



## Gastric Ulcer

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I. ABSTRACT

## GASTRIC ULCER

Alex Blumstein

The differential diagnosis between a benign gastric ulcer and a small ulcerating carcinoma of the stomach is not infrequently a perplexing problem.

Some of the features of the differential diagnosis are:

History

"The statement is made that a long history of indigestion suggests a benign lesion, whereas recent onset of symptoms is more common with malignant disease. There is doubtless some truth in this generalization, but there are so many exceptions that it will hardly serve as a working rule in practice." (Bloomfield). Rivers and Dry use the length of the history as one of the features in differentiation between benign and malignant ulcers. A number of authors comment on the failing appetite, loss of weight and strength, and distaste for meat in some of the cancer cases. These, however, are probably most often late signs of the disease.

Perforation

Perforating ulcers are more likely to be benign. Aird comments on the infrequency of perforation of the stomach in cases of carcinoma. He collected 71 cases from the available literature. "Two-thirds of the cases of perforated carcinoma of the stomach are fulminant in their course, closely resemble perforated peptic ulcer in their symptoms and signs ....."

Age

Although the criterion of older age groups for the carcinoma cases is statistically valid, this often is of no great practical importance in the individual case. In a series of 15 cases "which includes 15 instances of probable or certain ulcer-cancer", three patients were under 35 years of age (26, 29, 33) (Bloomfield).

Hematemesis and Melena

"An appreciable hematemesis is said to occur at some time during the course of 50 per cent of all ulcers of the stomach. Provided then that hemorrhage from oesophageal varices, trauma and corrosive irritants is excluded, hematemesis is diagnostic of an ulcerative lesion in the stomach and these ulcerative lesions are much more frequently peptic ulcers than carcinomata. Blood in the stool while a valuable sign is more difficult to interpret than hematemesis. The possibilities are much more numerous and many of them difficult to exclude. Ulcerative lesions in the rectum and lower bowel are readily detected by simple manual or proctoscopic examination. As hematemesis is the strongest evidence of a gastric ulcer, so a large tarry stool is presumptive evidence of ulcer of the duodenum. Slow seepage of blood into the stool is, however, more frequent in cancer of the stomach or bowel than in ulcer."

Rivers and Dry state "severe gastric hemorrhage is much more liable to occur with a benign than with a malignant lesion."

Effect of Supervised Medical Regimen

The lesion is usually assumed to be benign if there is symptomatic response to medical therapy, if repeated tests reveal no blood in the stool and if there is roentgenologic evidence of decrease in size of the lesion. Rivers and Dry have as part of their criteria, "complete disappearance of the lesion ...". They report an instance in which all their criteria were fulfilled. Yet, the patient died of carcinoma of the stomach.

In Bloomfield's series, there was symptomatic relief in five cases of cancerous ulcers for periods of 5 to 8 months before rapid decline set in. Conversely, "many benign ulcers fail to show any change in size by roentgen examination over long periods of time. ...."

X-ray

Kirklin and Weber state, "In its earlier stages, evidence of infiltrative carcinoma (of stomach) is exceedingly difficult, sometimes impossible to reveal." "A crater which has not penetrated beyond the normal confines of the gastric lumen, and which is surrounded by an elevated, overhanging ridge, is pathognomonic of ulcerating carcinoma."

These ulcers "characterized by slightly elevated, irregular overhanging borders uneven floors, and no tendency to perforate the wall," may be seen under palpatory pressure as a crescentic shadow to which the term "meniscus" has been applied.

"Malignant ulcer excites little, if any, spasm and is likely to be accompanied by sluggish peristalsis of a gaping pylorus." "A malignant ulcer is seldom tender, and tenderness over a niche suggests that the ulcer is benign."

Hurst and Stewart state less than 1% of the cases of hour-glass deformity of the stomach are due to carcinoma. (Cited by Rivers and Dry). According to Kirklin and Weber, "In many cases of malignant ulcer," the roentgenologist can find no definite x-ray evidence of malignancy.

Site and Size of Ulcer

It is frequently assumed that lesions on the greater curvature are malignant. Rivers and Dry reported that the files of the Mayo Clinic contained records of only four cases in which a lesion of the greater curvature proved to be benign.

Alvarez and MacCarty studied the size of the crater in 638 gastric ulcers; 79% were smaller than a dime (1.8 cm. in diameter), and 92.3% were smaller than a quarter (2.4 cm. in diameter). In the 8 years covered by their study, no excised benign ulcer was seen over 4 cm. in diameter.

In 20% of cases listed as gastric ulcer, excision or resection was not attempted. The authors state that in this group, many of the ulcers were large and some must have been benign. As a result of their calculations, they conclude, "given a lesion smaller than a quarter, the

chances (on the basis of site alone) are ten to one that it is benign. If it is larger than a quarter but smaller than a half-dollar, the chances are slightly in favor of its being malignant." They have grouped their cases in the following table:

Probability that a Gastric Lesion with a Given Area is Benign

Areas and Diameters of Lesions in Various Groups	% of All Ulcers Falling in the Group	% of All carcinomas Falling in the Group	Approximate Probability that a Lesion Sampled From the Group will be Benign
1 to 249 sq. mm. in area or 1.8 cm. in diameter (the size of a dime)	78.8	5.1	15.4 to 1
250 to 499 sq. mm. in area or 2.5 cm. in diameter (about size of a quarter)	15.0	3.8	3.9 to 1
500 to 749 sq. mm. in area or 3 cm. in diameter (about size of half dollar)	4.4	5.9	1.0 to 1.3
750 to 999 sq. mm. in area or 3.5 cm. in diameter (about size of silver dollar)	1.5	4.0	1.0 to 2.7
1,000 to 1,200 sq. mm. in area or 4 cm. in diameter	0.3	4.4	1.0 to 14.7
Under 500 sq. mm.	93.8	8.9	10.5 to 1
Under 750 sq. mm.	98.2	14.8	6.6 to 1
Under 1200 sq. mm.	100.0	23.2	4.2 to 1
Between 500 and 1,200 sq. mm.	6.2	14.3	1 to 2.3

(J.A.M.A. 91, #4: 230)

Unfortunately, the roentgenologist is not infrequently unable to estimate the size of the crater. The clinician, therefore, cannot use the above data to the fullest extent.

#### Gastric Secretion

The presence of a considerable amount of acid in the gastric secretion is regarded as evidence against carcinoma of the stomach. Bloomfield, in 92 consecutive cases of carcinoma of the stomach, reports 22 with free hydrochloric acid. In the 22 cases, who secreted free hydrochloric acid as tested by Topfer's reagent, there were 15 with a total acid of 60 or more.

In an earlier study, he observed that there was no definite correlation be-

tween the size of the growth and the character of the gastric secretions, and his observations were not in accord "with the undocumented statements made so often in the literature that acid decreases as the growth extends." He agreed with the theory, widely held, that a gastritis associated with the growth is responsible for the changes in secretion.

#### Malignant Degeneration

Rienhoff and Baker state "It has not yet been proven beyond question that a benign peptic ulcer ever becomes malignant." It is generally agreed that duodenal ulcers are practically never malignant. MacCarty and Broders examined 425 excised duodenal ulcers without finding any suspicion of

## malignancy.

It is now felt by many (according to Rienhoff and Baker) that 5 to 10% of chronic benign gastric ulcers undergo malignant degeneration. There are a few with whom Rienhoff and Baker agree, who are of the opinion "that an ulcer is either malignant from the beginning or else does not become malignant."

Chang studied 62 cases in which the roentgenogram showed craters typical of simple gastric ulcer without other change. In a follow-up period of 2 years, 2 of the patients definitely showed cancer, in a third case there was a serious suspicion of cancer.

There is a group of cases in which the differentiation between a benign and malignant lesion of the stomach is practically impossible except by microscopic examination. Rivers and Dry in a recent review of a group of gastric ulcer cases state, "No infallible means except microscopic investigation can be applied to prove the benignity of the lesion under consideration. The histories of the cases included in this study amply illustrate that practically all of the signs and symptoms may at times fail to indicate the exact nature of the lesion. The symptoms of benign and those of malignant ulcer may be identical....."

They reviewed the histories of 200 patients with surgically verified gastric ulcers. Of this series, 100 were benign and 100 malignant. In a comment on their study, they offer the following differential points:

(1) "Patients with gastric ulcers who have short histories and who have shown no remissions of symptoms, inadequate relief on medical regimens and persistent blood in the stool should be suspected of harboring malignant ulcers."

(2) "If, in addition, the ulcer is large and is situated near the pylorus on the greater curvature or on the anterior wall and if hydrochloric acid in the gastric content is demonstrably absent or diminished the probability that the lesion is malignant is great."

(3) "If, on the other hand, the patient is young, if there are long periods during which the ulcer is quiescent, if the values for gastric acids are high, if bleeding from the lesion is intermittent, if the ulcer exhibits the characteristics of penetration or if the complication of hour-glass contracture is present, the probability of benignity is suggested."

(4) "Further, clinical improvement under treatment, cessation of bleeding from the ulcer and roentgenologic evidence of the disappearance of the lesion add evidence that the lesion is benign."

They feel that it is usually safer to treat gastric ulcers surgically unless contraindications are present.

Bloomfield states, ".....it is impossible by clinical observation to determine early cancerous change in apparently benign peptic ulcer. He concludes, "The only practical attitude to adopt, therefore, is to regard small apparently innocent gastric ulcers as in fact benign until evidence to the contrary is weighty enough to arouse serious suspicions, and to accept the fact that a certain number of unavoidable tragedies will occur."

## II. CASE REPORT

### CARCINOMA OF STOMACH WITH METASTASES TO REGIONAL NODES

By E. Iverson

Case is of white male, 42 years of age, admitted to University of Minnesota Hospitals 2-25-35 and discharged 4-5-35 (39 days).

#### Admission Complaints

1. Epigastric pain for 14 years.
2. Vomiting, intermittently for 3 years.

#### Development of Illness

Fourteen years ago, he noted pain in epigastrium associated with gaseous eructations, particularly after meals.

Pains were intermittent and would be relieved by food between meals.

Six years ago, he began having much more distress following meals. He was placed on an ulcer regime. Patient adhered to this from time to time with only a slight amount of relief.

Four years ago, he started having gas pains about 2 hours after each meal. Vomiting would relieve him.

Two years ago, patient consulted physicians at which time a gastro-intestinal x-ray series was taken. Diagnosis: gastric ulcer. Patient was placed on a Sippy diet and for a time felt relieved.

Six months previous to admission, his epigastric pain became more severe. He had nausea and vomited usually every day, 2 to 3 hours after meals. There was no weight loss.

#### Admitted. Physical Findings

2-25-35 - For the most part were essentially negative. There were no palpable masses in the abdomen. No rectal shelf and no adenopathy. Laboratory - Urine - negative. Blood - hemoglobin 91%, leucocytes 10,350, Non-proten nitrogen - 30.8. Chlorides 650.

Gastric expression with histamine:

	<u>1</u>	<u>2</u>	<u>3</u>
Free acid	0	+	10
Total acid	38	-	16

Blood present in stools on 3 examinations. X-rays: "Gastro-intestinal study (2-18-35) - Reexamination of the stomach shows a definite filling defect on the greater curvature of the stomach at the pylorus. The pylorus itself is held open and somewhat rigid. There is some irregularity in this region. Some hyperperistalsis is present and some evidences of an inflammatory process may be made out, but I believe that the primary lesion is a small carcinoma just in the prepyloric area of a rather early type. Conclusions: carcinoma, prepyloric, early stages." X-ray: (Following medical regime) (3-15-35). "The findings are

very similar to the last examination. The defect on the greater curvature is again observed. The pyloric canal is held open and appears to be rigid. The whole appearance suggests a small carcinoma as previously reported.

#### Course

Put on Sippy diet for 3 weeks after which there was no change in the lesion on X-ray, as already reported.

#### Operation

3-22-35 - Findings - Small, hard lesion confined wholly to the intrinsic portion of the stomach. One hard lymph node in gastrocolic omentum near pancreas was excised. No peritoneal implants were seen. A subtotal gastric resection was done. Pathologic report: Gross: "Stomach resection. There is a small area of roughening in the mucosa in the prepyloric region. The pylorus is somewhat rigid and cuts with brittleness. Microscopic: The mucosa appears slightly eroded and infiltrated by round cells. Deep in the submucosa, there is a small nest of blue staining cells which have a tendency to form acini." Lymph node from gastrocolic omentum - hard, oval, 3/4 cm. in long axis. Microscopic: "At the hilum of the node, there is one nest of basophilic cells with a definite tendency to acinar formation. Diagnosis: Scirrhus carcinoma of the stomach with metastasis to lymph node."

The convalescence was complicated by postoperative pneumonia in the left chest. Patient recovered from this and x-ray study (4-10-35) revealed "gastric resection with anastomosis is shown. There is some irregularity around the stoma, but I believe this is due to hypertrophy of the rugae. Moderately good function is present. There is no retention. Conclusion: Gastric resection with anastomosis functioning well."

#### Discharged

on April 5, 1935.

### III. CASE REPORT

#### BENIGN ULCER OF GREATER CURVATURE

Case is of white male, 58 years of age, admitted to University of Minnesota Hospitals 5-2-35 and discharged 5-22-35 (20 days).

#### Present complaints

1. Epigastric and left upper quadrant pain.
2. Gaseous distention and eructations.

#### Present illness

History dates back to summer 1933 when he had daily attacks of epigastric pain which were so severe as to cause him to "sweat" and feel "tight in the chest." The attacks usually came on about 2 hours after meals. Belching and warm water with soda only partly relieved the pain. Had a tonsillectomy following which he felt somewhat better.

12- -34 - "Caught cold." Before he recovered entirely from this, he again experienced abdominal discomfort. At that time, he experienced anorexia and from December 1934 until his admission he lost 36 lbs.

3- -35 - Epigastric pain became more severe. Pain was accompanied by nausea not associated with vomiting.

#### Admitted. Physical examination.

5-2-35 - Essentially negative except for slight tenderness in the epigastrium and evidence of marked weight loss.

Laboratory: Urine - negative. Blood - hemoglobin 94%, leucocytes 6,050, X-ray: (5-7-35) Gastro-intestinal study; "Re-examination in the upright position shows a carcinoma on the greater curvature extending fairly high up to well above the level of the esophageal orifice. There is also some extension medially and posteriorly right around the area of the esophageal orifice. Some distortion of the esophageal stream is present indicating that the tumor extends well up to the esophageal orifice on the posterior wall."

#### Operation

5-10-35 - "The stomach at first appeared to be entirely normal, but on further examination it was found that there was an attachment of the stomach to the anterior abdominal wall well over to the left of the midline. This point of attachment was at or just to the anterior side of the greater curvature about 5 or 6 inches down from the esophageal opening. There was an area of attachment to the peritoneum over an area of about 1.5 cm. in diameter. This appeared to be of an inflammatory nature. Palpation of the stomach which was adherent did not reveal any evidence of disease or change in its consistency. Operative procedure: The attachment of the stomach to the peritoneum was taken down by excising the peritoneum around this attachment and then suturing the defect in the peritoneum from within the abdominal cavity. The mass was then excised going about 0.5 cm. on all sides of the tissue. After it was removed and the mucosal side inspected, it was seen that there was a round, punched out ulcer without thick edges but rather normal appearing mucous membrane right up to the edge of the ulcer."

#### Pathologic Report

Gross: Ulcer 2.5 mm. in diameter. There are no overhanging edges and the floor is fairly even. Microscopic: Three different areas are studied. These show round cell infiltration of the base of the ulcer. Most of the cells are plasma cells and there are a few eosinophils. No evidence of malignancy. Diagnosis: Benign ulcer of stomach.

Convalescence was uneventful. Discharged 5-22-35 with instructions to return to the Out-Patient Department for follow-up.

#### IMPRESSIONS

1. A long history of indigestion suggests a benign lesion.
2. Perforating ulcers are more likely

to be benign.

3. An appreciable hematemesis is more common in benign than in malignant ulcers.

4. Slow seepage of blood into the stool is more frequent in carcinoma of the stomach than in ulcer.

5. The lesion is usually assumed to be benign if there is symptomatic response to medical therapy, if repeated tests reveal no blood in the stool and if there is roentgenologic evidence of decrease in size of the lesion.

6. In its earlier stages, evidence of infiltrative carcinoma (of stomach) is exceedingly difficult, sometimes impossible to reveal.

7. Benign ulcers of the greater curvature are rare.

8. Lesions over 4 cm. in diameter are malignant in the great majority of instances.

9. The presence of considerable amount of acid in the gastric secretion is of some evidence against carcinoma of the stomach.

10. In certain instances, the differentiation between a benign and malignant ulcer is practically impossible by clinical methods.

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Radiology 22, #2: 131, (February) 1934.

#### IV. MOVIES

Title: Motor Mania

Released by: Fox Motion Picture Corporation

V. SUBJECTSVOLUME VI  
1934-35

1.	Oct. 4, 1934	Case Analysis
2.	Oct. 11, 1934	Malignant Melanoma
3.	Oct. 18, 1934	Lipoma
4.	Oct. 25, 1934	Intracranial Hemorrhage
5.	Nov. 1, 1934	Case Analysis
6.	Nov. 8, 1934	Typhoid Fever
7.	Nov. 15, 1934	Hyperemesis Gravidarum
8.	Nov. 22, 1934	Appendicitis
9.	Dec. 6, 1934	Brain Abscess
10.	Dec. 13, 1934	Oxygen Therapy
11.	Dec. 20, 1934	November Autopsies
12.	Jan. 10, 1935	Anemias of Childhood
13.	Jan. 17, 1935	Endometriosis
14.	Jan. 24, 1935	December Autopsies
15.	Jan. 31, 1935	Intracranial Meningioma
16.	Feb. 7, 1935	Carcinoids
17.	Feb. 14, 1935	Agranulocytosis
18.	Feb. 21, 1935	January Autopsies
19.	Feb. 28, 1935	Kidney Tumors
20.	Mar. 7, 1935	Benign Gastric Tumors
21.	Mar. 14, 1935	Acromegaly
22.	Mar. 21, 1935	Carcinoma of the Tongue
23.	Apr. 4, 1935	Peripheral Vascular Disease
24.	Apr. 11, 1935	Pneumococcic Pneumonia
25.	Apr. 25, 1935	Adenoma of Thyroid
26.	May 2, 1935	February Autopsies
27.	May 9, 1935	Myxedema
28.	May 16, 1935	Jaundice
29.	May 23, 1935	Ectopic Pregnancy
30.	June 6, 1935	Gastric Ulcer

Note: No Bulletin was published for the meeting held Thursday, April 18th. This was the address of Professor Franz Blumenthal on "Paradoxical Influence of Light in Skin Cancer."

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For Regular Attendance and Interest

Entire staff

We Apologize

For failure to mention anyone who has taken a special part in the proceedings, because we failed to include your name in the records. We appreciate it just the same.

The average attendance was 100 per meeting and over 100 bulletins were sent out each week by mail to physicians, clinics, libraries, hospitals and medical schools. There were 31 meetings, all held in the Amusement Room of the Nurses' Hall with the exception of one in the Medical Science Amphitheater. We started on time with very few exceptions and finished within the allotted period in the majority of instances. The movies apparently helped in this respect (starting time). They also seemed to break the concentration on personal-professional affairs and left us in a more receptive frame of mind. Most of the departments cooperated in not scheduling conflicting assignments.

Again we wish to thank all who assisted in any way in making the meetings successful, especially L. G. Rigler and staff. We realize that the choice of subjects was not always a happy one and we wish to thank all of those who made helpful suggestions along these lines. We assure you that it was a pleasure to be of service to you in planning and conducting these meetings during the past year.

Signed: Alex Blumstein  
Rudolph Koucky  
William A. O'Brien