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Review

Enteral Nutrition in Cancer Patients

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ABSTRACT

Enteral nutrition can be continued from the mouth to the jejunum. This process targets various regions of the gastrointestinal system. When implementing enteral nutrition, the patient's needs, environmental conditions, and duration of treatment should be taken into consideration. Enteral nutrition is of paramount importance in cancer patients. With enteral nutrition support, the aim is to maintain the patient's weight and overall condition, thereby preventing complications that could lead to life-threatening situations. Inadequate nutrition is a common problem in cancer patients. If a patient is unable to consume sufficient nutrients despite having no gastrointestinal issues, enteral nutrition is provided to support the patient. It is important to monitor how cancer patients respond to enteral nutrition support during this process. This review addresses the following topics: the importance of enteral nutrition in cancer patients, considerations for implementing enteral nutrition, common complications of inadequate nutrition in cancer patients, and the monitoring of patient response to enteral nutrition support.

Keywords: Cancer, enteral nutrition, gastrointestinal system.

Cancer is a major health issue worldwide. In Turkiye, cancer is also a significant problem in the field of public health. Nutrition is even more important for cancer patients, as it is in all aspects of life. Globally, cancer is seen as the second leading cause of death. If this trend continues to increase rapidly, it is estimated that by 2030 it will be the leading cause of death.[1]

The world population is continuously increasing. According to calculations based on the elderly population, it is estimated that an additional 19.3 million cancer cases will be added by the year 2025. It has been observed that 56.8% of these cases and 64.9% of patients whose cause of death is cancer are seen in countries with lower levels of development.[2]

Several factors play a role in the development of cancer. Fundamentally, we can categorize these factors into two main headings: environmental factors and genetic factors. When we delve into environmental factors, we can list smoking, an individual's dietary habits, obesity, and physical and chemical agents. Inadequate and imbalanced dietary intake is a major concern. Additionally, individuals who do not prioritize physical activity and lead a sedentary lifestyle are at a significantly higher risk of developing cancer, along with excessive weight gain. Individuals who consume high-fat foods have a higher risk of developing cancers such as uterine, colon, and prostate cancer. Moreover, individuals with very low physical activity and obesity have a higher risk of developing cancers such as colon, breast, esophageal, kidney, and uterine cancers.[3,4]

Due to reasons such as the increase in morbidity and mortality rates, the high cost and lengthy duration of treatments, and side effects, individuals should protect themselves before the onset of the disease. To prevent cancer, individuals should learn about risk factors thoroughly and minimize potential risks. The exact cause of cancer formation is not known. However, despite the unknown cause, numerous factors can contribute to the development of the disease. Genetic predisposition, family history of cancer, cancers that may occur due to radiation exposure, excessive weight gain, genetic

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susceptibility, race, gender, and age in certain types of cancer are influential. In addition to these factors, parasites, viruses, alcohol and tobacco use, passive smoking, occupational exposures, increased oxidative stress, and the formation of free radicals are the most fundamental risk factors for cancer formation.[5]

CANCER AND NUTRITION

An increase in gluconeogenesis is observed in cancer patients, particularly in the liver. Glucose intolerance, insulin resistance, acidosis, and abnormalities in insulin secretion are changes that occur in carbohydrate metabolism. Alongside carbohydrate metabolism, cancer patients also experience various disruptions in protein metabolism. Therefore, it is essential to ensure adequate protein intake through nutrition. Protein requirement calculation should be accurately tailored to each patient. High-fat diets in the patient's nutrition may contribute to the development of certain types of cancer. It is believed to be associated with cancers such as kidney, prostate, stomach, breast, lymphoid, and pancreatic cancers. In the diet of cancer patients, attention should also be paid to vitamins and minerals. Vitamin intake has been observed to contribute to regression in certain types of cancer such as prostate, breast, and ovarian cancers. There are numerous studies on the use of vitamin C in cancer treatment and prevention.[4,5]

Enteral Nutrition

Two main factors that negatively affect the nutrition of cancer patients are the disease itself and the treatment method. Therefore, cancer patients are at a high risk of malnutrition formation. Enteral nutrition is an important and beneficial practice that supports nutrition through oral intake or tube feeding for individuals who are unable to eat adequately or are at risk of inadequate nutrition. Enteral nutrition support has many advantages. It is chosen as the first option due to its ability to preserve intestinal integrity and function and reduce potential side effects. Enteral nutrition is divided into oral and tube feeding. Tube feeding, in turn, is divided into three types: gastric, duodenal, and jejunal. Each of these three methods is further subdivided. When applying enteral nutrition to cancer patients, the severity of the disease should be taken into account, and accordingly, a method of application should be selected to provide nutritional support to the patient. When selecting the methods to be applied, gastrointestinal functions, the position of the feeding tube, and the patient's ability to tolerate the planned nutritional support should be examined. The methods to be applied are divided into four categories: intermittent, continuous bolus, and overnight feeding.[5,6] If there are no contraindications to enteral nutrition support in patients with functional gastrointestinal systems and with malnutrition or at risk of malnutrition, enteral nutrition support should be initiated within the first 24 hours.[7]

Complications of Enteral Nutritional Support

Complications that may occur in enteral nutrition support include nausea, vomiting, delayed gastric emptying, diarrhea, constipation, and abdominal cramps, which are commonly encountered. Overfeeding and medications can cause nausea in patients. The feeding rate should be reduced, and medications causing nausea should be reviewed. Causes of vomiting, another complication, may include gastrointestinal obstruction, medications, and delayed gastric emptying. If vomiting occurs due to gastrointestinal obstruction, enteral nutrition support should be stopped. Medications causing vomiting should be changed if possible. Conditions such as diabetes, stress due to illness, high-fat solutions, medications, and gastric surgery can cause delayed gastric emptying. Treatment with prokinetics in delayed gastric emptying, feeding with duodenal and jejunal tubes, preferring solutions with low-fat content, monitoring gastric residual volume (GRV) every four hours, stopping enteral nutrition support for one hour, and ensuring control of GRV can be used. Diarrhea may occur as a complication due to excessive osmotic intake. In this case, oral feeding should be reviewed, and possible causes should be reconsidered. Continuous feeding should be preferred, using solutions with low osmolarity. Medications, intestinal infections, contaminated solutions, low-residue feeding solutions, lactose intolerance, and nervous tension also cause diarrhea. Constipation is another complication. If insufficient fluid intake occurs, fluid intake should be increased. Low-residue solutions and decreased intestinal motility are possible causes of constipation. Enteral nutrition support is stopped until the motility of the gastrointestinal system improves. Many medications such as opioids and dopamine that may cause constipation should be reviewed. Electrolyte balance should be maintained. Another complication is abdominal cramps. Abdominal cramps can occur as a result of rapid feeding. Enteral nutrition support should be administered slowly. Enteral feeding should be gradually increased.[5-8]

Cancer and Enteral Nutrition Support

In cancer, inadequate food intake is composed of many fundamental factors such as the catabolic effects spread throughout the body due to the tumor, local inhibitory factors causing functional changes in swallowing, appetite loss, and cachexia due to the tumor, weakness in dietary habits, excessive alcohol consumption, and others.[9]

Nutritional habits play a significant role in the organs where cancer is observed in the body. Research on the relationship between nutrition and cancer shows the effect of nutrition on the development of cancer. Colorectal cancer, esophageal cancer, and liver cancer are believed to be associated with an individual's dietary habits. The frequency of occurrence of the mentioned types of cancer varies proportionally across different populations. The diagnostic rate of inadequate nutrition ranges between 10% and 40%. This rate can increase up to 80% with the increase in cancer incidence. If a patient cannot achieve adequate nutrient intake after surgical treatment, the response to treatment is unfavorable. This leads to complications, prolonged hospital stays, and increased mortality.[10]

Nutrition is crucial for cancer patients. Weight loss is commonly observed in cancer patients. Along with physiological issues such as vomiting, diarrhea, and malabsorption, the patient's body balance is disrupted. Consequences like anorexia can arise. Treatment methods applied to cancer patients also contribute to weight loss. The primary reason why a cancer patient requires nutritional support is the adverse side effects of anticancer treatments. Surgery, chemotherapy, and radiation therapy can be cited as examples of anticancer treatments. Consequently, patients often experience frequent food intake problems. Priority is given to pain management in cancer patients. To ensure that the cancer patient's body weight reaches a healthy standard and to maintain continuity in energy balance, the patient's specific energy requirement should be determined. For energy intake to be adequate, various factors need to be examined, such as the diagnosis of the disease, whether there are other diseases accompanying this disease, the type of cancer treatment, potential complications resulting from the disease, and the presence of undesirable conditions such as fever and infection.[4] If the patient can be orally fed, our first preference should be oral feeding. A cancer patient may not have any gastrointestinal issues. However, if the patient cannot receive adequate nutrition despite this, enteral nutrition support is provided. Enteral nutrition support prevents the deterioration of the patient's condition and can reduce the length of hospital stay. Enteral nutrition support should be tailored to the patient's needs to ensure proper monitoring of the patient. It has been indicated that 10-20% of cancer patients lose their lives not due to cancer itself but because of inadequate nutrition. In cases where cancer patients cannot receive adequate nutrition, personalized nutritional support should be provided quickly based on the type of cancer and the stage of the cancer disease.[11]

In less developed regions, stomach cancer is widely regarded as one of the most common factors contributing to deaths caused by cancer.[12]

Poor nutrition leads to decreased food intake. This condition is frequently observed in patients with stomach cancer. The release of toxin-containing chemicals increases due to the side effects of treatment. Characterized factors such as significant losses in body mass, imbalanced nitrogen distribution, and fatigue necessitate enteral nutrition for patients who are unable to eat or receive inadequate nutrition.[13]

It is noted that enteral nutrition support generally reduces complications such as sepsis by maintaining intestinal barrier integrity, decreases mortality incidence, and is more cost-effective. In enteral nutrition support, along with important gastrointestinal secretions for intestinal absorption and adaptation, hormonal secretions are also stimulated. Studies have observed that patients receiving enteral nutrition support can tolerate chemotherapy better after surgery.[14,15]

When selecting appropriate products for enteral nutrition support, it is important to consider clinical findings. If conditions are normal, standard products with different flavors can be used. However, if there is an abnormal condition, special products are used. Standard products generally contain 1 kcal per 1 ml. Their osmolarities are moderate, and their tolerability is good. They contain essential nutrients as well as trace elements and vitamins.[16,17]

In conclusion, numerous factors increase the risk of cancer. Studies help us better understand the relationship between nutrition and cancer. It is emphasized that nutrition can both decrease and increase the risk of cancer. Cancer patients may require enteral nutrition support due to inadequate food intake. Enteral feeding should be preferred as the method of nutrition support for the patient. After enteral nutrition support is provided, it is important to monitor the patient closely. Additionally, more

research is needed on the topic of cancer and nutrition. The community should be provided with ample information and awareness about cancer.

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