

## Evaluation of Clinicopathological Analysis of the Early Gastric Cancer

Michio Sowa, M.D., Hiyoshi Ohkita, M.D., Mitsugu Nitta, M.D., Takayuki Yoshimoto, M.D., Hiroshi Matsuzawa, M.D., Atsushi Miki, M.D., Seiji Sugano, M.D., Toyoaki Aoki, M.D., Kenjin Kamino, M.D., and Kaoru Umeyama, M.D.

First Department of Surgery, Osaka City University Medical School, Osaka, Japan

Clinicopathological data obtained in 174 cases of early gastric carcinoma were reviewed. They covered 183 lesions composed of 88 intramucosal lesions (m) and 95 submucosal lesions (sm). Of the 183 lesions, 46 (25.2%) were of a protruded or an elevated type, and 135 (73.7%) of a depressed or an excavated type, while 2 were of a flat type. Thus, the depressed type (IIC) was predominant. Furthermore, of the 183 lesions, about 58% developed in the middle part (M) of the stomach, about 40% in the lower part (A), and slightly over 2% in the upper part (C).

Histologically papillary adenocarcinomas were of the protruded or elevated type and about 86% of poorly differentiated adenocarcinomas came under the depressed or excavated type. No metastasis occurred in any type when cancer cells remained within the mucosa. When cancer cells invaded the submucosa, the incidence of metastasis was 23/174 (13.2%) in early gastric cancer, and was somewhat higher in IIA + IIC type cancer. Lymph node metastases were noted in the primary ( $n_1$ ) or second ( $n_2$ ) group but not in the third group. These results suggest that resection of early gastric cancer should be coupled with cleaning the lymph nodes in the first 2 groups as a rule. The 5-year survival rate in our patients was 98%.

Early gastric carcinoma was classified histologically and its possible relation to intestinal metaplasia in the perifocal mucosa was sought by the Tes-tape method.

Early gastric carcinoma, as defined in 1962 by the Japanese Gastroenterological Endoscopy Society, is that in which cancer cell infiltrations are restricted to the mucosa (m) and submucosa (sm), regardless of the presence of metastasis and the size of tumors. The number of early gastric cancer cases

totalled 183 lesions in 174 cases in our clinic at the Osaka City University, during the period from 1967 to 1979. The purpose of this paper is to outline the results of the taxonomical work on gastric carcinoma based on some clinicopathological features.

### Early Gastric Cancer Cases

The frequencies of early gastric cancer lesions classified macroscopically are summarized in Table 1. Of the 183 lesions, 46 (25.2%) were of a protruded or an elevated type and 135 (73.7%) of a depressed, excavated type. (Only 2 were of a flat type.) The depressed type was thus predominant. Of the 135 lesions of the depressed type, those of type IIC accounted for the largest percentage as has also been reported by other investigators [1-3]. When classified by the depth of lesions, 48.1% belonged to group m and 51.9% to group sm.

The classifications by location and by gross type are shown in Table 2. Of the 183 lesions, 58.0% occurred in the middle part (M) of the stomach, 39.3% in the lower part (A), and only 2.7% in the upper part (C). As a whole, lesions of the depressed type, IIC and IIC + III, are frequent in the M, and those of the protruded or elevated type in the A.

Table 3 shows the histological and gross type classifications. All lesions of papillary adenocarcinoma were of the protruded or elevated type; no papillary adenocarcinomatous lesion was found among those of the depressed or excavated type. As a whole, many cases of moderately or poorly differ-

Reprint requests: Michio Sowa, M.D., First Department of Surgery, Osaka City University Medical School, Asahi-Machi, Aveno-Ku, Osaka, 545, Japan.

**Table 1.** Frequencies of early gastric cancer lesions by gross types and by depth of lesions.

Gross types	Depth of lesions		Total	
	m <sup>a</sup>	sm		
Protruded				
I	5	3	8 ( 4.4%)	] 46 (25.2%)
IIa	9	8	17 ( 9.3%)	
IIa + IIc	7	14	21 (11.5%)	
Flat				
IIb	2			2 ( 1.1%)
Depressed				
IIc	45	48	93 (50.8%)	] 135 (73.7%)
IIc + III	18	20	38 (20.7%)	
III + IIc	2	2	4 ( 2.2%)	
Total	88 (48.1%)	95 (51.9%)	183 (100%)	

<sup>a</sup>m: mucosal layer; sm: submucosal layer.

**Table 2.** Incidence of the locations and gross types of the early gastric cancer.

Locations	Types							Total
	Protruded			Flat IIb	Depressed			
	I	IIa	IIa + IIc		IIc	IIc + III	III + IIc	
Upper part of the stomach (C)		1			2	2		5 (2.7%)
Middle part of the stomach (M)	3	12	7		61	22	1	106 (58.0%)
Lower part of the stomach (A)	5	4	14	2	30	14	3	72 (39.3%)
Total	8 (4.4%)	17 (9.3%)	21 (11.5%)	2 (1.1%)	93 (50.8%)	38 (20.7%)	4 (2.2%)	183 (100%)

**Table 3.** Gross types and histological patterns of early gastric carcinoma.

Gross types		Histological patterns <sup>a</sup>					Total
		Pap	Tub <sub>1</sub>	Tub <sub>2</sub>	Por	Sig	
Protruded	I	8					8 (4.4%)
	IIa	3					17 (9.3%)
	IIa + IIc	3	14 (100%)	9 (31.5%)	3 (21.1%)	2 (10.6%)	21 (11.5%)
Flat	IIb				2 (3.0%)		2 (1.1%)
	IIc		28 (68.5%)	9 (78.9%)	40 (86.4%)	16 (86.7%)	93 (50.8%)
Depressed	IIc + III		6 (68.5%)	6 (78.9%)	16 (86.4%)	10 (86.7%)	38 (20.7%)
	III + IIc		3		1		4 (2.2%)
Total		14 (7.6%)	54 (29.5%)	19 (10.4%)	66 (36.1%)	30 (16.4%)	183 (100%)

<sup>a</sup>Pap: papillary adenocarc.; Tub<sub>1</sub>: well diff. tub. adenocarc.; Tub<sub>2</sub>: moderately diff. tub. adenocarc.; Por: poorly dif. adenocarc.; Sig: signet-ring cell carc.

**Table 4.** Classification of early gastric cancer by lymph node metastasis and by gross type.

Gross type	n-Factor		Total
	n (+)	n (-)	
IIa, I + IIa	1 (4%)	24	25
IIa + IIc	6 (29%)	15	21
IIb	0 (0%)	2	2
IIc	8 (9%)	85	93
IIc + III	7 (18%)	31	38
III + IIc	1 (25%)	3	4
Total	23 (12.5%)	160	183

**Table 5.** Lymph node metastasis and treatment of early gastric carcinoma.

R-Factor	Cases	n-Factor <sup>a</sup>			
		n <sub>0</sub>	n <sub>1</sub>	n <sub>2</sub>	n <sub>3</sub>
R <sub>1</sub>	15	14 (93.3%)	1 (6.7%)	-	-
R <sub>2</sub>	117	100 (85.5%)	10 (8.5%)	7 (6.0%)	-
R <sub>2-3</sub>	42	37 (88.1%)	5 (11.9%)	0	0
Total	174	151 (86.8%)	16 (9.2%)	7 (4.0%)	0

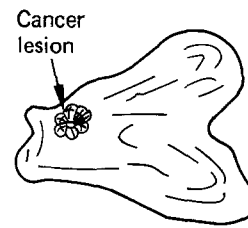
<sup>a</sup>n<sub>1</sub>: primary group; n<sub>2</sub>: second group; n<sub>3</sub>: third group

entiated adenocarcinoma fell under the depressed or excavated type.

Table 4 shows the classification incidences of early gastric carcinomas by lymph node metastasis and by gross type. Lymph node metastasis took place in none of the gross types insofar as lesions were located within the mucosa (group m). On the other hand, when the submucosa was invaded, metastatic involvement of the lymph nodes was seen in 23 (13.2%) of 174 early gastric cancer cases and the incidence was somewhat higher, namely about 30%, when review was limited to type IIa + IIc of group sm.

Under the "General Rules for Gastric Cancer [4]" framed by the Japanese Research Society for Gastric Cancer, the regional lymph nodes are sorted into 3 groups according to the distance from the stomach and from the location of a main lesion. Cancer metastasized to lymph nodes in the primary (n<sub>1</sub>) and the second (n<sub>2</sub>) group, while it did not metastasize in the third group (Table 5). These findings suggested that in the first 2 groups, resection of early gastric carcinomas should be coupled with cleaning the lymph nodes as a rule. The 5-year survival rate of our patients with early gastric cancer was 98%.

**Table 6.**



1. The specimen was washed with cold saline and excess fluid removed with filter paper.

2. Then the whole surface of the gastric mucosa was quickly covered with Tes-tapes (Eli-Lilly Co., Indianapolis, U.S.A.).
3. The surface was sprayed with a solution of 5% sucrose in 10 mM sodium phosphate buffer.
4. The specimen was incubated at 37°C for 5 min.
5. The Tes-tapes over area of intestinal metaplasia turned green, since glucose was produced by disaccharide in this area.

<sup>a</sup>"Tes-tape Method" devised by Sugimura, T., and Kawachi, T. [9, 10]

**Table 7.** Relation of early gastric carcinoma to intestinal metaplasia in surrounding mucosa of the lesion by histology and by Tes-tape method.

Grade of activity	Well-differentiated types	Moderately or poorly differentiated types
(-)	4 (14%)	29 (63%)
(+)	16	10
(++)	9	7
Total	29	46

Many authors [5-8] favor the view that intestinal metaplasia of the gastric mucosa is a premalignant condition. The presence of metaplastic components within tumors may support this view. In order to ascertain the possible association of this metaplasia with gastric carcinoma, we used a simple, rapid, and rational method devised by Sugimura and Kawachi [9, 10] for detection of such a metaplasia. An outline of this method is given in Table 6.

Table 7 demonstrates the incidences of intestinal metaplasia in the perifocal mucosa in cases of histologically classified early gastric carcinomas. The incidences were 25/29 (86.2%) in well-differentiated adenocarcinoma cases and 17/46 (36.9%) in moderately or poorly differentiated adenocarcinoma. Particularly in the latter group, intestinal metaplasia was unseen in the gastric mucosa in as many as 29 cases (63%). It is questionable, therefore, to correlate early gastric carcinoma to intestinal metaplasia in the surrounding mucosa, at least in the depressed type of early gastric cancers.

## Résumé

La définition du cancer précoce de l'estomac qui a été proposée par la Société d'endoscopie gastro-entérologique du Japon en 1962 est la suivante: infiltration cellulaire néoplasique limitée à la muqueuse et à la sous muqueuse sans tenir compte de la présence de métastases ou du volume de la tumeur. Le nombre de cancers gastriques précoces atteint 183 lésions pour 174 cas opérés pendant la période s'étendant de 1967 à 1979 dans notre service. Le propos de cet article est de faire part de notre expérience basée sur l'interprétation des constatations cliniques et pathologiques.

## References

1. Arima, S., Shimura, H.: Clinicopathological study on 100 early gastric cancer cases. *Gastroenterol. Jpn.* 13:244, 1978
2. Sakita, T.: Present status of clinical diagnosis for early gastric cancer. *Gastroenterol. Endosc.* 16:662, 1974
3. Hayashida, T., et al.: End results of early gastric cancer collected from 22 institutions. *Stomach Intest.* 4:1077, 1969
4. The General Rules for the Gastric Cancer Study in Surgery and Pathology, edited by Japanese Research Society for Gastric Cancer, Tokyo, Kanehara Shuppan, 1979
5. Morson, B.C.: Carcinoma arising from areas of intestinal metaplasia in gastric mucosa. *Br. J. Cancer* 9:377, 1955
6. Correa, P., Cuello, C., Duque, E.: Carcinoma and intestinal metaplasia of the stomach in Colombian migrants. *J. Natl. Cancer Inst.* 44:297, 1970
7. Ming, S.C., Goldman H., Frciman D.G.: Intestinal metaplasia and histogenesis of carcinoma in human stomach. *Cancer* 20:1418, 1967
8. Jarvi, O., Lauren, P.: On the role of heterotopias of the intestinal epithelium in the pathogenesis of gastric cancer. *Acta Pathol. Microbiol. Scand.* 29:26, 1951
9. Sugimura, T., Kawachi, T., Kogure, K., Tanaka, N., Kazama, S., Koyama, Y.: A novel method for detecting intestinal metaplasia of the stomach with Tes-Tape. *Gann* 62:237, 1971
10. Tanaka, N., Kawachi, T., Sugimura, T., Koyama, Y., Sano, R.: Studies of intestinal metaplasia in gastric mucosa by "Tes-Tape Method." *Stomach Intest.* 6:1593, 1971