CANCER OF THE STOMACH

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CANCER of the stomach is regarded by some physicians as the equivalent of a death warrant. This view is fostered by the infrequency of cured cases in the experience of any single physician, as well as by some published reports that stress the pessimistic aspects of the disease. No such implication attaches to cancer of the breast; yet, if the patient with cancer of the breast has fixation of the tumor to the chest wall, or distant metastases to bone, no mastectomy is carried out and, in most series, the patient does not figure in the five-year survival statistics. Not so with cancer of the stomach; most studies scrupulously include every instance of the diagnosis, whether or not the patient ever is examined by a surgeon, and whether or not the diagnosis is confirmed by histologic study of tissue removed from the tumor or one of its metastases.

In studies of cancer of the stomach, we should distinguish between the different stages of the disease at the time treatment is carried out. It is not at all unusual to read that five-year survivors comprise 25 to 30 per cent of all patients with gastric cancer in whom a gastric resection "for cure" has been carried out (i.e., all gross evidence of tumor has been eradicated). The percentages are not very different from those for five-year survivals reported for radical mastectomy for cancer of the breast, and at the time of surgery the two conditions are comparable: as far as the surgeon can tell, the cancer has been entirely removed. The condition of a patient who has a gastric carcinoma that is irresectable because of fixation to the aorta, for example, is analogous to that of a patient with cancer of the breast which is irresectable by reason of extension to the chest wall. The fact that clinical examination can establish inoperability in the case of the breast lesion, whereas an abdominal operation is required to establish inoperability in the case of the gastric lesion, does not alter the basic similarity. Until a hopeless situation is disclosed by operation, we should adopt the same attitude of cautious optimism which we entertain toward "operable" cancer of the breast.

Differentiating the stage of the disease at the time of operation is of practical importance. Without it, we excuse ourselves for lack of an aggressive attitude toward treatment of the patient whose lesion may be malignant but is probably benign, on the grounds that if the lesion is not cancer, no urgency for surgical treatment exists; and if the lesion is cancer, the outlook is hopeless anyway. What are the facts to support a modest optimism in "operable" (i.e., potentially curable) cancer of the stomach?

Practical Import of a Clinical Classification of Cancer of the Stomach. The writer recently has proposed[1] a clinical classification of cancer of the stomach based upon two aspects of the disease: (1) the presence or the absence

of *metastases*, and their surgical accessibility if present; (2) the degree of *invasion* by the primary tumor.

In regard to point 1, three possible stages of *metastases* are designated as follows:

Stage A—*No metastases.*

Stage B—*Regional metastases.* These usually are resectable and hence are consistent with a potential cure.

Stage C—*Distant metastases.* These include metastases to liver, lung, supraclavicular lymph nodes, peritoneum, and bone. At the present time they mean incurability.

In regard to point 2, three possible stages of *invasion* by the primary tumor are designated as follows:

Stage I—*Superficial cancer*, confined to the inner layers of the gastric wall. Bulky or extensive cancers are not excluded, but all may be resected.

Stage II—*Cancer in all gastric layers.* As in Stage I, cancers may be extensive or bulky, but all are resectable, since neighboring structures are not invaded.

Stage III—*Extragastric invasion by the cancer.* The tumor has extended to one or more organs outside the stomach, such as colon, mesocolon, liver, pancreas, or aorta. Resectability depends upon the resectability of the organ or that part of it which the tumor has invaded.

Every cancer of the stomach may be classified by a combination of two symbols: A, B, or C designating the stage of metastases, and I, II, or III designating degree of invasion. A stage A-I lesion is a superficial cancer without evidence of any metastases, regional or distant. The outlook should be excellent. A stage C-III lesion is one that has distant metastases and invasion of neighboring structures by the primary tumor. The outlook is hopeless. Lesions in stages C-I, C-II, and C-III all are incurable, because all have distant metastases; whether or not the stomach is resected has no bearing on the prognosis. (A special case of hopeless lesions with distant metastases is designated as stage C-NX, meaning that the degree of invasion by the primary tumor is unknown. An example is the condition in the patient who has the clinical history and roentgenographic findings consistent with gastric carcinoma, where biopsy of a supraclavicular lymph node establishes the existence of distant metastases, but on whom no laparotomy is performed.)

All stage A-I and stage A-II lesions are resectable and potentially curable (no metastases, and the primary tumor either superficial or confined to all coats of the stomach). Nearly all stage B-I and stage B-II lesions are resectable and potentially curable (regional metastases, and primary tumor either superficial or confined to all gastric layers); the only exceptions to potential curability will occur when the regional nodes themselves are not resectable. On the other hand, potential curability of stage A-III and stage B-III lesions (involvement of organs outside the stomach by extension of the primary tumor, and either no metastases, or regional metastases) depends entirely on the dispensability of the structures that have been invaded by the primary tumor.

The correlation of this clinical classification with the actual results of surgery in patients has been tested on a personal series of 100 consecutive patients having primary operations for carcinoma of the stomach, each followed either to a fatal termination of the illness or for periods ranging from 18 months to 4 years. The results, summarized in the table, show that so far, in this admittedly short follow-up, the classification has practical utility in predicting the outcome. All seven patients with stage A-I lesions are living without evidence of disease, whereas all 34 patients in stage C (C-II, C-III, C-NX) are dead of their disease.

A practical use of the classification is given in figure 1, where patients are divided into two comprehensive groups: those with potentially curable lesions as determined at operation, and those with clinically incurable lesions. The relation between the clinical stage and survival without disease in this limited follow-up is clearly shown.

Can the Clinical Stage of Cancer of the Stomach be Determined Without Operation? A surgical procedure usually will be necessary to establish the stage of the disease, as well as to furnish histopathologic proof of its exact nature. This surgical procedure will not always be a laparotomy. Examples where a tissue diagnosis may be obtained without a laparotomy include the following: biopsy of an involved supraclavicular node; biopsy of a bony metastasis; needle biopsy of an hepatic metastasis or of a metastatic mass in the pouch of Douglas (Blumer's shelf); demonstration of malignant cells in ascitic fluid. In each instance it is assumed that there is clinical and roentgenographic evidence of a gastric neoplasm. All such cases are classified as Stage C-NX (distant metastases but no knowledge of the degree of invasion of the primary tumor).

It may be asked why, in the examples just given, a clinical diagnosis will not suffice, avoiding the expense and inconvenience to the patient of any surgical procedure. There are two reasons for obtaining a tissue diagnosis even when the disease seems to be hopelessly advanced: firstly, there is always the possibility of an error in the clinical appraisal and, secondly, tissue diagnosis may disclose a lesion that could be treated advantageously with roentgen therapy or nitrogen mustard, for example, reticulum cell sarcoma, Hodgkin's granuloma or lymphoma or lymphosarcoma. In connection with clinical errors, the writer has seen an "involved" stony-hard supraclavicular node prove to be a cervical rib (this patient is now living and apparently free from disease three years after a total gastric resection); hepatic "metastases" have been cirrhosis of the liver; "ascites" has been adipose tissue; a "Blumer's shelf" has been an incarcerated, retroverted uterus. These errors, ridiculous as they may seem in retrospect, were made by experienced clinicians, and if these misdiagnoses had been used as the basis for advising treatment, they might have prevented an operation for a potentially curable lesion.

If it is sometimes difficult to be certain of the existence of distant metastases without an operation, it is impossible, without an operation, to determine the degree of invasion of the primary tumor or the presence or absence of regional metastases. In particular, the roentgenographic appearance of a gastric neoplasm is not a reliable means of determining resectability of the local lesion.

TABLE
Results of Primary Operations for
Carcinoma of the Stomach in 100 Patients
(Minimum Follow-up—18 Months)

Stage of carcinoma	No. of patients	Resection for cure	NUMBER OF PATIENTS			
			Hospital death	Dead of disease	Living with disease	Living without disease
A-I	7	7	0	0	0	7
A-II	15*	14	2	6	1	6
A-III	12	9	0	7	0	5
B-I	1	1	0	0	0	1
B-II	12	12	0	6	1	5
B-III	19	11	2	16**	0	1
C-I	0	—	—	—	—	—
C-II	7	0	1	6	0	0
C-III	20	0	1	19	0	0
C-NX	7	0	0	7	0	0
TOTAL	100	54	6	67	2	25

* *Stomach not resected in one patient when operation was discontinued because of poorly taken anesthetic; patient subsequently died in the hospital.*
** *One patient died after secondary operation for stricture of esophageal anastomosis.*

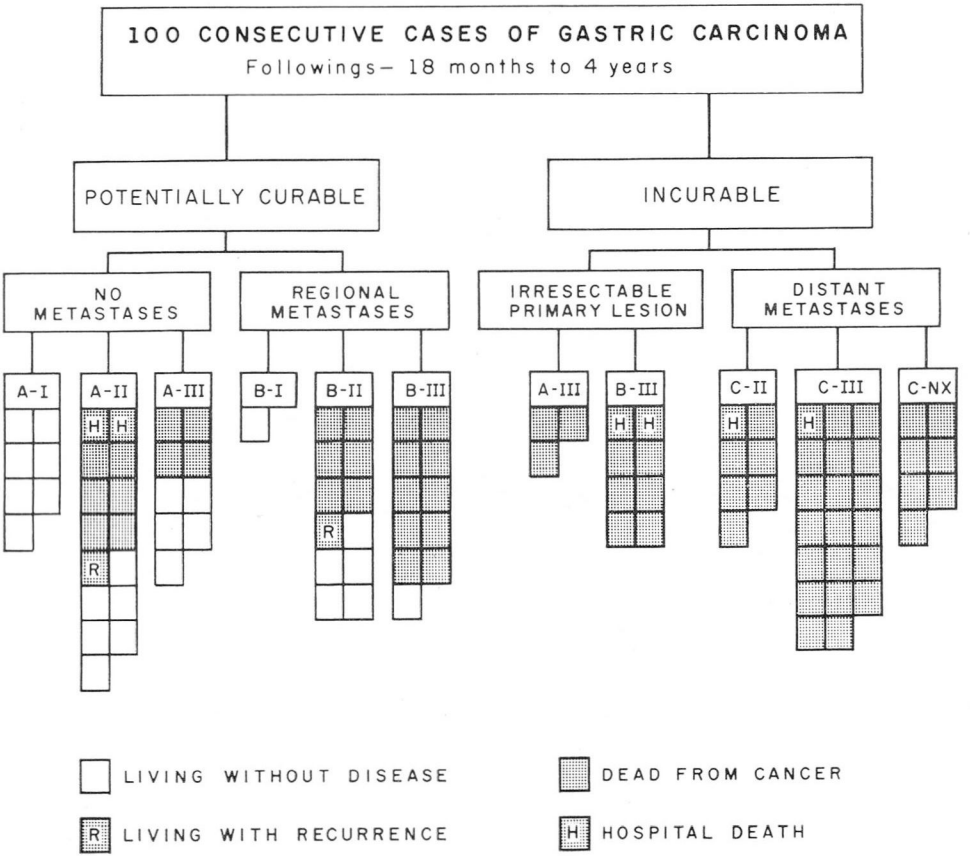

Fig. 1. Chart showing relation between clinical stage and survival without disease.

An unfavorable-appearing lesion, from a roentgenographic standpoint, high in the fundus of the stomach in a man of nearly 80 years, which was threatening his life by hemorrhage, proved to be a well-localized leiomyosarcoma, easily and adequately treated by a local excision without gastric resection. Even tumors that involve the entire stomach, as viewed by the radiologist, may be easily resectable because there is no extension beyond the stomach. The duration of symptoms, the appearance of the lesion through a gastroscope, the presence or absence of a palpable abdominal mass, all are unreliable criteria of the potential curability or incurability of a given lesion.

One may conclude that if the patient physically is able to undergo an operation, he is entitled to a laparotomy to determine whether the lesion is resectable and potentially curable, and if not curable by surgery, whether it is a histopathologic type amenable to roentgen therapy.

Is the Operative Fatality Rate Prohibitive? Because of the nature of the disease, and the debility of many of the patients who require surgery, the operative mortality rate from operations for gastric cancer always will be substantially greater than that of operations for benign conditions such as duodenal ulcer, where the fatality rate as given by many surgeons is 1 per cent or less. In the author's series brought up to date there were 12 operative fatalities (about 8 per cent) in 145 patients undergoing primary laparotomy for gastric malignancy. Fortunately, the operative mortality rate seems to be lower in the more favorable lesions. There were six deaths in a total of 82 resections for potentially curable lesions, making a mortality rate of slightly more than 7 per cent. There were five deaths in a total of 15 palliative resections or short-circuiting procedures, a mortality rate of 30 per cent. (There was one death in 48 patients who underwent simple exploration with biopsy.) Although this latter percentage is unduly high (two deaths were sudden and were not directly related either to the disease or to the type of operation), it is consistent with the experience of others that palliative procedures are appreciably more hazardous than curative resections, no matter how radical. It has influenced the author to limit the indications for consideration of palliative surgery.

The six deaths of patients with potentially curable lesions include those of two patients who underwent a total gastrectomy, one patient who had a simultaneous colectomy and gastrectomy for a lesion that involved the colon, one patient whose lesion invaded the liver, one 79 year old patient in whom the operation was discontinued because of a poorly taken anesthetic after partial mobilization of the stomach, and only one patient who had a simple subtotal gastrectomy for a favorable lesion. The mortality rate in simple subtotal gastrectomy for favorable lesions is less than 5 per cent, and cannot be regarded as a legitimate reason for urging patients to avoid operation for a lethal disease.

Is There an Excessive Morbidity Following Radical Operations? Several years ago there was considerable agitation within the profession urging total gastrectomy for every patient with gastric cancer in an effort to improve the over-all results. The illogic of this stand was appreciated by the majority of

surgeons from the very beginning, since recurrence of cancer solely in the remaining stomach is unusual after an experienced surgeon has performed an apparently adequate subtotal gastrectomy. The added risk to life and, equally important, the severe nutritional disturbances that so many patients experience for a good many months afterwards, likewise are cogent arguments against a routine total gastrectomy. Our current practice is to perform a total gastrectomy only when it is required to obtain lines of resection free from disease. We lay much emphasis, on the other hand, upon radical excision of *neighboring* structures that may be involved by continuity, and on a radical removal of regional nodes insofar as this is possible without unnecessary sacrifice of the stomach. Such complicated en bloc dissections increase the operative risk and immediate morbidity, but do not yield the late side-effects of total gastrectomy. A total gastrectomy is required only about once in every five resections for potentially curable lesions (15 of 82 resections in the author's series), and hence late morbidity from ultraradical surgery is kept at a minimum.

Does the Histopathologic Type of Malignant Growth Have an Influence on Prognosis? In a recent study by Fisher and Hoerr[2] the gastric lesions of 100 patients were classified according to four histologic types. The order of apparently increasing malignancy was adenocarcinoma, medullary carcinoma, carcinoma simplex, and scirrhous carcinoma. In mixtures of the various types, behavior was that of the most malignant element present. Scirrhous carcinoma carried a particularly ominous prognosis: none of 21 patients whose lesions contained scirrhous elements was apparently cured of the disease. All of the other histologic types had some apparent cures. Mucinous and colloid variants seemed to be of subordinate importance to the basic types mentioned.

SUMMARY AND CONCLUSIONS

1. Cancer of the stomach essentially is no more hopeless than other forms of malignant disease occurring in more accessible portions of the body.

2. A clinical classification of gastric carcinoma based on the presence or absence of *metastases* and the degree of *invasion* by the primary tumor may assist in a better understanding of the disease by clarifying the potential curability at the time of operation, and the probable outlook for survival.

3. A surgical operation, usually a laparotomy, is necessary in nearly every case to establish the clinical stage of the disease and hence its potential curability. A tissue diagnosis is desirable in every instance to verify the nature of the disease, and to bring to light tumors that might be radiosensitive.

4. Bedside estimates of the presence or absence of distant metastases, or of the resectability of the primary lesion, are subject to grave error even by the most experienced clinicians.

5. The mortality rate is lowest when the procedure is a simple laparotomy and biopsy, and highest when a palliative resection or short-circuiting procedure is carried out. The fatality rate for 145 patients undergoing primary operations

for gastric malignancy was 8 per cent; it was 7 per cent for 82 patients who had resections for potentially curable lesions.

6. Ultraradical operations are reserved for patients whose lesions require it. About one in every five resections for potentially curable lesions is a total gastrectomy.

7. The histopathologic type of the gastric malignancy is of subordinate importance to other features of the disease such as metastases or extension of the primary growth, except for scirrhous carcinoma. There were no cures in 21 patients in this series whose tumors were composed of scirrhous carcinoma in whole or in part.

References

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2. Fisher, E. R. and Hoerr, S. O.: The practical value of histopathological classification of gastric carcinoma; an appraisal based on 100 consecutive cases. Cancer. In press.