

Skip Metastases Extending to the Esophagus in Carcinoma of the Cardia

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Eight cases with skip metastases to the esophagus in carcinoma of the cardia were pathologically analyzed in the genesis.

These lesions were characterized by 1) deeply invaded carcinoma outside the gastric wall in carcinoma of the cardia 2) extended cancer spreading across the esophagocardiac junction 3) much more prominent histologic vascular invasion (ly) on the basis of histologic findings.

We allege from this study that wide resection of the esophagus is necessary for the treatment of carcinoma of the cardia in which cancer in the cardia extends outside the gastric wall and spreads across the esophagocardiac junction.

INTRODUCTION

The possibility leading to recurrence following surgical treatment of gastric cancer were associated with findings of existing cancer invasion to the contiguous surrounding organs, lymph node involvement and peritoneal dissemination seen at operation. Many reports¹⁾⁻⁵⁾ described the modes of histological extension of gastric cancer. Skipping tumor extension into the esophagus, however, has been noted.

In particular great emphasis has been focused upon the resected extent distant from grossly visible cancer margin in the cardia. The aim of this study is to clarify the mode of skipping cancer extension from the cardia and is to help surgeons decide a proper cut line from the standpoint of proximal cancer extension into the wall of the esophagus.

MATERIAL AND METHOD

Surgical specimens obtained from the 177 patients with cancer in the cardia were subjected to this study, fixed in 10% formalin, and sectioned along the long axis and stained with hematoxyline and eosin, occasionally using **VAN GIESON'** and **WEIGERT'** stains. The serosal cancer invasion was also expressed as follows, se: serosal invasion exposed to peritoneal cavity, si: infiltration to other organ across the serosa.

Histologic vascular invasions of lymph and blood vessels were expressed as ly in the lymph vessel involvement and v in the blood vessel involvement and a figure of 1, 2 and 3 was used in accordance with their severity.

The criteria of skipping cancer extension were as follows 1) cancer extension histologically shows the compressive and/or destructive growth to the adjacent tissue 2) histological features of metastatic foci are similar to those of the original one 3) There is no histologic evidence of transitionally proliferative patterns between the epithelium and mucus glands in the wall of the esophagus 4) histologic distances between original and skipping metastatic lesions are kept more than 0.5cm. Eight cases (4.5%) who fulfilled the criteria given above were evaluated as being a skip metastasis.

Of the 177 study subject, eight specimens (4.5%), fulfilled the criteria given above as being a skip metastasis and were eligible for study in the genesis.

RESULTS

The results from pathological examinations in the eight cases were summerized in Table.

Ages ranged from 56 to 78 years and all were men. Carcinomas in all but 1 were situated in the esophagocardiac junction (EC-j). In the other one, carcinoma was located 3cm distal to EC-j.

The modes of cancer extension to the esophagus across the esophagocardiac junction (EC-j) were submucosal spread in 4, throughout the wall involvement in 3 and adventitial spread in 1.

The macroscopic features of the original carcinomas according to **BORRMANN** classification were **BORRMANN I** in 2, **BORRMANN II** in 2, **BORRMANN III** in 3 and **BORRMANN IV** in 1.

The distances of cancer extension in the 8 cases were histologically measured either from EC-j or the proximal tumor margins.

All were definitely beyond EC-j. The distances from EC-j ranged from 0.2 to 5.0cm and these from the tumor margins also ranged from 0.2cm to 1.5cm. Characteristic findings of histological examination were the depth of invasion. All showed serosal cancer invasion of si or se as previously cited. Vascular invasions (ly) were also seen in all of them. In contrast, vascular invasion (v) was noted in only 1. Skip lesions in the eight cases numbered from one to six. Proximal lesions were measured from EC-j and tumor

margins. The distances from EC-j were a range of 1.9cm to 19.5cm and these from tumor margins were from 0.7cm to 15.0cm. A maximum spreading was 19.5cm from EC-j and 15.0cm from the tumor margin as shown in Fig 2. In BORRMANN IV of original cancer, skip lesion is liable to far spread and the submucosal spreading type tends to spread widely.

Table Histologic findings in 8 patients with skip metastases to the esophagus

case	Borrmann classification schema of modes of extension	distance from EC-j (tumor margin)	the depth of invasion	vascular invasion ly v	skip metastasis distant from EC-j (tumor margin)
1. 59, M 	4	0.2cm (0.8cm)	si	ly ₃	12.0cm (11.5-12.5)
2. 63, M 	3	1.4cm (0.6cm)	se	ly ₃	4.5cm (3.0cm)
3. 60, M 	3	1.7cm (1.5cm)	se	ly ₃	1.9cm (0.7cm)
4. 56, M 	2	3.8cm (0.2cm)	si	ly ₁ v ₃	9.0cm (5.0cm)
5. 78, M 	2	1.7cm (0.4cm)	si	ly ₂	3.5cm (2.8cm)
6. 60, M 	3	5.0cm (1.5cm)	se	ly ₁	5.0cm (1.5cm)
7. 58, M 	1	6.5cm (0.2cm)	si	ly ₃	12.5cm (5.5cm)
8. 73, M 	1	3.5cm (0.5cm)	si	ly ₃	19.5cm (15.0cm)

E: Esophagus, EC-j: esophagocardiac junction
ly: lymph vessel invasion v: blood vessel invasion

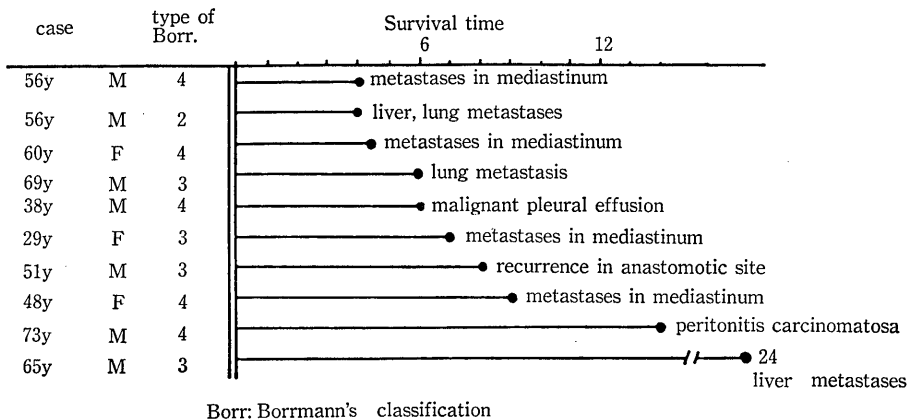


Fig. 1. Prognosis for eight patients with skip metastases to the esophagus

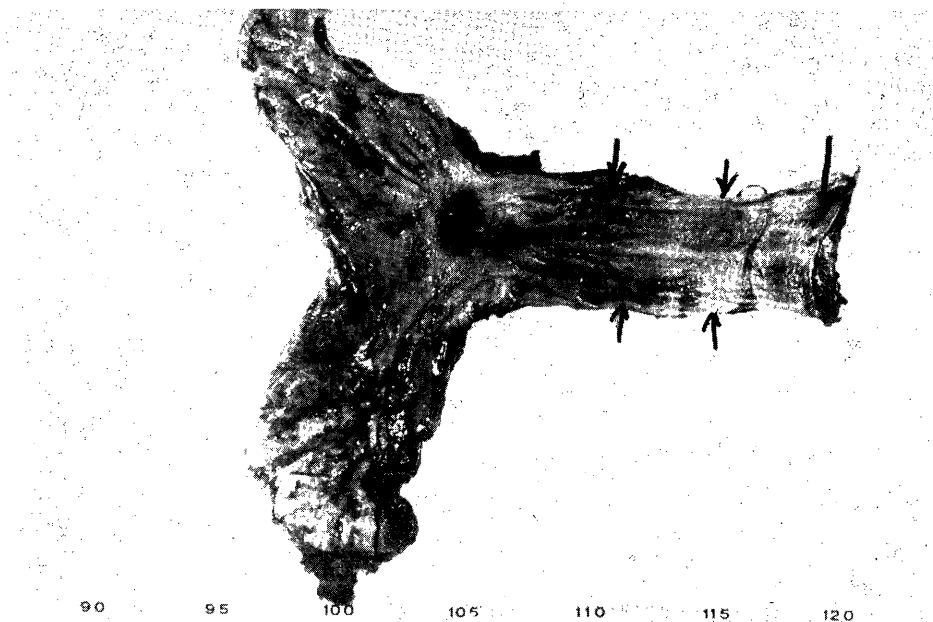


Fig. 2. Surgical specimen, showing a maximum of skip metastases (arrow) 19cm proximal to the esophagocardiac junction (EC-j) and 15cm proximal to the tumor margin, occupying EC-J. A shortened distance of approximately 15cm from EC-j and 11cm from the tumor margin due to formalin-fixed specimen were indicated.

The prognosis for the 8 cases were extremely poor as shown in Fig. 1. Survival over 1 year following surgery was 2 cases (25%) and all but 2 died within 1 year after operation. Causes of death were blood-bore metastases into the liver and the lung, and local recurrence in the anastomotic site, the mediastinum, the pleura and the peritoneum.

DISCUSSION

It is known that cancer arising from the cardia occasionally extends widely to the esophageal wall across the esophagocardiac junction¹⁾²⁾. The extended cancer spread to the esophagus alert the surgeon to a wide resection including the thoracic esophagus. One must take the extent of cancer extension into account. The modes of cancer extension were divided into the two types, direct invasion from the original cancer and indirect invasion with skip metastases. Recognition of coexisting cancer lesions of the esophagus is essential to determine the resected range and to select the operative procedure for surgical treatment of carcinoma of the cardia. HANAFUSA³⁾ reported that histologic vascular invasion tended to yield skip metastasis into the esophageal wall. In this series, all of the 8 cases with skip metastases revealed histologic vascular invasions (ly) although v was seen in only one. But all of them accompanied direct tumor invasion from the cardia to the esophagus. It is assumed that vascular invasion (ly) may play an important

role in developing a skip metastasis to the esophagus. Cancer lesion extending across the esophagocardiac junction may well cause poor curability of surgical treatment due to skip metastases. It is defined in this study that cancer extension of carcinoma of the cardia to the esophageal wall shows a maximum of 15cm long from the line of visible tumor margins. Then, extended operation with wide range of resection of the esophagus should be performed as far cephalad as possible. Cancer lesions extend along the esophageal wall via the four routes of mucosa, submucosal, adventitial and throughout the wall layers as reported by many reporters¹⁾²⁾⁴⁾⁵⁾. Most of proximal cancer extensions reveal the submucosal spread, not showing grossly visible changes in the surface of the mucosa⁶⁾. Therefore, we are more likely to be misjudged as to the extents of cancer lesions and residual carcinoma is very liable to be overlooked on gross appearance at surgery. A growing concern about cancer extension from the cardia to the esophagus has focused attention on determination of resected line of the esophagus. The coexisting skip metastases may well lie away from the original tumor. It is emphasized that a 15cm esophagus distant from the visible tumor margin may at times involved.

Cancer lesion remnant at the cut edges of surgical specimens were reported as 39% and 38% in frequency by WEBB⁵⁾ and ALFONSON⁴⁾. Positive cancer lesion remnant at the cut edges may be eliminated by a wide resection of the esophagus.

The length of direct cancer invasion to the esophagus beyond the esophagocardiac junction ranged from 0.4 cm to 5.5 cm as assessed by PAPACHRIST⁷⁾. It has become obvious in this study that skip metastases more frequently develop in carcinoma of the cardia in which cancer penetrates deeply across the serosa (se or si) and extends beyond the line of FC-j.

REFERENCE

- 1) UCHIDA, Y., MIURA, T., HARADA, K., *et al*: Evaluation of cancer extension of the cardia to the esophagus. *Geka* 7: 543-550, 1974 (in Japanese)
- 2) TOBINAGA, K.: Clinicopathological study on cancer extension from the cardia to the esophagus. *Nagasaki Medical* 46: 213-229, 1971 (in Japanese)
- 3) HANAFUSA, S.: Cancer extension along the esophageal wall from carcinoma of the cardia and lower esophagus. *J. Cancer Clin.* 23: 110-115, 1977 (in Japanese)
- 4) ALFONSON, A.: Adenocarcinoma of the proximal third of the stomach, pitfalls in surgical management. *Am. J. Surg.* 134: 326-330, 1977
- 5) WEBB, J. N.: Adenocarcinoma of the oesophagus and of the oesophagogastric junction. *Br. J. Surg.* 65: 475-479, 1978
- 6) AKIYAMA H., YAMAZAKI, Z., KOGURE T., ITAI, Y., KATO, H.: Mucosal pattern in cancer of the esophagus. *Stomach and intestine* 7: 1055-1062, 1972
- 7) RAPACHRISTOU, N. D., FORTINER, G. J.: Adenocarcinoma of the gastric cardia. *Ann. Surg.* 192: 58-64, 1980