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SUMMARY

Title:

Assessment of the nutritional status and dietary intake changes in patients with head and neck cancer treated with radical radiotherapy.

Introduction:

Patients subjected to radical radiotherapy due to head and neck cancers experience numerous side effects, including swallowing disorders, which may have a considerable impact on the patients' ability to meet individual daily energy demand by means of oral diet, which may in turn favor the development of malnutrition. Malnutrition is associated, among others, with a weaker response to treatment, a greater number of complications, and worse tolerability. Patients with head and neck cancer represent a group that requires particular dietary supervision, including regular dietary counseling.

Purpose:

The purpose of this study was to assess the changes that occur in the nutritional status and diet of patients with head and neck cancer during radical radiotherapy.

Material and methods:

The study group consisted of 104 patients (26 women and 78 men) diagnosed with head and neck cancer qualified for radical treatment: radiotherapy alone or chemoradiotherapy, or radiotherapy plus cetuximab. Radical treatment takes 6 weeks and every week patients were assessed for nutritional status (body weight, grip strength, laboratory tests of blood, NRS questionnaire), dietary intake, swallowing disorders (EAT-10 questionnaire) and appetite disorders (CNAQ). Subjects were covered with constant care of a dietitian, received ONS (oral nutrition supplements) and, if necessary, enteral nutrition (EN). The study group's weight loss over the course of treatment with radical radiotherapy was compared with a historical control group which was not provided dietary care and which did not routinely receive oral nutritional supplements and industrial enteral nutrition.

Results:

The average weight loss in patients between the first and sixth week of treatment was 4 kg. The highest average weight loss was noted in the fourth week of treatment. The results show major differences in patients' body weight over individual weeks of treatment ($p < 0.001$). A systematic decrease in mean values of hemoglobin, red blood cells, lymphocytes and albumin was also noted during treatment. The differences in mean values of parameters of blood between individual weeks of treatment have proved to be statistically significant. 13.6% of patients had an appetite disorder on the day of starting therapy, whereas in the last week of treatment this percentage increased to 75.3%. Swallowing disorders on the starting therapy day concerned 16.3% of patients, and in the last week of treatment as much as 97.1%. The differences between the beginning and the end of therapy were shown to be statistically significant ($p < 0.001$).

In the first week of treatment, patients using the oral diet met 91.5% of energy demand, while in the last week of treatment only 40.9%. After introducing the ONS diet, patients met 120% of the demand in the first week of therapy and 95% in the last week, respectively. 61.5% of patients complied with the dietary recommendations, while 38.5% were below the set threshold. The average degree of compliance with dietary recommendations was 78.0%. The patient who followed the dietary recommendations were characterized by significantly ($p < 0.001$) lower weight loss (3.07 kg), compared to non-adherent patients (5.56 kg). In comparing the test group to the historical control group, it was observed that the weight loss differed significantly depending on the access to dietary advice. People with access to dietary advice (study group) were characterized by a statistically significant weight loss (4.04 kg vs 7.75 kg) during treatment, compared to people without such access (historical control group).

Conclusions:

1. Radical radiotherapy has a statistically significant impact on body weight, BMI and grip strength in each treatment week. The changes followed a downward trend, indicating a negative impact of the treatment on the nutritional status of patients.
2. The use of a complex dietary regimen in patients with head and neck cancer in the course of radical radiotherapy significantly reduced weight loss compared to patients without access to dietary counseling.
3. Radical radiotherapy caused a significant gradual deterioration of appetite and the development of swallowing disorders as the therapy progressed.
4. The used therapy significantly contributed to decreasing nutritional intake in subsequent weeks of treatment, and the patients' nutrition was inadequate to caloric demand. On the other

hand, incorporating ONS in the diet and enteral nutrition with industrial diets significantly increased the fulfilled energy demand of patients.

5. Patients' compliance with dietary recommendations (ONS supplementation, enteral nutrition) had a positive effect on reducing weight loss during radical radiotherapy.

6. Regular dietary supervision (including the use of ONS and enteral nutrition according to indications) for patients with head and neck cancer during radical radiotherapy should be a routine procedure during anti-cancer treatment.