



CLINICOPATHOLOGICAL FACTORS ASSOCIATED WITH 10-YEAR SURVIVAL FOLLOWING RADICAL SURGERY FOR GASTRIC CANCER

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ABSTRACT

Despite continuous advances in multimodal treatment, gastric cancer remains one of the leading causes of cancer-related mortality worldwide. Radical surgery is the cornerstone of treatment for locally advanced gastric cancer; however, only a limited proportion of patients achieve long-term survival exceeding 10 years. Conventional TNM staging does not fully explain differences in long-term outcomes among patients with similar disease stages.

Relevance

Despite continuous advances in multimodal treatment, gastric cancer remains one of the leading causes of cancer-related mortality worldwide. Radical surgery is the cornerstone of treatment for locally advanced gastric cancer; however, only a limited proportion of patients achieve long-term survival exceeding 10 years. Conventional TNM staging does not fully explain differences in long-term outcomes among patients with similar disease stages. Therefore, comprehensive evaluation of clinicopathological characteristics associated with prolonged survival is essential for improving prognostic assessment, optimizing surgical treatment strategies, and developing personalized postoperative management algorithms.

Objective of the Study

To identify clinicopathological factors associated with 10-year survival following radical surgical treatment for locally advanced gastric cancer and to evaluate their prognostic significance for long-term outcomes.

Materials and Methods

A retrospective cohort study included **267 patients** with locally advanced and disseminated gastric cancer who underwent surgical treatment at the **N.N. Blokhin National Medical Research Center of Oncology (Moscow, Russian Federation)** between **1999 and 2011**. The study population consisted of **164 men (61.4%)** and **103 women (38.6%)**, with a mean age of **53.8 ± 10.4 years** (range 24–74 years).

Patients were divided into three groups according to survival duration: **62 patients (23.3%)** who survived for more than **10 years**, **106 patients (39.8%)** who survived **5–10 years**, and **99 patients (36.9%)** who survived less than **5 years** after radical treatment and served as the control group.

Clinicopathological variables included age, sex, tumor localization, Borrmann classification, Lauren histological type, tumor differentiation grade, pathological TNM stage, lymph node involvement, type of radical surgery, and immunohistochemical expression of **Ki-67, VEGFR, p53, and BCL-2**. Tumor invasion corresponded to **T3 in 42.8%, T4a in 36.4%, and T4b in 20.7%** of patients. Statistical analysis was performed to determine prognostic factors associated with long-term survival.

Results and Discussion

Among patients with locally advanced gastric cancer, **63.2%** achieved five-year survival, whereas **23.3%** remained alive for more than ten years. Female patients and individuals younger than 60 years demonstrated significantly better long-term outcomes than older patients and males.

The intestinal type according to Lauren classification was significantly associated with prolonged survival. Median overall survival reached **94.7 months** in patients with intestinal-type gastric cancer compared with **51.3 months** in diffuse-type tumors and only **15.4 months** in the control group. Poorly differentiated tumors (G3), diffuse histological type, advanced local tumor invasion, and extensive lymph node metastases were associated with significantly worse prognosis.

Gastrectomy was the predominant surgical procedure among long-term survivors, accounting for **88.1%** of patients surviving more than ten years, whereas subtotal gastric resections were performed considerably less frequently. Complete radical (R0) resection remained one of the principal determinants of prolonged survival.

Immunohistochemical analysis demonstrated statistically significant associations between long-term survival and the expression of **Ki-67, VEGFR, p53, and BCL-2** ($p \leq 0.002$). Incorporation of these biological markers together with clinicopathological characteristics substantially improved prognostic assessment beyond conventional TNM staging and enabled more accurate stratification of patients according to long-term survival probability.

Based on the identified prognostic factors, recommendations for individualized risk assessment and postoperative follow-up were developed and introduced into the clinical practice of the **Tashkent Regional Branch of the Republican Specialized Scientific and Practical Medical Center of Oncology and Radiology**. Their implementation improved multidisciplinary treatment planning and facilitated personalized management of patients with locally advanced gastric cancer.

Conclusions

Ten-year survival following radical surgery for locally advanced gastric cancer depends on a combination of clinicopathological, surgical, and biological factors rather

than TNM stage alone. Female sex, age below 60 years, intestinal histological type, better tumor differentiation, lower lymph node involvement, radical gastrectomy, and favorable immunohistochemical profiles were independently associated with prolonged survival. The integration of these parameters into routine clinical practice allows more accurate prognostic evaluation, supports individualized therapeutic decision-making, and may improve long-term outcomes in patients with locally advanced gastric cancer

