

GASTRIC CANCER: SURVIVAL RATES WITH SPECIAL REFERENCE TO "EARLY GASTRIC CANCER"

KIMIYUKI KATO,* TSUYOSHI KITO, HIROAKI NAKAZATO,*
SEIICHI MIYAISHI* AND EIKICHI YAMADA*

Department of Surgery, Aichi Cancer Center Hospital, Nagoya, Japan
* *Lecturer of Nagoya University of School of Medicine*

ABSTRACT

From January 1965 to December 1972, 1449 patients who underwent laparotomy for gastric cancer at the Aichi Cancer Center Hospital were studied. Of these 1449 patients, 895 had a curative gastrectomy (partial or total gastrectomy with removal of the second group lymph nodes that are classified as NX+b according to the TNM classification). The five year survival rate for the 895 patients was 62.5%. This favorable result seems partly due to the fact that the incidence of early gastric cancer was 25% of all operated cases, but, on the other hand, the lower incidence of death observed in patients with early gastric cancer suggests that gastrectomy with removal of the second group lymph nodes is adequate for treatment of gastric cancer.

For patients with early gastric cancer, the mortality rate of other diseases after recovery from operation did not differ from people without gastric cancer.

In early gastric cancers, no evidence of recurrence has been observed so far in 4 patients who had tumor cells at the lines of resection. The reason for finding is not clear. Early gastric cancer may behave in a more benign fashion than advanced gastric cancer.

PREFACE

Gastric cancer in Japan accounts for about 40% of all malignancies. Furthermore, about 30% of men over thirty years of age die of gastric cancer in Japan⁽¹⁾. The most effective method of treatment for gastric cancer is surgery. Therefore, it is important to improve surgical results for gastric cancer in order to further decrease the mortality of this disease. This paper presents surgical results of patients with gastric cancer with special reference to prognoses of patients with early gastric cancer following gastrectomy.

MATERIALS

From January 1965 to December 1972, 1449 patients who underwent laparotomy for gastric cancer at the Aichi Cancer Center Hospital were studied (Table 1). Of these 1449 patients, 895 had a curative gastrectomy. These 895 had no

加藤王千, 紀藤 毅, 中里博昭, 宮石成一, 山田栄吉

Presented at the 11th International Cancer Congress, Florence, 20-26, October, 1974.

(Table 1) GASTRIC CANCER A.C.C. Hospital

Curative Gastrectomy	895
Non-curative Gastrectomy	258
Gastro-jejunostomy	101
Gastrostomy or Jejunostomy	22
Exploratory Laparotomy	173
Total	1449

distant metastases and underwent gastrectomy with removal of the second group lymph nodes⁽²⁾ that are classified as NX+b according to TNM classification.⁽³⁾ Two hundred and fifty eight underwent non-curative gastrectomy. Some of these 258 patients had a palliative gastrectomy and the rest of these were found by histopathology to have had remaining tumor cells after operation. One hundred and one had a gastrojejunostomy, 22 had a gastostomy or jejunostomy and 173 had an exploratory laparotomy. All of the patients underwent follow up observation.

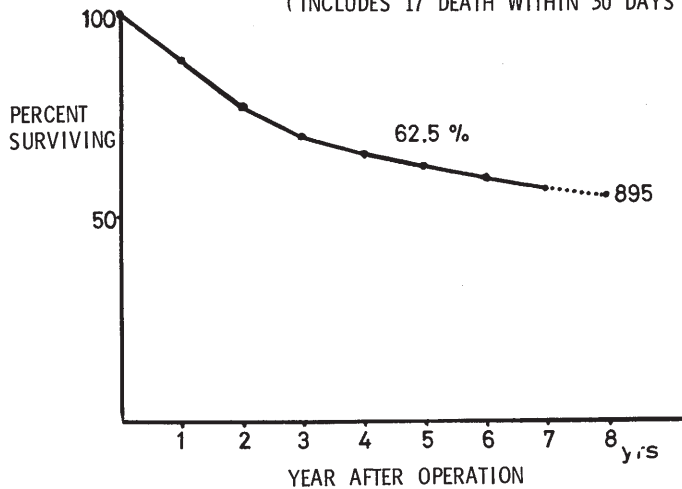
RESULTS

Survival Rates

Seventeen or 1.9% of the 895 patients who underwent curative gastrectomy died within 30 days after operation. The five year survival rate for the 895 patients was 62.5%, computed by actuarial method⁽⁴⁾ without correction for age (Fig. 1).

(Fig. 1) SURVIVAL CURVE FOR PATIENTS
HAVING CURATIVE GASTRECTOMY

(INCLUDES 17 DEATH WITHIN 30 DAYS OF OPERATION)

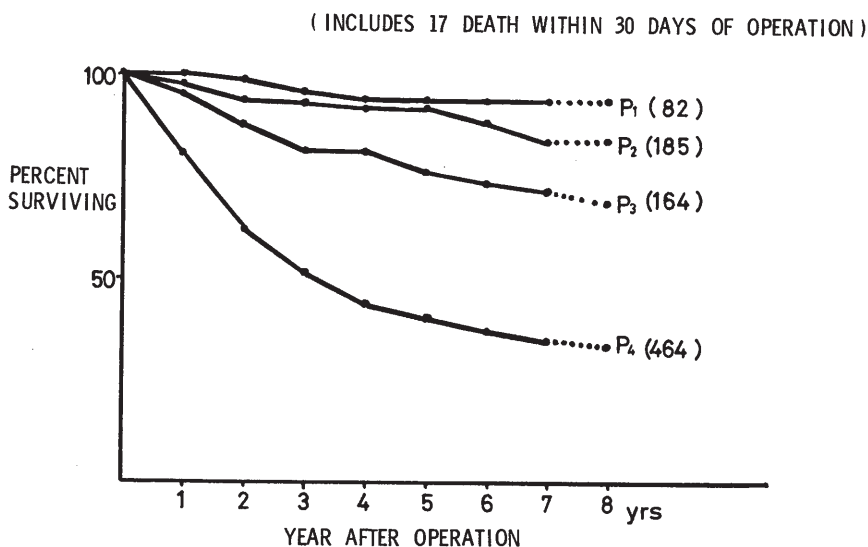


The distribution of the patients according to histopathological categories is P1:82, P2:185, P3:164, P4:464. Five year survival rates according to histopathological categories for the patients are P1:93.7%, P2:92.3%, P3:76.0%, P4:40.2% (Table 2). Their survival curves are shown in Fig. 2. In 267 of the 895 patients, carcinoma involved the mucosa or/and submucosa but did not reach the muscularis propria (category P1 and P2). Such a lesion is called an "Early Gastric Cancer". The five year survival rate of the 267 patients with early gastric cancer was 92.7%.

(Table 2) FIVE YEAR SURVIVAL RATES FOR PATIENTS HAVING CURATIVE GASTRECTOMY (INCLUDES 17 DEATH WITHIN 30 DAYS OF OPERATION)

Histopathological Category (TNM Classification)	No. of Patients	5 Year Survival
P ₁	82	93.7%
P ₂	185	92.3%
P ₃	164	76.0%
P ₄	464	40.2%
Total	895	62.5%

(Fig. 2) SURVIVAL CURVES FOR PATIENTS HAVING CURATIVE GASTRECTOMY BY HISTOPATHOLOGICAL CATEGORY



Death of Patients with Early Gastric Cancer

Until April 1974, 18 of 267 patients with early gastric cancer had died later than 30 days postoperatively (Table 3). Two of these 18 patients died of unknown cause and 2 had another primary cancer and it was impossible to determine which of the cancers caused their death. Eight patients died of other diseases. Of these 8 patients, 4 died of cardiovascular disease, one died of a cerebrovascular accident, one of maxillary cancer, one of pneumonia and one of peritonitis. This distribution of the causes of death was not significantly different from that of the over all nationwide distribution, calculated from statistical tables of causes of death in Japan in 1970.⁽¹⁾

(Table 3) CAUSES OF DEATH OF PATIENTS WITH
EARLY GASTRIC CANCER

4 : early postoperative deaths (within 30 days)
2 : peritonitis
1 : acute renal shut down
1 : cardiac infarction
18 : deaths later than 30 days
2 : unknown cause
2 : co-existing primary cancer
8 : other diseases
4 : cardiovascular diseases
1 : cerebrovascular accident
1 : maxillary cancer
1 : pneumonia
1 : peritonitis
6 : recurrent gastric cancer
2 : hepatic metastases
1 : pulmonary metastases
1 : bone metastases
1 : lymph node metastases
1 : local recurrence







Six of the 18 patients died of recurrent gastric cancer (Table 4). In 4 of these 6 patients there were hematogenous metastases, such as metastases in the liver, lung or bone; in one metastases to lymph nodes and in one local recurrence.

Patients with Early Gastric Cancer Having Non-curative Gastrectomy

From January 1965 to December 1972, 6 patients with early gastric cancer had a non-curative gastrectomy (Table 5). One of these 6 patients had distant lymph node metastases, and died one year and 5 months after operation. One of the 6 had inadequate removal of the lymph nodes but is still alive, 4 years and 11 months after operation. The remaining 4 patients had tumor cells at the lines of resection, caused by inadequate resection at the distal margin. In these 4 patients,

one patient died of gallbladder cancer but no tumor was found in the stomach at autopsy and 3 patients were alive without evidence of recurrence as of April 1974.

(Table 4) PATIENTS WITH RECURRENT TUMOR (EARLY GASTRIC CANCER)







Case	Region	Histopath. Category	Regional Lymph Nodes	Survival Period	Form of Recurr.
55 yrs. M		P ₂	NX + a	1 yr. 11 mos.	hepatic meta.
56 yrs. M		P ₂	NX-	1 yr. 9 mos.	hepatic meta.
55 yrs. M		P ₂	NX-	6 yrs. 7 mos.	pulmonary meta.
56 yrs. M		P ₁	NX-	3 yrs. 1 mo.	bone meta.
50 yrs. M		P ₂	NX + a	2 yrs. 7 mos.	lymph node meta.
55 yrs. M		P ₂	NX-	5 yrs. 6 mos.	local recurr.

COMMENT

Among the patients in this series there was a high incidence of early gastric cancer of category P₁ and P₂. In this group with early gastric cancer, a favorable survival rate was achieved. Therefore, the recent surprisingly improved survival rate for patients with gastric cancer seems partly due to the high incidence of 25% of early cancer among our operated patients, as a result of the recent progress in the diagnosis of gastric disease.

The lower incidence of death observed in patients with early gastric cancer

(Table 5) PATIENTS WITH EARLY GASTRIC CANCER HAVING
NON-CURATIVE GASTRECTOMY

Case	Region	Histopath. Category	Regional Lymph Nodes	Reason Gastrectomy Non-curative	Period Since Op.	Post-op. Course
49 yrs. F		P ₂	NX + c	NX + c	died after 1 yr. 5 mos.	local recurr.
47 yrs. M		P ₂	NX + b	n2 lymph nodes not all removed	alive after 4 yrs. 11 mos.	healthy
73 yrs. F		P ₂	NX-	tumor cells at lines of resection	died after 1 yr. 8 mos.	gallbladder ca. no ca. in the stomach
70 yrs. M		P ₁	NX-	tumor cells at lines of resection	alive after 3 yrs. 11 mos.	healthy
61 yrs. F		P ₂	NX-	tumor cells at lines of resection	alive after 2 yrs. 6 mos.	healthy
63 yrs. M		P ₂	NX + a	tumor cells at lines of resection	alive after 1 yr. 10 mos.	healthy

suggests that gastrectomy with removal of the second group lymph nodes is adequate for treatment of gastric cancer.

Unfortunately, a few patients with early gastric cancer died after operation. In order to improve surgical results in the treatment of gastric cancer, it is important to analyse the causes of death of these patients. In patients with early gastric cancer, the distribution of the causes of death was not significantly different from that of the over all nation-wide distribution, calculated from statistical tables of causes of death in Japan in 1970. Therefore, it seems that curative gastrectomy itself does not influence the mortality rate of other diseases following recovery from operation.

It is reasonable that the incidence of hematogenous metastases as the cause of

recurrence of early gastric cancer was higher than that of more advanced gastric cancer of category P3 and P4. From now on, to obtain better surgical results for early gastric cancer, it will be necessary to offer adjuvant chemotherapy⁽⁵⁾ as well as new surgical techniques, for example the no-touch isolation method.⁽⁶⁾

The survivors of patients with early gastric cancer having non-curative gastrectomy suggest that early gastric cancer grows slowly and it may result in late appearance of signs of recurrence. In some cases no remaining tumor cells may be found in the stump, in spite of histological evidence of cancer cells at the margin of the resected surgical specimen. A patient with early gastric cancer, who has tumor cells at the lines of resection, seldom dies shortly after operation and should not be thought to have a hopeless prognosis. Patients with advanced gastric cancer are in quite a different category. During the past 8 years, 50 patients with advanced gastric cancer who underwent gastrectomy in our clinic were found to have tumor cells at the lines of resection. More than 70% of the patients died within 3 years and the median survival period was 18 months.

CONCLUSION

The crude 5 year survival rate for patients who underwent curative gastrectomy was 62.5%, and this favorable result seems partly due to the fact that the incidence of the early gastric cancer was 25% of all operated cases, owing to recent progress in endoscopy and radiology in the diagnosis of gastric disease as well as our mass survey campaign.

For patients with early gastric cancer, the mortality rate from other diseases after recovery from operation was not different from people without gastric cancer.

In early gastric cancers, no evidence of recurrence has been observed so far in 4 patients who had tumor cells at the lines of resection. The reason for this finding is not clear. Early gastric cancer may behave in a more benign fashion than advanced gastric cancer.

We hope in the future to be able to operate in an increasing proportion of cases of gastric cancer in its early stages. At present the 5 year survival rate for such cases is almost 95% in our clinic⁽⁷⁾.

ACKNOWLEDGEMENT

The authors wish to thank President Dr. Hajime Imanaga for his advice.

REFERENCES

- 1) Health and Welfare Statistics Division, *Vital Statistics 1970 Japan. Vol. 2*, Ministry of Health and Welfare, Tokyo, 1972, p266. (in Japanese)
- 2) Japanese Research Society for Gastric Cancer, The general rules for the gastric cancer study in surgery, *Jap. J. Surg.*, 3, 61, 1973.
- 3) Commission on Clinical Oncology, *TNM Classification of Malignant Tumours*, Imprimerie G. de Buren S. A., Geneva, 1968, P27.

- 4) U. S. Public Health Service, *National Cancer Institute Monograph 15. International Symposium on End Results of Cancer Therapy*, Washington, 1964.
- 5) Imanaga, H., The recent progress in cancer therapy: surgical therapy, *Shindan to Chiryō*, **60**, 1903, 1972. (in Japanese)
- 6) Turnbull, R. B., Kyle, K., Watson, F. B. and Spratt, J., Cancer of the colon: the influence of the no-touch isolation technic on survival rates, *Ann. Surg.*, **166**, 420, 1967.
- 7) Yamada, E., Nakazato, H., Koike, A., Suzuki, K., Kato, K. and Kito, T., Surgical results for early gastric cancer, *Int. Surg.*, **59**, 7, 1974.