



MAKING CACHEXIA REVERSIBLE: WHAT IS THE PRIORITY STRATEGY FOR AGGRESSIVE INTERVENTION? A SYSTEMATIC REVIEW

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INTRODUCTION

Cancer cachexia has a direct impact on survival, response to pharmacological therapy, nutritional status, functionality and quality of life. Although the central role of nutritional intervention in cancer cachexia is recognized, there is no consensus in the literature on how to effectively reverse or to ameliorate cachexia and which nutritional support to privilege.

AIM

The aim of this systematic review is to clarify which nutritional intervention is effective in ameliorating or reversing cancer cachexia.

RESULTS

Preliminary results using PubMed yielded 213 hits. Twenty-four studies with patients with high risk of malnutrition or cachexia were included. A second group with fourteen studies was included with a variable proportion of patients at medium risk of malnutrition or cachexia.

EFFECTIVE ameliorating or reversing cancer cachexia

Main results: *NIG significantly increased % change of body weight and increased BMI.*
Sukaraphat (2016).

Main results: *NC was associated with a better weight maintenance or gain, attenuated loss of body weight and better nutritional risk score.*
Poulsen (2014), Silvers (2014), Kiss (2016), Werf (2020).

Main results: *Polymeric formula ONS and NC have significantly lower sarcopenia prevalence and satisfactory results in weight gain/ maintenance. ONS rich in leucine/isoleucine increases LBM.*
Ishikawa (2016), Kapoor (2017), Meng (2020), Tan (2020).

Main results: *Supplementation with whey-protein-isolate, or L-carnitine effectively improves body composition and nutritional status (FFM, muscle strength, BW, BMI, FM)*
Methylbutyrate/arginine/glutamine may be effective in increasing FFM and weight.
May (2002); Kraft (2012); Cereda (2019); Mazzuca (2019).

Main results: *Soy-whey-blended-protein supplementation increases muscle mass (arm muscle area and gripping power).*
Ren (2017).

Main results: *Polymeric protein supplement enriched with circa 2 g of EPA regulates or even improves BW and LBM.*
Fearon (2003), Bauer (2005), Yeh (2013), Martinez (2018).

Main results: *Polymeric protein supplement enriched with circa 2 g of EPA increases SMM ratios and promote weight gain or weight maintenance.*
Cereda (2017), Feijó (2018), Akita (2019).

Main results: *To assist in weight maintenance for malnourished patients or to increase weight, BMI and LBM with immunonutrients.*
Vasson (2013), Gavazzi (2016).

Main results: *Positive benefit in stabilizing body-composition and even in increasing of FFM in advanced/palliative cancer.*
Hasenberg (2009), Obling (2019)

Dietary Counseling / Nutritional Therapy Alone

Oral Nutritional Supplements (ONS)

Protein Isolate

N-3 Fatty Acids

Enteral Nutrition

Parenteral Nutrition

Main results: *No difference in NS, BW or BMI.*
Kim (2014), Marchasson (2014).

Main results: *Individual nutritional counseling did not improve nutritional or physical outcome.*
Uster (2013).

Main results: *Perioperative high energy and protein ONS did not change BW.*
Kong (2018).

Main results: *High-energy, high-protein ONS did not change BMI.*
Ziętarska (2014).

Main results: *Methylbutyrate/arginine/glutamine supplementation did not improve FFM and BW.*
Berk (2008)

Main results: *EPA enriched oral nutritional supplement (with protein) did not affect NS.*
Hamilton (2018), Laviano (2019).

Main results: *EPA enriched ONS (with protein) did not affect weight, LBM and NS. Supplementation with fish oil did not influence NS.*
Bruera (2003), Candela (2011), Moses (2014), Hanai (2018)

Main results: *Arginine supplemented pre/postoperatively didn't improve NS.*
Schuere (2001)

NOT EFFECTIVE ameliorating or reversing cancer cachexia

Studies with patients with high risk of malnutrition or cachexia (n=24)

Studies with a variable proportion of patients at medium risk of malnutrition or cachexia (n=14)

NIG, Nutritional Intervention Group; NC, Dietary Counseling; MM, Muscle Mass; FM, Fat Mass; FFM, Fat-Free Mass; SMM, Skeletal Muscle Mass; LBM, Lean Body Mass; ONS, Oral Nutritional Supplements; BMI, Body Mass Index; BW, Body Weight, NS, Nutritional Status;

METHOD

PubMed was searched from 2001 to 2020 for controlled trials that included nutritional intervention vs. placebo/conventional care in cancer patients with malnutrition/sarcopenia/cachexia. Weight, BMI, fat mass and lean body mass were the sought outcomes. Pediatric and terminal-phase patients were excluded.

CONCLUSIONS

Oral nutritional supplementation with protein, protein isolate and circa 2g of n-3 fatty acids may effectively ameliorate or even reverse cancer cachexia. Evidence is still limited on the role of enteral and parenteral nutrition and further trials are needed.