ПОЛНОТА НУТРИТИВНОЙ ПОДДЕРЖКИ И СОХРАНЕНИЕ НУТРИТИВНОГО СТАТУСА ПОСЛЕ ОПЕРАЦИИ ПО ПОВОДУ РАКА ЖЕЛУДКА

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Аннотация: Изучить связь полноты выполнения нутритивной поддержки с показателями нутритивного статуса и мышечной массы после операции по поводу рака желудка.

Ключевые слова: *рак желудка, нутритивная поддержка, потеря массы тела, скелетно-мышечный индекс, саркопения, приверженность.*

OSHQOZON SARATONI OPERATSIYASIDAN KEYIN NUTRITIV QO‘LLAB-QUVVATLASH TO‘LIQLIGI VA OZIQLANISH HOLATINING SAQLANISHI

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Annotatsiya: Oshqozon saratoni bo‘yicha operatsiyadan keyin nutritiv qo‘llab-quvvatlashning to‘liq bajarilishi bilan oziqlanish holati va mushak ko‘rsatkichlari o‘rtasidagi bog‘liqlikni o‘rganish.

Kalitso‘zlar: *oshqozon saratoni, nutritiv qo‘llab-quvvatlash, vazn yo‘qotish, skelet-mushak indeksi, sarkopeniya, tavsiyalarga rioya qilish.*

COMPLETENESS OF NUTRITIONAL SUPPORT AND PRESERVATION OF NUTRITIONAL STATUS AFTER GASTRIC CANCER SURGERY

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Abstract: To examine the association between completion of nutritional support and nutritional and muscle parameters after surgery for gastric cancer.

Keywords: *gastric cancer, nutritional support, weight loss, skeletal muscle index, sarcopenia, adherence.*

Introduction

After gastric resection or gastrectomy, a patient's eating pattern changes substantially. Early satiety, difficulty with food intake, and general weakness may prevent full consumption of the prescribed diet. Therefore, in addition to prescribing nutritional support, monitoring its actual implementation is also of great importance.

According to ESPEN recommendations, cancer patients require regular assessment of nutritional status and individualized nutritional support [1]. The NRS-2002 scale is used to identify nutritional risk [2], and malnutrition is diagnosed using the GLIM criteria, which combine phenotypic and etiologic criteria [3].

The tolerability of and adherence to oral nutritional supplements after gastrectomy have been examined in dedicated studies [4]. A randomized trial demonstrated the benefit of perioperative oral nutritional support in patients with severe malnutrition [5]. These data confirm the need for an individualized approach to nutritional support and for monitoring its implementation. The aim of the study was to compare weight loss, albumin levels, nutritional risk, and muscle parameters according to the completeness of nutritional support after surgery for gastric cancer.

Materials and methods

Study design and patients. The study included 334 patients with morphologically confirmed gastric cancer who underwent surgical treatment at the Samarkand branch of the Republican Specialized Scientific and Practical Medical Center of Oncology and Radiology in 2021–2025. The results are reported in accordance with the STROBE recommendations for observational studies [6].

Nutritional support. In the postoperative period, the target energy intake was set at 25–30 kcal/kg/day and the protein intake at 1.2–1.5 g/kg/day [1]. Completion of at least 80% of the prescribed measures was considered complete nutritional support. Based on this criterion, patients were divided into two groups: those who received complete nutritional support (n=184) and those who received incomplete nutritional support (n=150).

Assessed parameters. The following were assessed: weight loss relative to baseline weight (%) at 1 and 3 months after surgery; the proportion of patients with weight loss exceeding 10.5% at 3 months; serum albumin at 1 month; nutritional risk according to NRS-2002 (≥3 points) at 3 months [2]; and the skeletal muscle index (SMI) based on computed tomography and the prevalence of sarcopenia at 3 months. Sarcopenia was defined according to the EWGSOP2 criteria [7].

Statistical analysis. Quantitative variables are presented as mean and standard deviation (M±SD), and qualitative variables as absolute numbers and percentages (n, %). Quantitative variables were compared using Welch's t-test, and qualitative variables using Pearson's χ^2 test. Differences were considered statistically significant at $p<0.05$. Calculations were performed using IBM SPSS Statistics 26.0 (or version 28.0) software.

Results

In the complete nutritional support group, weight loss was already lower at 1 month (3.2±0.4% vs. 5.8±0.6%; $p<0.001$), and the difference persisted at 3 months (4.1±0.5% vs. 8.4±0.5%; $p<0.001$). The proportion of patients with weight loss exceeding 10.5% at 3 months was 9.8% in group I and 26.0% in group II, and the proportion of patients at high nutritional risk according to NRS-2002 was 9.8% and 28.0%, respectively (Table 1).

Table 1. Weight dynamics and nutritional risk according to the completeness of nutritional support.

Parameter	Complete support, n=184	Incomplete support, n=150	p
Weight loss at 1 month, %	3.2±0.4	5.8±0.6	<0.001
Weight loss at 3 months, %	4.1±0.5	8.4±0.5	<0.001
Weight loss >10.5% at 3 months, n (%)	18 (9.8)	39 (26.0)	<0.001
NRS-2002 ≥3 at 3 months, n (%)	18 (9.8)	42 (28.0)	<0.001

In the complete nutritional support group, albumin levels at 1 month and SMI at 3 months were higher. The prevalence of sarcopenia in group I was almost half that in group II (26.1% vs. 53.3%; $p<0.001$) (Table 2).

Table 2. Protein metabolism and muscle status parameters according to the completeness of nutritional support.

Parameter	Complete support, n=184	Incomplete support, n=150	p
Albumin at 1 month, g/L	38.4±2.1	33.1±1.8	<0.001
SMI at 3 months, cm^2/m^2	44.2±3.1	39.5±2.8	<0.001
Sarcopenia at 3 months, n (%)	48 (26.1)	80 (53.3)	<0.001

Discussion

The results show that complete implementation of the nutritional program is associated with better preservation of nutritional status after surgery. The difference in weight loss was evident as early as the first month and persisted up to three months. This underscores the importance of nutritional support in the early postoperative period and is consistent with ESPEN recommendations [1]. Studies of oral nutritional supplements after gastrectomy also confirm that the level of adherence affects weight preservation [4, 5].

Patients who received complete nutritional support had a higher SMI and an almost twofold lower prevalence of sarcopenia. Muscle parameters complement the assessment of nutritional status. According to the EWGSOP2 consensus, the diagnosis of sarcopenia includes assessment of muscle strength and function in addition to muscle mass [7]; therefore, evaluating SMI together with functional tests provides a more complete picture of the recovery process.

A threshold of 10.5% weight loss over three months was used as a prognostic marker. Cancer cachexia is a metabolic syndrome broader than simple malnutrition [8]; therefore, when weight loss is detected, clinical evaluation of its cause is advisable.

For clinical practice, it is important to record the implementation of prescribed nutritional support as a separate indicator. When a patient does not take the nutritional supplement, the reasons should be identified - taste, volume, nausea, or financial or organizational barriers. The ERAS perioperative management protocol [9] and impairment-driven rehabilitation targeting a specific functional problem [10] make it possible to identify such barriers in a timely manner and address them individually.

Multivariate analysis accounting for patients' baseline condition and the extent of surgery, as well as prospective studies, represent a promising future direction for assessing the independent effect of the completeness of nutritional support.

Conclusions

1. In patients who completed at least 80% of the nutritional support recommendations, weight loss within three months after surgery was half as great (4.1% vs. 8.4%), and nutritional risk was lower.

2. In the complete nutritional support group, albumin levels and SMI were higher, and the prevalence of sarcopenia was almost half as high (26.1% vs. 53.3%).

3. Along with prescribing nutritional support, regular monitoring of its actual implementation is advisable.

Conflict of interest. The authors declare no conflict of interest.

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