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Dietary treatment of weight loss in patients with advanced cancer and cachexia: A systematic literature review

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Contents

Abstract

Purpose: A systematical literature review evaluating the effect of dietary counseling in treating weight loss and improving energy intake in patients with advanced cancer with different stages of cachexia.

Principal results: Five publications were retrieved, of which three were randomized. Two out of five studies showed less weight loss with dietary counseling (+1% weight gain vs. −1.5% weight loss, $p = 0.03$, 1.4 kg vs. −2 kg, $p < 0.05$), two presented positive effect on energy intake (92% of total caloric need vs. 73%, $p < 0.01$, 1865 ± 317 kcal vs. 1556 ± 497 kcal, ns).

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Conclusion: Dietary counseling can effect energy intake and body weight, however, apparent heterogeneity between studies is present. Based on these results there is not enough proof of evidence that dietary counseling given to patients with cancer is beneficial for improving weight or energy balance in the different cachexia stages. Nutrition is an essential part of cachexia treatment as it is not considered possible to increase or stabilize weight if nutritional needs are not met.

Keywords: Cancer; Cachexia; Dietary counseling; Weight loss; Nutritional status; Energy intake

1. Introduction

Weight loss is common in patients with progressive cancer and has major impact on both morbidity and mortality. The etiology of cancer related weight loss is not fully understood, even though cancer cachexia usually is considered the main contributor [1,2]. Cachexia is by definition associated with underlying illness and characterized by loss of lean tissue with or without loss of fat mass [2]. The definition also states that weight loss in advanced cancer is a consequence of a combination of metabolic abnormalities and reduced food intake leading to negative energy balance [2]. Reduced food intake may be a result of a wide variety of symptoms directly or indirectly limiting oral intake e.g. loss of appetite, taste change, dysphagia and pain [3]. The impact of impaired food intake on weight loss in cachexia has not yet been elucidated and remains undefined, and the clinical benefits of dietary intervention in the treatment of cachexia are not clarified.

The development of cachexia in cancer should be seen as a continuum moving through three different phases, namely pre-cachexia, cachexia and refractory cachexia [2]. During this cachexia trajectory, nutritional and dietary practices that promote energy balance may be of varying importance [2,4], however, the scientific foundation to supports these assumptions are ambiguous. In pre-cachectic patients, the focus is on prevention of weight loss and the response to dietary treatment is expected to be fair [5,6]. In patients with cachexia, dietary treatment is most likely insufficient to reverse cachexia since other factors such as metabolic and inflammatory changes are involved [2,5]. If the patient has entered a stage of refractory cachexia, the response to dietary treatment is no longer anticipated due to very advanced or rapidly progressive cancer unresponsive to anti-cancer therapy [2]. Even if nutritional or dietary treatment do not influence weight loss or survival it may be highly significant when it comes to eating- and weight loss-related distress, relief of certain symptoms, quality of life and social meaningfulness for the patients [6,7].

There are basically only three techniques/methods that are used to increase energy intake in patients; parenteral nutrition (PN), enteral nutrition (EN) or dietary counseling with advices aiming to increase oral intake. In dietary counseling the focus is commonly to increase intake of energy dense foods, increase meal frequency and/or to use oral liquid nutritional supplements (ONS) [8,9]. Former reviews and guidelines have concluded that the benefits from PN or EN in advanced cancer are limited [10,11]. The overall aim of this systematic review was therefore to evaluate the evidence of the effect of dietary counseling in treating weight loss and improving energy intake in patients with advanced cancer and different stages of cachexia. Secondary research questions were if dietary counseling is effective in improving physical function or quality of life.

2. Methods

2.1. Search strategy and selection criteria

Studies with adult patients with advanced cancer that evaluated the effect of oral dietary interventions were included. Studies were excluded if the main aim was to evaluate the effect of either PN or EN or if the intervention was selected nutritional compounds such as certain vitamins, fatty acids, proteins or amino acids. Studies were also excluded if they at baseline did not report data necessary to classify cachexia or if only treatment with curative intent was given. The recent consensus criteria for diagnosis of cancer cachexia were used to classify cachexia [2]. Patients with weight loss $\leq$5% at inclusion were classified as pre-cachectic. Patients with weight loss >5% or body mass index (BMI) <20 and weight loss >2% or weight loss >2% and sarcopenia were classified as cachectic. Simple starvation should be ruled out as a reason for weight loss. Patients were considered having refractory cachexia if the criterions for cachexia were fulfilled and expected survival was <3 months, WHO performance status was $\geq$3 or they did not respond to anti-cancer therapy. The classification into cachexia stages was based on the information provided in the articles; no attempts were made to obtain further information from the study authors.

Primary outcomes of interest in this review were weight (measured in kg, pound or percent change, lean body mass, total body mass or fat mass) and energy intake (measured as kcal, kJ or MJ, absolute intake and/or energy balance). *Secondary outcomes* were physical functioning and quality of life (QoL).

This review considered quantitative study designs including randomized controlled trials (RCTs), quasi-RCT, cohort studies, pre–post study design and case control studies.

Case series with 10 or less participants were not included, neither were qualitative studies. Only studies published in

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