Malnutrion In Patient Cancer

Luan Ronaldo
Centre of Cancer Study of Honduras, Honduras
Email: luan_ronaldo32@yahoo.com

Abstract

Nutrition is an important part on the implementation of cancer, both in patients who are undergoing therapy, restoration of the therapy, in a State of remission or to prevent a recurrence. Nutritional status in cancer patients is known to correlate with response therapy, prognosis and quality of life. More or less 30-87% of cancer patients experiencing malnutrition before undergoing therapy. The incidence of malnutrition vary depending on the origin of cancer, for example in patients with pancreatic cancer and gaster are experiencing malnutrition to 85%, 66% in lung cancer, and 35% in breast cancer. One of the problems of nutrients that need attention in cancer patients is the kaheksia. The malnutrition common in advance because the nutrition component of the intake not as recommended.

Keywords: nutrition, malnutrition, cancer

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A. INTRODUCTION

Nutrition is an important part of the implementation of cancer, whether in patients who are undergoing therapy, recovering from therapy, in a state of remission or to prevent recurrence. Nutritional status in cancer patients is known to be associated with therapeutic response, prognosis and quality of life. Malnutrition and cachexia often occur in cancer patients (24% at an early stage and> 80% at an advanced stage). The incidence of malnutrition varies depending on the origin of the cancer, for example in patients with pancreatic and gastric cancer who are malnourished up to 85%, 66% in lung cancer, and 35% in breast cancer.

One of the nutritional problems that need attention in cancer patients is cachexia. Cachexia is also closely related to malnutrition.[1] Cachexia is defined as muscle loss, or no lipolysis, which cannot be reversed with conventional nutritional support.[2]

Various cancer malnutrition factors known as cachexia have been reported for a long time, but it has not been confirmed and it is suspected that the causes are multifactorial, namely decreased nutritional intake and changes in metabolism in the body. Decreased nutritional intake occurs due to decreased oral food intake (due to anorexia, nausea and vomiting, changes in taste and smell perception), local effects of tumors (odynophagy, dysphagi, gastric / intestinal obstruction, malabsorption, early satiety, psychological factors (depression, anxiety) , and side effects of therapy. [3]

Cancer can cause an effect severe detrimental to nutritional status. Not only cancer cells take up nutrients of the patient's body, but treatment and consequences physiology

of cancer can interfere with maintaining adequate nutrition. Some of the potential effects of cancer on nutrition: Weight loss due to:

a. Reduced food intake, possibly induced by changes in the levels of neotransmitters (serotonin) in the central nervous system; increased levels of lactic acid produced by anaerobic metabolism, the preferred method of metabolism for tumors; psychological stress, dysguesia (changes in taste); and dislike of certain foods. About 70% of individuals with cancer experience an aversion or dislike of certain foods, due to changes in taste thresholds for some components of smell and taste.
b. Increased basal metabolic rate.
c. Increased gluconeogenesis (production of glucose with the breakdown of body glycogen, fat and protein) caused by the dependence of tumors on anaerobic metabolism.
d. Decreased body protein synthesis "Cancer cachexia" is a form of severe malnutrition characterized by anorexia, rapid satiety, weight loss, anemia, weakness, and muscle loss. Although adequate nutritional support can help prevent muscle loss and weight loss, only successful cancer therapy can repair / restore this cancer cachexia syndrome.[4]

B. METHOD

This study used a qualitative approach by collecting data with a literature study on malnutrition in cancer patients. The data is then analyzed and analyzed to produce a research framework.

C. RESULT AND DISCUSSION

Causes of Malnutrition in Cancer Patients

a. Anorexia

Anorexia is common in cancer patients, with an incidence of 15% -40% at the time of diagnosis.[13] Anorexia is a major cause of cachexia in cancer patients. Causes and mechanisms of anorexia in patients cancer is not known until now clear. Cancer metabolite products can also causes anorexia .. Cancer metabolism too may cause changes in the taste of soy sauce. Psychological stress that occurs in cancer patients plays an important role in its occurrence anorexia. Mechanical obstruction on gastrointestinal tract, pain, depression, constipation, malabsorption, side effects treatment such as opiates, radiotherapy and chemotherapy can decrease intake food. Treatment with anti-cancer too the most common cause of malnutrition. Chemotherapy can cause nausea, vomiting, stomach cramps and bloating, mucositis and ileus paralytic. Some antineoplastics such as fluorouracil, adriamysin, methotrexate and cisplatin induces complications gastrointestinal weight. [5]

b. Changes in Metabolism

Metabolism is closely related metabolism of carbohydrates, protein, and fat. In cancer patients the metabolism of these substances changes and has an effect on the occurrence of weight loss. Hypermetabolism often occurs in cancer patients, the increase in metabolism is up to 50% higher than in non-cancer patients. But this increase in metabolism does not occur in all cancer patients. Several studies have reported this increase in metabolism is associated with decreased nutritional status and tumor type and size. In normal people the metabolic rate decreases during starvation as a normal adaptation process but in cancer patients this process does not occur. The difference between metabolic disorders due to starvation and cancer cachexia can be seen in Table 1.[6]

Table 1. Difference between metabolic disorders due to starvation and cancer cachexia. [5]

	Starvation	Cachexia Cancer
Basal Metabolism	N/⬇	N/⬆ / ⬇
Role of mediator	-	+++
Liver Uragenesis	+	+++
Nitrogen Balance Negative	+	+++
gluconeogenesis	+	+++
Proteolysis	+	+++
liver protein synthesis	+	+++

Protein Metabolism In starvation conditions, use energy for the brain by glucose is replaced by objects ketones which are the result of breaking down fat. Muscle protein and visceral protein are used as a precursor to gluconeogenesis thus there is a decrease in protein catabolism and decreased gluconeogenesis of amino acids in heart. In cancer patients, amino acids are not stored so that there is a depletion of the mass muscle and in some patients there is muscle atrophy severe.16 Loss of muscle mass is a result of increased protein degradation and decreased protein synthesis due to use for the formation of acute phase proteins and gluconeogenesis. Several studies states that branched chain amino acids (BCAA) can regulate protein synthesis directly by modulating mRNA translation. [6]

Lipid Metabolism

In cancer patients there are changes lipid mobilization in the form, decreased lipogenesis,
decreased lipoprotein lipase (LPL) activity and increased lipolysis. Increased lipolysis caused by an increase in hormones epinephrine, glucagon, adrenocorticotropic hormone (ACTH) which is cyclic mediated adenosine monophosphate (c-AMP). c-AMP will

activate hormone sensitive lipase (HSL) which will then convert one triglyceride molecules into three acid molecules free fat and one glycerol molecule. The decrease in LPL activity is caused by cytokines pro inflammatory TNF-α, INF-γ and IL-1β prevent storage of fatty acids on adipose tissue and causes increased levels of free fatty acids and glycerol in circulation.[5]

Diet Therapy for Cancer Patients

Weight loss that occurs continuously in cancer patients caused by a decrease in intake energy or increased expenditure energy. Production of insulin in cancer patients will decrease, low insulin production the body can further cause increased blood glucose levels. High blood glucose levels can further causing a decrease in the patient's appetite. Therefore breakfast is the time eating right versus meal times others because in the morning levels blood glucose is the lowest. Tolerance glucose levels affect function gastrointestinal, due to blood glucose levels high ones can slow down movement peristalsis in the stomach. This can then be causing cancer patients to feel fast full and no appetite. [7]

Increased breakdown of muscle protein in cancer patients can cause losing the body's amino acids, and so on causing tuhuh to be weak. For support the success of cancer treatment the need for optimal nutritional support by paying attention to nutritional needs and the purpose of nutrition for cancer patients. The goal of giving cancer patients a diet among others are :

1. Prevent weight loss(short-term).
2. Achieve and maintain body weight normal (long term).
3. Replacing nutrients lost due to treatment effect.
4. Meet the needs of calories, protein, Carbohydrates, Vitamins and Minerals balanced to prevent the occurrence of nutrition.
5. Prevent infection and further complications.
6. Meet the needs of micronutrients.
7. Maintain a balance of blood glucose levels:

Recommended diet:

- high protein: 1.5 - 2.0 g / kg BW to compensate for weight loss,
- high in calories: 25 - 35 kcal / kg BW, and 40 -50 kcal / kg BW to replace savings in the body when the patient is underweight less. If there is infection it needs additional calories according to the state of infection.
- fat: 30-50% of total calorie requirements.more food should be givena lot in the morning. Serves are given small and frequent. Sonde formula food can be provided in accordance with the conditions patient. When you lose weight more than 20% can given. [8]
- Total Parenteral Nutrition (TPN), as appropriate with the patient's condition:

- supplement if necessary vitamin B complex (vitamin 86, pantothenic acid 1 folic acid, etc.) vitamin A, and vitamin C
- special dietary therapy requirements varies according to the patient's condition and accompanying diseases.
- is also recommended to fulfill the amino acid requirement of Leucine and Methionine. Glutamine is necessary for postoperative or radiation patients on abdomen.[9,10]

Micronutrious Needs

Micronutrient deficiencies that occur in cancer patients, has the meaning to be causing impaired immune function as a result deficiency of zinc, selenium, vitamin C, vitamin A, vitamin B6, folic acid. Supplementation vitamins and minerals in cancer patients are if found the patient's condition cannot meet these needs through intake daily or have an effect side of therapy that affects intake patient. [11]

According to the American Institute for Cancer Research (AICR) on cancer patients undergoing radiation therapy and chemotherapy should not consume supplementation vitamins and minerals that act as antioxidants in amounts that exceed the upper of safe intake, namely vitamin C 2000 mg / day, vitamin E 250 mg / day, and selenium 400ug / day. Recommended consumption of potassium, sodium and chloride 45 - 145 meq / day each, calcium 60 meq / day, magnesium 35 meq / day, and phosphate 23 mmol. [11]

Route of Nutrition

The first option is through nutrition oral route. Oral nutrition is a first choice after surgery. If inadequate intake can be given orally nutritional supplementation to intake optimal. [10]

If 10-14 days intake is less than 60% of need, then an indication of giving enteral. Short-term enteral administration (<4-6 week) can use a nasogastric tube (NGT). Long-term enteral administration (> 4-6 weeks) using endoscopic percutaneous gastrostomy (PEG). Use of a nasogastric tube has no effect on tumor response nor any negative effects related to chemotherapy. Installation of a nasogastric tube is not must be done routinely, unless there is one the threat of ileus or insufficient nutritional intake adequate.[12]

Parenteral nutrition is used whenoral and enteral nutrition are not fulfillingthe patient's nutritional needs, or if the gastrointestinal tract not functioning normally eg bleeding massive gastrointestinal tract, severe diarrhea, intestinal obstruction total or mechanical, severe malabsorption. Providing nutrition education can improve quality of life and slow down toxicity radiation in colorectal cancer patients versus the usual diet with or without nutritional supplements.[13.14]

D. CONCLUSION

If not handled properly, malnutrition can develop into cachexia. Cachexia defined as loss of muscle mass, with or without lipolysis, which cannot restored with conventional nutritional support. Judging from the symptoms, cachexia is a a syndrome characterized by no appetite (anorexia), feeling full quickly, and general body weakness.

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