

Histomorphologic Characteristics of Gastric Cancer over 70 Years of Age

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Histomorphological specificity was assessed on the basis of study on the 65 resected specimens in old patients of more than 70 years of age. The operative procedures used were distal gastrectomy in 40, proximal gastrectomy in 2 and total gastrectomy in 23.

- 1) As for tumor location, there was no predominance of desired site on the gastric wall in older patients.
- 2) According to the analysis for histologic differentiation, well differentiated carcinoma was mostly common in older patients and high incidence of well differentiated carcinoma was seen in female.
- 3) Peritoneal dissemination arising from serosal invasion in older patients occurred in a few, especially in female. In contrast, serosal invasion of ssr, se, and sei was seen in 58.5%.
- 4) According to the types of infiltration (INF) and vascular invasion of lymph vessels (ly), INF γ and ly₃ were considerably a few in older patients.

In conclusion, the modes of cancer extension in older patients are a predominance of serosal invasion, not extending to peritoneal dissemination. Surgical treatment is warranted for a prolongation of survival time in view of pathological aspect.

INTRODUCTION

According to elongation of life-span, surgical indication for gastric cancer in older patients has become widely extended. The question arises as to whether the

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specificity of gastric cancer on clinicopathological aspects in the elderly exists or not. Proper treatments in accordance with its specificity, if would be confirmed, are required. This report presents our experience on 65 patients with gastric cancer of more than 70 years of age. The aim of this study is to clarify the clinicopathological characteristics of gastric cancer in older patients over 70 years of age.

MATERIAL AND METHOD

During the last eight years, reviewed from 1976 to 1981, 65 cases with gastric cancer of more than 70 years of age were operated upon in our Department. The age distribution was shown in Fig 1. There was a preponderance of men rather than female, 46 men and 19 female. The highest age was 82 years old. According to operative procedures, distal gastrectomy was employed in 40, proximal gastrectomy in 2 and total gastrectomy in 23. The resected specimen was opened along the greater curvature, fixed in 10% formalin and sectioned serially 0.5cm apart with a long axis along the center of lesions including serosa invasion.

Sections were stained with hematoxylin and eosin, the staging of gastric cancer were classified according to the degree of cancer involved as outlined in Table 1.

The cancer stage is expressed grossly and histologically. Capital letters was used to describe gross finding and small letters was used to describe histologic findings. S indicates the degree of serosal invasion, S₀: no serosal invasion, S₁: suspected serosal invasion, S₂: definite serosal invasion, S₃: invasion to continuous structures. N reveals the extension of lymph node involvement and designated as group in accordance with

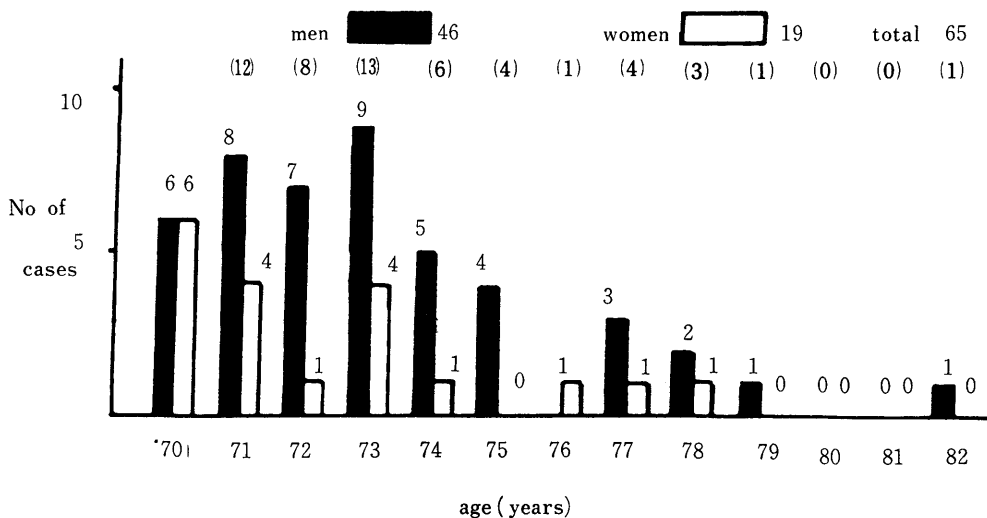


Fig 1. Yearly distribution of patients who underwent gastrectomy for the treatment of gastric cancer

cancer location. The lymph nodes of Group I, 2 and 3 are referred to as N_1N_2 and N_3 , N_0 : no suspected lymph node metastasis, N_1 : metastasis to lymph nodes of Group I, N_2 : metastasis to lymph nodes of Group II, N_3 : metastasis to lymph nodes of Group III, N_4 : metastasis to lymph nodes located beyond Group III.

H indicates the existence of liver metastasis. H_0 : no liver metastasis, H_1 : metastasis is limited to one lobe, H_2 : a few scattered metastases to both lobes, H_3 : numerous scattered metastases to both lobes. P also demonstrates the degree of disseminating peritoneal metastasis, P_0 : no metastases to the peritoneum, P_1 : metastasis to the adjacent peritoneum, P_2 : a few to several scattered metastases to the distant peritoneum, P_3 : numerous metastases to the distant peritoneum.

Tumor location in the stomach was expressed as a A, M and C. The stomach is separated into upper, middle and lower portion by drawing line between the corresponding trisecting points on the greater and lesser curvatures.

The primarily involved portion was only listed such as A, M and C. When the lesion are diffusely extended, it is expressed as a CMA.

The gross findings of extension modes of gastric cancer lesions were expressed as early type and advanced type. Early type was divided into Type I (protruded type), II (superficial type), which was more subdivided into 3 subtypes of IIa (elevated type), IIb (flat type) and IIc (decreased type), and III (excavated type). Advanced type was divided into 4 types according to Borrmann's classification.

The depth of cancer invasion into the gastric wall was histologically examined and the depth was expressed with a maximum cancer infiltration reached into the gastric wall layers such as the mucosa (m), submucosa (sm) muscularis propria (pm) subserosa (ss) and serosa (s). When cancer involves the subserosa, the term ss was used in addition to the mode of infiltration such as α (expansive cancer growth with well defined margin to adjacent tissue) β (intermediate between α and γ) and γ (infiltrative cancer growth without defined margin). The term se means serosal invasion exposed to peritoneal cavity and si means infiltration to other organs across the serosa.

When the findings of se and si coexisted, the term sei was used.

Vascular invasion to the blood vessels and lymph vessels were also examined histologically.

Table 1. Case distribution in accordance with gastric cancer stage.

Stage	men	women	total
I	8	3	11
II	7	3	10
III	10	4	14
IV	21	9	30
total	46	19	65

RESULTS

According to the classification of macroscopic staging, Stage IV disease was seen in 30 out of the 65 cases (46.2%), 21 male and 9 female. Stage IV disease in the elderly is

classified on the basis of metastases and/or invasion, that is H_{1-3} in 3, P_{1-3} in 13, S_3 in 19 and N_4 in 1, as shown in Table 1.

With regard to tumor location as outlined in Table 2, the tumors located in C numbered 18 cases (36.9%), M 16 cases, A 27 cases and CMA 4 cases. The preferable site in aged cancer was the antrium (A) but it was a preponderance of occurring in the cardia in male and of the antrum in female. Based on the macroscopic classification of gastric cancer lesion as listed in Table 3, early cancer in older patients numbered 10 out of the 65 (15.4%), 8 men (17.4%) and 2 female (10.5%). Detection in early stage tended to be facilitated in male rather than in female. The types of IIc and IIc + IIa in early stage were common.

In advanced cancer, Type I divided by Borrmann's classification was seen in 8 (14.5%), Type II in 16 (29.1%), Type III in 22 (40.0%) and Type IV in 6 (10.9%).

The remaining 3 were unclassified type. Ulcerative type in advanced cases was commonly revealed. The tendency toward forming ulceration in older patients was so common that Type IV lesion was a few in number. The Type IV carcinoma in man was dominant rather than in female.

Based on findings of the depth of cancer invasion on the gastric wall, m and sm invasion numbered 10 (15.4%), pm 8 (12.3%), ssa and $ss\beta$ 9 (13.8%), $ss\gamma$ and se 34 (52.3%) and si and sei 4 (6.2%) as shown in Table 4. Gastric cancer lesions in older patients seems more likely to extend at operation on the basis of the finding of depth of cancer invasion.

With regard to existence of metastases to the liver and peritoneum, dissemination to the peritoneum was seen in 13 out of the 65 (20%) and metastasis to the liver was seen only in 3 out of the 65. The lymph nodes were involved in 33 of the 65 (50.8%), 19 were in n_1 , 23 in n_2 , 9 in n_3 and 1 in n_4 . High incidence of lymph node involvement was seen in the elderly as shown in Fig 2.

In patients with serosal invasion, 13 (34.2%) had dissemination to the peritoneum although 33 (50.8%) showed serosal invasion of se or si . The modes of cancer infiltration and vascular invasion to the lymph and blood vessels were assessed as indicated in Fig 3. Cancer infiltration of γ -degree in older patients occupied in 18 of the 65 (27.7%). As for the degree of lymph vessel invasion, the findings of ly_0 - ly_1 were seen in 37

Table 2. Locations of the tumors

location	men	women	total
C	17	1	18
M	10	6	16
A	15	12	27
CMA	4	0	4
total	46	19	65

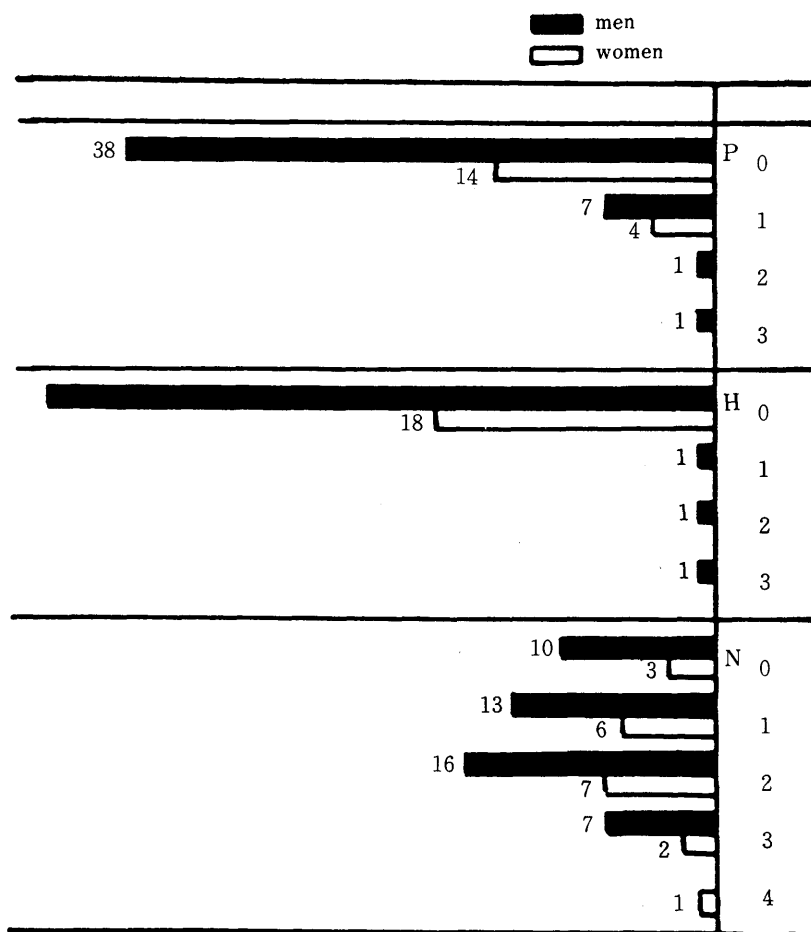
Table 3. Gross finding of the lesions of gastric cancer

Gross finding	men	women	total
early	8	2	10
Borr. 1	5	3	8
Borr. 2	11	5	16
Borr. 3	15	7	22
Borr. 4	5	1	6
others	2	1	3
total	46	19	65

Borr : Borrmann's classification

Table 4. The depth of cancer invasion on the gastric wall

		the depth of cancer invasion								total
		m	sm	pm	ss α	ss β	ss γ	se	si sei	
aged patients	men	2	6	6	0	5	0	25	2	46
	women	2	0	2	1	3	5	4	2	19
total		4	6	8	1	8	5	29	4	65



P:peritoneal dissemination
 H:hepatic metastases
 N:lymph node involvement

Fig 2. Gastric cancer patients in the aged, classified by the degree of peritoneal dissemination, hepatic metastases and lymph node involvement

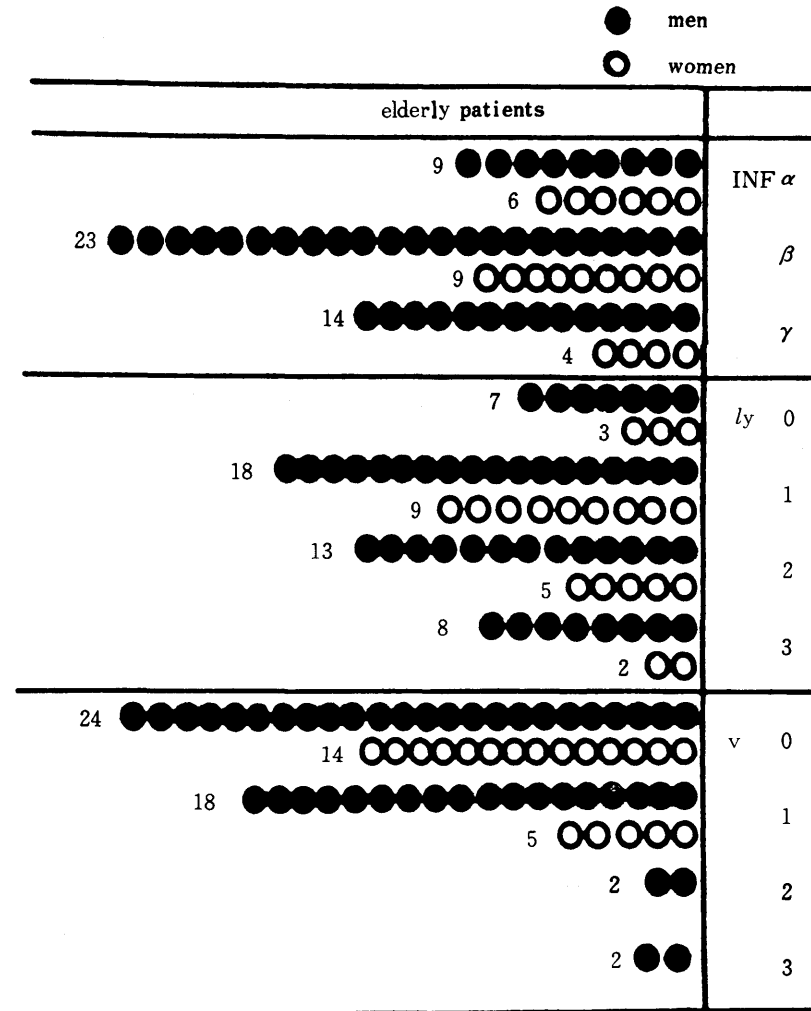


Fig 3. Gastric cancer patients in the aged, classified by the degrees of histologic infiltration, lymph vessel invasion and blood vessel invasion

(56.9%) and ly_3 in 10(15.4%). As for the degree of blood vessel invasion, the majority of the cases had a finding of v_0 .

As for the histological type of cancer, 11 was papillary adenocarcinoma, 10 tubular adenocarcinoma, 5 well differentiated type, 18 moderately differentiated type, 13 poorly differentiated type, 6 undifferentiated type and 2 signet-ring cell carcinoma.

DISCUSSION

Based on experience with surgery for gastric cancer of more than 70 years of age, the search for specificity in older patients with gastric cancer was aimed. The tumor location of the antrum(A) was common in older patients, as reported by others. ¹⁾²⁾ The cancer

extension ranged from the cardia to the antrum (CMA) is a few in older patients. In the present series, the tumor location of the antrum in female was preferred to in male. The incidence detected in the stage of an early gastric cancer in this series was low. It is conceivable that carcinoma of the stomach in older patients tends to allow the lesions to be localized. Thus, the type of Borrmann's IV is seen in a few. In this series, only a 9.1% of gastric cancer of more than 70 years of age revealed Borrmann's IV type lesion.

It is well known that curative resection of the stomach for the treatment of gastric cancer in older patients is restricted for its use by either extension of lymph node metastases³⁾⁴⁾ or spreading of peritoneal dissemination.²⁾⁵⁾

As a result of this study, it is certain that Stage IV disease in older patients mainly leads to development of the advancing serosal invasion (S₃), not being far extending lymph node metastases (n₄). It is our conviction that operative indication for the treatment of gastric cancer in older patients can be extended with an aid of extensive resection of the adjacent tissue of s₃. In this series, serosal invasion of ss_γ, se and sei was encountered in 58.5%.

High incidence of serosal invasion in this study is based upon the increase in frequency of carcinoma located in the cardia, which is more susceptible to serosal invasion. It is certain that resection of gastric cancer with serosal invasion is satisfactorily feasible with a high incidence of 50.8% in 33 with se and sei as a mode of serosal invasion among the 65 cases resected in the old patients. In contrast, the lesion of peritoneal dissemination in the aged rarely occurred. It appeared to be due to a difference in specifically biologic environment between younger and older patients.

Much work has been detailed concerning a varying mode of cancer extension between younger and older patients.

There was no difference in histologic differentiation between younger and older patients as would be expected but histologically well differentiation in adenocarcinoma was frequently seen in female.

With regard to the degrees of infiltration (INF) and lymph vascular invasion(ly), the lesions of INF γ and ly₃ were not commonly seen in the extension of the gastric cancer in the older patients.

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