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Article

Effectiveness of Neoadjuvant Chemotherapy in Cardioesophageal Junction Cancer

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Abstract: Neoadjuvant chemotherapy (NACT) plays an important role in the multimodal treatment of cardioesophageal junction cancer (CEJC), particularly in locally advanced stages. This study evaluated the clinical and pathological effectiveness of neoadjuvant chemotherapy administered according to FLOT and DCF regimens in patients with stage IIIb–IVa disease. Forty-seven patients received 4–6 cycles of chemotherapy, and treatment response was assessed using MSCT or PET-CT imaging and repeat histological examination. Overall treatment response was achieved in 87.2% of patients, including complete regression in 19.1% and partial regression in 68.0% of cases. Pathological response assessment according to Lavnikova's criteria demonstrated grade III–IV therapeutic pathomorphosis in 12.8% of patients. Although adverse effects were observed in 59.4% of cases, severe toxicity (grade III) was rare and manageable. The findings confirm the clinical effectiveness of neoadjuvant chemotherapy in locally advanced cardioesophageal junction cancer, while indicating its partial but not definitive impact on tumor regression.

Keywords: Cardioesophageal junction cancer, neoadjuvant chemotherapy, FLOT regimen, DCF regimen, tumor regression, pathological response, Lavnikova criteria, multimodal treatment.

Introduction

Cardioesophageal junction cancer (CEJC) represents a distinct oncological entity with increasing global incidence over recent decades [2], [8]. Tumors localized at the gastroesophageal junction are characterized by aggressive biological behavior, early lymphatic dissemination, and a high probability of locoregional invasion at the time of diagnosis [6], [7]. Due to the anatomical complexity of the transition zone between the esophagus and stomach, radical surgical treatment alone often fails to ensure adequate oncological control, particularly in patients with stage III disease [5].

Current evidence indicates that multimodal treatment strategies significantly improve outcomes in locally advanced gastroesophageal malignancies. Neoadjuvant chemotherapy has been shown to increase R0 resection rates, reduce tumor volume, and improve overall survival compared with surgery alone [1], [4]. The FLOT regimen, in particular, demonstrated superior survival outcomes in the FLOT4-AIO trial and is currently considered a standard perioperative treatment approach in advanced gastric and gastroesophageal junction cancers [1]. Similarly, DCF-based regimens have shown substantial tumor response rates in advanced disease settings [9].

Despite these advances, variability in clinical and pathological response remains a significant challenge. The degree of tumor regression and post-treatment pathomorphosis differs among patients depending on tumor biology, stage, and histological phenotype [3], [7]. Therefore, further evaluation of the effectiveness of neoadjuvant chemotherapy in specific clinical populations with cardioesophageal junction cancer remains highly relevant for optimizing therapeutic strategies and improving oncological outcomes.

Aim of study

To evaluate the clinical and pathological effectiveness of neoadjuvant chemotherapy using FLOT and DCF regimens in patients with locally advanced cardioesophageal junction cancer.

Materials and Methods

A total of 47 patients (18.1%) with locally advanced cardioesophageal junction cancer (stage IIIb–IVa) received neoadjuvant chemotherapy based on standard oncological indications. Chemotherapy was administered according to the FLOT regimen (mean of 4 cycles, 15-day interval) or the DCF regimen (4–6 cycles, 21-day interval).

Treatment response was assessed 2–3 weeks after completion of four chemotherapy cycles using multislice computed tomography (MSCT) or positron emission tomography–computed tomography (PET-CT). Additionally, repeat histological examination of tumor biopsy specimens was performed to evaluate therapeutic pathomorphosis according to Lavnikova's criteria.

Clinical response parameters included complete regression, partial regression, disease stabilization, and progression. Subjective improvement was assessed based on reduction of dysphagia, pain syndrome, and signs of pathological ascites. Adverse events were recorded and graded according to toxicity severity, and supportive therapy was administered when necessary.

Considering the high probability of extensive local tumor spread based on primary diagnostic findings, 47 (18.1%) patients received neoadjuvant chemotherapy (NACT) according to the FLOT or DCF regimens. Chemotherapy according to the FLOT regimen was administered for an average of 4 cycles with 15-day intervals. In the DCF regimen, the interval was 21 days, and the treatment duration ranged from 4 to 6 cycles. Neoadjuvant chemotherapy was mainly performed in patients with stage IIIb and IVa disease.

Evaluation of treatment response was carried out 2–3 weeks after completion of the fourth chemotherapy cycle using MSCT or PET-CT imaging, along with repeated histological examination of biopsy specimens. According to follow-up MSCT or PET-CT findings, overall treatment effectiveness was observed in 87.2% (41) of patients (Table 1).

Table 1. Results of Neoadjuvant Chemotherapy in CEJC, n=47

Parameters	Absolute	%
Complete regression	9	19.1
Partial regression	32	68.0
Stabilization	3	6.4
Progression	3	6.4
Total	47	100

According to the obtained data, complete regression was observed in 19.1% of patients, while partial regression occurred in 68.0%. Disease stabilization was noted in 3 (6.4%) patients. Disease

progression was recorded in 6.4% (3) of cases. In these patients, after four chemotherapy cycles, the treatment regimen was changed and continued for an additional four cycles.

During neoadjuvant drug therapy, adverse events were observed in 27 (59.4%) patients, including grade III toxicity in 4.2% of cases. All adverse events were managed successfully with supportive symptomatic therapy (Fig. 1).

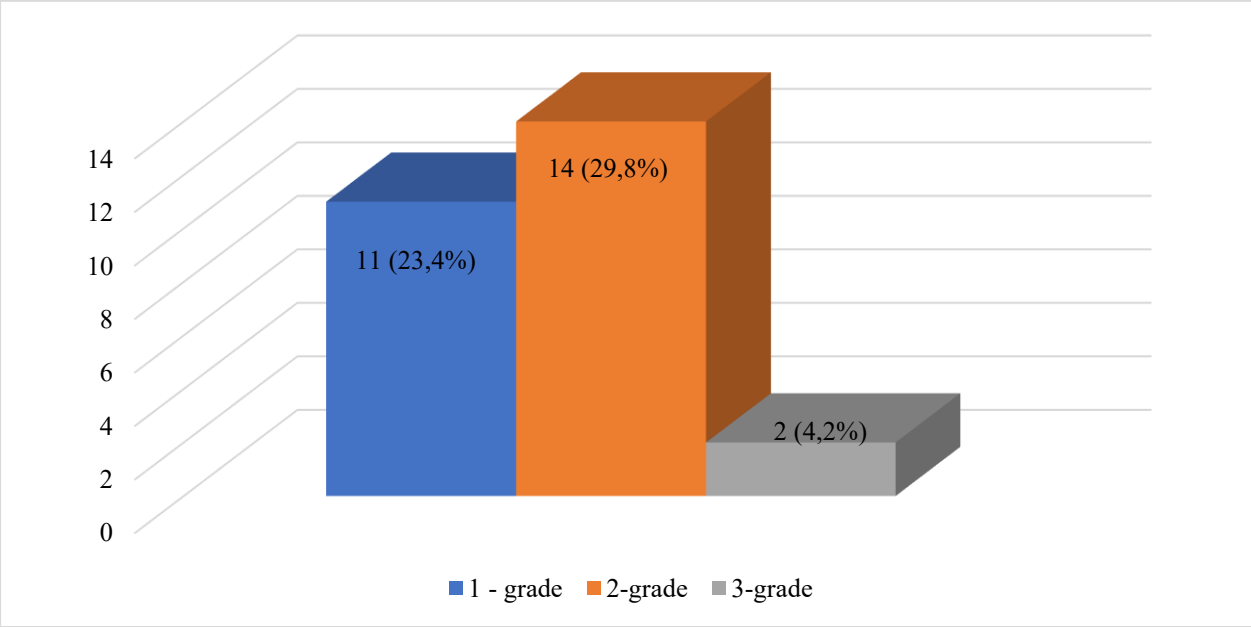

Figure1. Severity of adverse events during NACT in CEJC patients.

In addition to objective assessment of tumor response during NACT, subjective evaluation included reduction of dysphagia and disappearance of signs suggestive of pathological ascites. Improvement in dysphagia was noted in 23 of 47 patients (48.9%), and reduction in pain syndrome was observed in 12 (25.5%) patients.

Repeated histological examination of biopsy specimens to assess post-treatment effect according to Lavnikova's criteria demonstrated grade III–IV therapeutic pathomorphosis in 12.8% of patients (Fig. 4.5). In most cases, grade II tumor cell pathomorphosis was identified, indicating a significant but not definitive role of neoadjuvant therapy in cardioesophageal junction cancer (Fig. 4.6)

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