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The importance of primary gastric cancer location in 5-year survival rate

KEYWORDS: Stomach Neoplasms; Survival Rate; Gastrectomy

ABSTRACT

Gastric cancer is the second largest cause of cancer-related death. The aim of this study was to review 5-year survival rate with potentially curative gastric resections connected to primary gastric cancer location. From 1990 to 2000, 105 patients (73 men and 32 women) were treated for gastric adenocarcinoma at the Surgical Clinic in Nis. Patients were divided into three groups: group I - patients with proximal tumor location; group II - fundus and corpus; and group III - antrum and pylorus. Kaplan- Meier survival curve was used to analyze statistic hazard among different gastric cancer locations. Total gastrectomy was done in 30 (28.57%) patients with tumors in the proximal stomach. Subtotal gastrectomy was performed in 75 (71.43%) patients. Twenty-five patients received postoperative adjuvant chemotherapy. Eighteen patients received adjuvant radiotherapy. The most common tumor location was antrum and pylorus (73.34% patients). The mean number of months of patients' follow-up was 38.2, range: 0.3-68 months. The 5-year survival rate was 21.42% for proximal stomach, 28.57% for corpus and fundus, and 50.65% for antrum and pylorus. The optimum surgery for gastric cancer includes complete tumor removal with clear margins and regional lymphadenectomy. The site of the primary tumor appeared to affect survival with better effect for distal gastric cancer. Patients who required a total gastrectomy tended to have worse survival rate than patients undergoing subtotal gastrectomy.

INTRODUCTION

The past decade has seen many advances in knowledge about gastric cancer. Notably, tumor biology and lymphatic spread are now better understood, and treatment by surgical and medical oncologists has become more standard (1). Worldwide, gastric cancer is the second largest cause of cancer-related death (2). The disease is most common in Japan and China; in Europe the annual incidence is 12-15 per 100 000 (3,4). During the past 50 years, incidence of and mortality from gastric cancer have decreased worldwide, especially in developed countries (1,2,5).

In spite of evidence improvement in gastric cancer diagnosis and treatment controversies exist with regard to the extent of gastric resection and the role of extended lymph node dissections. Effective postoperative adjuvant therapies remain to be defined, and novel neoadjuvant approaches are currently considered investigational. Even after potentially curative gastric resections, disease recurrence develops in at least 80% of patients (6).The aim of this study was to review our experience in 5-year survival rate with potentially curative gastric resections, connected to primary gastric cancer location.

PATIENTS AND METHODS

Between 1990-2000, 105 patients were treated for gastric adenocarcinoma at the Surgical Clinic in Niš. Patients with a diagnosis of primary gastric lymphoma or primary gastric sarcoma were excluded. Patients undergoing palliative resections for stage IV disease were also excluded from the analysis. Patients experiencing an operative death within 30 days of surgery were excluded to avoid the confounding influence of their early death on analysis of factors affecting survival.

Patients were divided into three groups: Group I - patients with the proximal tumor location; Group II - (fundus and corpus); and Group III (antrum and pylorus). Kaplan-Meier survival curve is used to analyze statistic hazard among the different gastric cancer locations. For the purpose of this study, curative resection was defined as resection of all gross disease with no evidence of distant metastases and histologically negative resection margins.

RESULTS

The study group included 73 (69.52%) male patients and 32(30.48%) female patients. There were 69 (65.71%) patients in the <65-year-old group (younger) and 36 (34.29%) in the 65-year-old group (older) treated for gastric carcinoma. Operative procedures varied on the basis of site and extent of the primary tumors. Total gastrectomy was done in 30 (28.57%) patients with tumors in the cardia and proximal stomach. Subtotal gastrectomy was performed in 75 (71.43%) patients.

Twenty-five (23.80%) patients received postoperative adjuvant chemotherapy. Eighteen (17.14%) patients received adjuvant radiotherapy only. All chemotherapy protocols included infusional 5-fluorouracil as the main chemotherapy component (Table 1).

Table 1. Patient's characteristics and postoperative therapy

	N(%)
Gender	
Male	73 (69.52%)
Female	32(30.48%)
Age	
<65 years	69(65.71%)
≥65 years	36(34.29%)
Type of surgery	
Total gastrectomy	30(28.57%)
Subtotal gastrectomy	75(71.43%)
Adjuvant chemotherapy	
Yes	25(23.80%)
No	80(76.20%)
Adjuvant radiotherapy	
Yes	18(17.14%)
No	87(82.86%)

The most common tumor location was antrum and pylorus 77 (73.34%) patients. Poorly differentiated gastric cancer was found in 37 (35.23%) patients and moderately differentiated in 36 (34.29%) patients. They were the most frequently observed histological gastric cancer type. The most frequently observed type of tumor by Lauren classification was intestinal type found in 71 (67.62%) patients. The majority of patients 63 (60%) were presented with (T 3/4) tumors. Absence of cancer lymph node involvement was observed in

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58 (55.23%) patients.
The mean number of months of patient follow-up was 38.2 with range 0.3-68 months. The 5-year survival rate was 21.42% patients for proximal stomach, 28.57% for corpus and fundus and 50.65% patients for antrum and pylorus.

Table 2. Outcome by cancer localization

Median follow-up	38,2 (months)
Range of follow-up	0.3-68 (months)
5-year survival rate	
Proximal stomach	21.42%
Corpus/Fundus	28.57%
Antrum/Pylorus	50,65%

Kaplan-Meier analysis showed significant statistic difference for overall survival among patients with gastric cancer based on different location ($p<0.001$) (Figure 1).

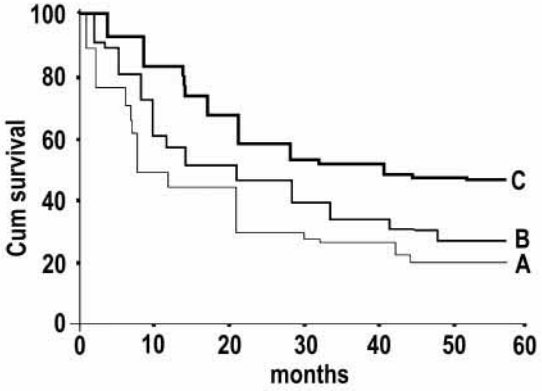

Figure 1. Overall survival among patients based on different tumor location (A) Proximal stomach, (B) fundus / corpus, (C) antrum / pylorus

DISCUSSION

During the past 60 years, there have been striking changes in the incidence and distribution of primary gastric carcinoma in the United States. From 1930 to 1980, the incidence of gastric cancer decreased from 38 to 10 per 100,000 for men and from 30 to 5 per 100,000 for women. Another extremely relevant change in the epidemiologic study of gastric cancer is related with the distribution of the primary lesion within the stomach. Between 1930 and 1970, most cases originated in the distal stomach and were intestinal-type, well-differentiated cancers. Since 1976 there has been a steady rise in the incidence of poorly differentiated, diffusely infiltrating cancers of the gastro esophageal junction and cardia. The reasons for this rapid increase in aggressive proximal malignancies remain unclear (7).
Prognostic factors analyzed for effect on survival included age, sex, race, signs and symptoms, tumor location, depth of penetration, lymph node status, Lauren classification, histological grade, micro vessel invasion, type of resection performed, and use of postoperative chemotherapy and radiation therapy (6,8).
In this series, cancers originating in the proximal stomach were observed in 14 (13.33%) of the cases. This is not consistent with recent reports in which the incidence of proximal cancers ranges from 25% to 40% and higher, but it is in relation with reports published before 1988 (1,4,5). Total gastrectomy was required in 28.57% patients. The 5-year survival rate was 21.42% patients for proximal stomach.
Michelassi et al. (9) demonstrated significant reductions in 5- and 10-year survival rates for cancers located in the cardia and just below the gastroesophageal junction.
Similarly, Sanchez-Bueno et al. (10) reported reduced survival for proximal stomach cancers and an independently decreased survival rate after proximal gastrectomy. In their series, the 5-year survival rate for a lesion in the proximal stomach was 17%, and the 5-year survival rate after proximal gastric resection was 14%. Harrison et al (11) from the Memorial Sloan-Kettering Cancer Center addressed this specific question in a recent report comparing outcomes of patients with proximal gastric cancers relative to patients with distal gastric cancers. The median survival of patients with proximal cancers was 47 months, and the 5-year overall survival rate was 42%, whereas the median survival of patients with distal gastric cancers was 106 months and the 5-year survival rate was 61%. More importantly, the site of the primary tumor appeared to affect survival, with a worse outcome because the location of the tumor moved proximally. The 5-year survival rate on the basis of location was 62% for antral cancers, 59% for body tumors, 52% for cancers in the proximal third, and 22% for tumors located at the gastroesophageal-junction. Our study showed that the site of the primary tumor appeared to affect survival.
The 5-year survival rate on the basis of location was (50.65%) for pylorus and antral cancers, (28.57%), for body and fundus tumors, and (21.42%) for cancers in the proximal stomach. We found no significant difference in survival between patients with cancers in the fundus of the stomach compared with antral lesions. Patients who required a total gastrectomy tended to have a worse survival rate than patients undergoing subtotal gastrectomy, although the difference did not reach statistical significance. We found no evidence to support the routine use of total gastrectomy for lesions of the distal fundus or antrum. This is consistent with 3 recent prospective randomized trials that have addressed the extent of gastric resection for patients with distal gastric cancers (12,13). In the largest of these trials by Bozzetti et al. (13) 315 patients treated with subtotal gastrectomy had a 5-year survival rate of 65.3%, and 303 patients treated with total gastrectomy had a 5-year survival rate of 62.4%. The conclusions from all of these studies were that use of total gastrectomy did not improve survival rates for patients with distal gastric cancers as long as clear margins were achievable with subtotal gastrectomy.
Our surgeons would include removal of the perigastric nodes along the lesser and greater curvatures plus nodes along the left gastric artery, common hepatic artery, and splenic artery without routine removal of the spleen or distal pancreas, thus performing the so-called conservative D2dissection. The average number of lymph nodes removed was 15 and is consistent with current American Joint Committee on Cancer AJCC guidelines requiring examination of 15 or more nodes for adequate staging of gastric cancer. This is particularly important because the number of positive lymph nodes was a powerful predictor of survival (14-15).

CONCLUSION

Gastric cancer is one of the most common gastrointrestinal neoplasms. The optimum surgery for gastric cancer includes complete tumor removal with clear margins and regional lymphadenectomy. The site of the primary tumor appeared to affect survival with a better outcome for distal gastric cancers (the 5-year survival rate was 50.65% for pylorus and antral cancers). Patients who required a total gastrectomy tended to have a worse survival rate than patients undergoing subtotal gastrectomy.

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