determine cachexia in cancer patient. The pathophysiology and etiology of cancer cachexia is markedly characterized by reduced food intake, increased energy expenditure and metabolic abnormalities that driven to proteolysis and lipolysis and this causes weight loss. Some studies had been considered clinically important weight loss (varying from 5% to 20% or more) and this is correlated with increased morbidity and mortality. Weight loss and reduced food intake are the main symptoms reported by cancer patients leading to cachexia and it is too critical for disease progression, therefore, clinicians should be watchful to this complaint.

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Resumo

Introdução: A perda de peso é a principal característica do paciente caquético com câncer, levando a uma significativa depleção de massa muscular e do tecido adipose, que tem aumentado a mortalidade. Interesse real na caquexia do câncer por ter causado um desenvolvimento de diferentes ferramentas, escores ou critérios utilizados para avaliar o estágio da desnutrição e/ou perda de peso relacionada à caquexia. **Objetivo:** Esta revisão tem como objetivo mostrar as novas definições e ferramentas que têm sido discutidas para determinar a caquexia no câncer. **Método:** Foi realizada uma revisão da literatura sobre as definições e ferramentas para determinar e/ou para diagnosticar caquexia no câncer. Os artigos publicados a partir de janeiro de 2000 até agosto de 2013. A base de dados utilizada foi a PubMed/Medline (www.ncbi.nlm.nih.gov/PubMed). **Resultados:** Recentemente, três definições de caquexia foram publicadas pela: *Society for Cachexia and Wasting Disorders, European Palliative Care Research Collaborative; Special Interest Group on Cachexia and Anorexia of the European Society for Enteral and Parenteral Nutrition*. Muitas ferramentas para determinar caquexia do câncer são úteis, como: perda de peso, índice de massa corporal, triagem nutricional e composição corporal (impedância bioelétrica), ferramentas de imagem (absorciometria de dupla emissão de raios-X, tomografia computadorizada e ressonância magnética) e combinação da avaliação com marcadores inflamatórios. **Conclusão:** Os estudos têm considerado a perda de peso clinicamente significativa (variando entre 5% e 20% ou mais) e isto está correlacionado com o aumento da morbidade e mortalidade. A perda de peso é o principal sintoma relatado por pacientes com câncer que levam à caquexia e é muito crítica para a progressão da doença, por isso, os clínicos devem estar atentos a essa queixa.

Palavras-chave: Neoplasias; Caquexia; Perda de Peso; Avaliação Nutricional; Composição Corporal

Resumen

Introducción: La pérdida de peso es la principal característica en pacientes caquécticos con cáncer, lo cual lleva a una reducción significativa de la masa muscular y del tejido adiposo, que ha llevado al aumento de la mortalidad. El interés real en la caquexia por motivo de cáncer ha provocado el desarrollo de diferentes herramientas, escalas o criterios usados para evaluar el estado de desnutrición y/o pérdida de peso relacionada con caquexia. **Objetivo:** Esta revisión tiene como objetivo mostrar la nueva configuración y herramientas que han sido analizadas para determinar la caquexia en el cáncer. **Método:** Fue hecha una revisión bibliográfica de las definiciones e instrumentos para determinar y/o diagnosticar caquexia en el cáncer. Los artículos publicados desde enero de 2000 hasta agosto de 2013. La base de datos utilizada fue PubMed/Medline (www.ncbi.nlm.nih.gov/PubMed). **Resultados:** Recientemente, tres definiciones de caquexia fueron publicados por: Society for Cachexia and Wasting Disorders, European Palliative Care Research Collaborative; Special Interest Group on Cachexia and Anorexia of the European Society for Enteral and Parenteral Nutrition. Muchas informaciones para determinar la caquexia por cáncer son útiles, como: pérdida de peso, índice de masa corporal, selección nutricional y la composición corporal (impedancia bioeléctrica), herramientas de imagen (absorciometría de rayos X de energía dual, tomografía computarizada y resonancia magnética) y la combinación de la evaluación con marcadores inflamatorios. **Conclusión:** Nuestros estudios han considerado la pérdida de peso clínicamente significativa (que oscila entre el 5% y 20% o más) y esto se correlaciona con el aumento de la morbilidad y mortalidad. La pérdida de peso es el principal síntoma reportado por los pacientes de cáncer que conducen a la caquexia y es fundamental para el avance de la enfermedad, por esto, los clínicos deben estar atentos a esta queja.

Palabras clave: Neoplasias; Caquexia; Pérdida de Peso; Evaluación Nutricional; Composición Corporal