CURRICULUM VITAE OF TWO GASTRIC CANCERS

A Contribution to the Solution of the Problem of Stomach Carcinoma

THOMAS SCHOLZ, M.D.

New York

Prior to the x-ray era cases of gastric cancer, with few exceptions, were diagnosed only at an inoperable stage. Clinical methods usually did not permit of early recognition of the disease, and the result was the still existing horrible text-book picture of the hopeless stomach carcinoma.

With the advent of roentgenology, and more especially the development of its gastro-intestinal branch, we have obtained a means of recognizing gastric cancer long before its inoperable stage, while, thanks to the cancer campaign, public interest in the importance of early diagnosis has been stirred up to such a degree that patients now, in contrast to former times, are seeking medical advice early in ever increasing numbers. It would be expected, therefore, that early medical consultation together with a prompt roentgen examination would have caused a rapid diminution in the number of inoperable cases and, in conjunction with timely operation, would have furnished a practical solution of the problem of gastric cancer. This hope has not been realized. Even now approximately 80 per cent of the patients, including many who have sought medical advice early, come to operation when it is too late. It is, therefore, self-evident that there must exist certain phases of this problem which still lack a proper understanding on the part of the profession.

The writer has found two cases which shed an interesting light upon the problem. These two cases are among those rare instances in which the roentgenologist who has made a diagnosis of early malignancy is again called upon, years later, after the condition has reached an inoperable stage, to reexamine the patient. Fortunately, in both instances a complete history was obtained. The presentation of these two cases will enable us not only to trace the course of the disease from the earliest symptoms, but also to explain why, notwithstanding definite early roentgen diagnosis, the patients were allowed to drag along until the inoperable stage was reached.

834
Curriculum Vitae of Two Gastric Cancers

Report of Cases

Case I: Mr. E. B., aged fifty-four, was referred for roentgen examination of the digestive canal on June 12, 1922, with the clinical diagnosis "indigestion or possibly gastric ulcer." He was a lawyer by profession, highly intelligent, and apparently a careful observer. His height was 6 feet, his weight 200 pounds. He presented the picture of perfect bodily health. Prior to his present complaints he had never during his adult years suffered from any serious illness or from any digestive disturbance.

History of Illness: Three weeks before he was seen, the patient began to experience occasionally a slight oppression in the epigastric region. This feeling usually appeared towards the end of or immediately after his main meal, which he was in the habit of taking in the evening. It was more likely to occur if he ate very much. It never came on in conjunction with the other meals, which were small.

After about a week this symptom seemed to appear more regularly. Though the discomfort was only slight, it made the patient "stomach conscious," and, as he was a hearty eater who enjoyed his main meal, the expectation of the oppressive feeling made him nervous. At the end of the second week, therefore, he decided to consult a physician. The latter prescribed a medicine for "indigestion" and assured the patient, without any examination, that there was "nothing to worry about." When, after another week, no definite improvement had taken place, the patient insisted upon an x-ray examination "in order to get at the bottom of the trouble." There was at that time, three weeks after the onset of the symptoms, no loss of weight or strength nor any change in the appetite. The bowels were regular.

Examination of the abdomen proved negative.

First X-ray Examination, Three Weeks after Onset of Symptoms and One Week after Medical Consultation: At the junction of the middle and distal thirds of the lesser gastric curvature was a well defined and evenly outlined indentation about 2 cm. deep and 1 cm. wide (Fig. 1). This outline defect was permanent and constantly observed on several occasions. It did not give way to pressure manipulation under the fluoroscope and was only very slightly tender to palpation. Gastric motility was normal. As the width of the incisure was decidedly too great and its

Fig. 1. Case I: X-ray Findings Three Weeks after Onset of Symptoms; Small Indentation at the Middle Portion of the Lesser Gastric Curvature.
shape too well blocked out for a spastic contraction, a diagnosis of beginning neoplasm was made with the suggestion that the patient be reexamined within a week.

The clinician seemed to hesitate in accepting the roentgen diagnosis of gastric neoplasm in view of the "slight and very doubtful x-ray evidence, the perfect bodily health of the patient, and the absence of any other clinical evidence suggestive of malignancy." On the basis of the history and a marked increase in the hydrochloric acid of the stomach, he seemed more inclined to consider the case one of ulcer. Roentgen reexamination was, therefore, declared unnecessary.

The patient was again seen on November 21, 1925, approximately three and a half years later, being referred by Dr. Max Einhorn for x-ray examination of the gastrointestinal tract, with the clinical diagnosis "advanced carcinoma of the stomach." He had evidently lost much weight, was greatly emaciated and weak, and was suffering constant pain. Abdominal palpation revealed a diffuse tender mass in the gastric region.

![Image]

Fig. 2. Case 1: X-ray Findings Three and a Half Years Later Than Those Shown in Fig. 1; Involvement of Practically the Entire Stomach

Second X-ray Examination, Three and a Half Years after the First: Radiography this time showed a very marked, diffuse narrowing of the distal three quarters of the gastric lumen (Fig. 2). Peristalsis was almost entirely absent. The first portion of the duodenum was deformed. The pylorus appeared permanently open, allowing the contrast food to pass through very rapidly. The emptying time was four hours. A diagnosis of scirrhous carcinoma was made.

Though the condition evidently was inoperable, an exploratory laparotomy was insisted upon by the patient's family. The operation, performed by Dr. Willy Meyer, revealed the gastric involvement to be more extensive than the x-ray evidence indicated. Practically the entire stomach was indurated, and there was also pronounced enlargement of all the regional nodes. Microscopic examination of one of these nodes showed the condition to be an adenocarcinoma. The patient succumbed six weeks later.

Comment: How was it possible that in this case, notwithstanding the very early x-ray evidence of gastric cancer, the patient was allowed to drag along for almost three and a half years until the condition became inoperable and the chance of recovery was completely destroyed?
The answer to the above question is given by the story told by the patient and members of his family. According to this story, the patient was informed by the attending physician after the first x-ray examination that he had an ulcer of the stomach. He was placed on an ulcer diet, whereupon the symptoms immediately disappeared. After seven weeks, at the end of the diet period, another x-ray examination was made elsewhere. The roentgen report, a copy of which was given to the patient, described a marked permanent spastic constriction at about the middle of the lesser curvature of the stomach, "indicative of an ulcer at the corresponding level of the greater curvature." It was explained to the patient that this spastic contraction indicated that the ulcer had not yet completely healed and that, therefore, he would have to continue with the diet, which he did for another three months. During all that time he felt perfectly well.

At the end of the diet period the patient was gradually placed upon normal food. But the very first time he was allowed a full meal the symptom of epigastric oppression reappeared and continued to occur after each large meal. A few weeks later this feeling of oppression began occasionally to take on a slightly painful character. The patient, therefore, was again placed upon an ulcer diet and again the symptoms disappeared promptly, but reappeared just as promptly upon each attempt to return to a more liberal diet.

The following six to seven months were characterized by intermittent dieting causing relief from symptoms, and attempts to return to normal food, each time followed by reappearance of the symptoms. During that time a definite loss in weight and strength set in. This, however, was ascribed by both physician and patient to the long-continued dieting.

Dissatisfied with the therapeutic result, the patient changed his doctor. On the strength of the previous history, supported by the recent x-ray report of ulcer, the new physician, too, treated for gastric ulcer. This time the patient was put to bed for six weeks and placed on a strict diet. The symptoms disappeared "almost entirely." There was a gain of 8 pounds in weight and marked general improvement, but as soon as the patient was allowed to get up and attend to his business he again began to lose in weight and strength, while a more liberal diet brought on renewed gastric discomfort.

The patient now began to change doctors frequently, seeing five in slightly more than a year. He went the rounds with the x-ray plates, which then were more than two years old, and the roentgen report of gastric ulcer. Each physician agreed with the diagnosis of gastric ulcer and treated the condition as such with diet, medicine, injections, diathermy, etc., without any permanent improvement. Nor did the patient obtain relief from a chiropractor, whose first application made him feel so much worse that he immediately discontinued the treatment. Another x-ray examination was not made, not for financial reasons, but because nobody advised it. On one occasion when the patient himself suggested it he was told by the physician that the old plates "showed the ulcer so beautifully that any additional x-ray examination would be only waste of money."

For the following five or six months the patient kept away from physicians altogether. By that time, approximately two and a half years after the onset of the symptoms, his weight had decreased to 150 pounds, and gastric discomfort had become almost constant. He had learned, however, that by eating small amounts at a time, doing very little work, and resting frequently, he could bear the discomfort and not only hold his own, but occasionally even gain slightly in weight and strength. These transitory periods of improvement were instrumental in destroying entirely his already undermined confidence in doctors and in converting him to Christian Science, to which he adhered for about a year, when a sudden and very marked increase in the gastric pain and a more rapid loss in weight and strength induced him to see Dr. Einhorn, nearly four years after appearance of the first symptoms.
Case II: Mrs. E. R. was referred for roentgen examination of the digestive canal on Feb. 15, 1924, with the diagnosis of "gastric ulcer." The patient was a widow, forty-eight years of age, engaged in business to support her family of four. She was 5 feet 9 inches in height, weighed 178 pounds, and looked robust and healthy.

History of Illness: The patient had never had any digestive disturbances until five weeks before, when she began occasionally to experience a slight pain starting immediately after a meal and lasting for about half an hour to an hour. This pain did not occur after every meal, but it made its appearance often enough to attract her attention and cause her some annoyance and nervousness. Wishing to keep fit for her business activities as the only supporter of the family, and because of frequently heard discussions about cancer, she consulted, five days after onset of the symptoms, a physician who diagnosed the condition as "nervous indigestion," prescribed a medicine, advised her to let down on her work, to take more rest, and to eat more regularly.

First X-ray Examination, Five Weeks after Onset of Symptoms and Four Weeks after First Medical Consultation: At the distal portion of the greater curvature and extending for about 2 cm. was an evenly outlined defect causing a slight nar-
rowing of the pyloric end of the stomach (Fig. 3). The area of the outline defect appeared somewhat lifeless, and the peristaltic waves coming from above along the greater curvature here became very shallow and hardly noticeable. There was a very slight local tenderness on palpation under the fluoroscope. A tentative diagnosis of beginning pyloric neoplasm was made, with the suggestion that the patient be reexamined within a few days after proper atropinization for the purpose of excluding the possibility of spasticity.

The above roentgen diagnosis was considered entirely out of line with the clinical data. On the strength of the latter, therefore, and in view of the "very doubtful" x-ray evidence, the possibility of malignancy was entirely dismissed and the immediate reexamination declared unnecessary. The condition was believed to be a gastric ulcer, the patient was placed on a diet, and all gastric symptoms immediately disappeared.

Second X-ray Examination, Six Weeks Later: At the end of the diet period another x-ray examination was ordered. This showed a slight but definite increase in the extent and depth of the previously observed pyloric outline defect (Fig. 4). This pyloric narrowing was permanent and constant during several examinations made on two different days. Local tenderness on digital manipulation under the fluoroscope, also, appeared more pronounced than on the previous occasion. On the basis of these findings a definite roentgen diagnosis of pyloric neoplasm was made.

The case was then thoroughly discussed with the attending physician. We were here confronted with a puzzling situation. If the roentgen diagnosis was correct, the only hope lay in prompt operation, which, in view of the early stage of the condition, gave a good chance for a complete recovery, while any further delay would tend to jeopardize the patient's life. On the other hand, we had here a patient in whom the history suggested a gastric ulcer; in whom the instituted ulcer treatment evidently had accomplished a perfect clinical cure; in whom there was clinically not the slightest evidence or suggestion of malignancy; and in whom all the other laboratory findings, including blood picture, Wassermann reaction, urine and gastric chemistry were negative. The clinician, furthermore, had to take into consideration that an operation would not only completely wipe out the patient's small savings, but also bring her family into financial distress. If the roentgen diagnosis should prove correct the expenditure would, of course, be justified. However, should the operation show, as the clinician evidently feared, that the x-ray diagnosis was wrong, he would be placed in a very awkward situation.
The question of operation was talked over with the patient. Feeling perfectly well and considering herself completely cured, she definitely declined to consider any operative procedure. To divide the responsibility still further the attending physician proposed a consultation with a clinical specialist. The latter, too, advised against operation, especially in view of the excellent result of the ulcer treatment, which "conclusively proved the case to be one of benign ulcer."

The patient was again seen on Aug. 29, 1926, slightly more than two and a half years later, when referred for x-ray examination of the digestive canal by Dr. Henry J. Wolf with the diagnosis of "advanced cancer of the stomach." She appeared greatly emaciated and very weak, having lost 67 pounds since she was previously seen. Her appetite was poor. She was suffering from constant gastric pain which was intensified by food, and vomited occasionally. On palpation there was a diffuse tender mass in the umbilical region.

Third X-ray Examination, Two and a Half Years after the Second: Radiography this time revealed the condition of the stomach shown in Fig. 5. There was a large, irregular outline defect involving the distal two thirds of the greater gastric curvature and causing a very marked narrowing of the corresponding portion of the stomach lumen. A diagnosis of advanced neoplasm, probably of inoperable character, was self-evident. On account of the patient's greatly weakened condition an operation was deemed inadvisable. She died three months later.

Comment: What were the reasons for the so disastrous procrastination in this case? The following data supplied by the patient will give the necessary explanation. After the first clinical ulcer cure the patient felt perfectly well for about two months, when gradually the original slight dull pain in the gastric region recurred. It started, as before, immediately after eating, but lasted longer than formerly. For financial reasons the patient first tried to treat herself, by means of the diet she had previously been taught to observe. When she failed to accomplish any permanent improvement, she consulted her original physician, who again placed her on a diet. But this time neither the diet nor an additional medicine seemed to be as effective as before. Though her condition improved generally, she did not become entirely free from pain. She then changed her physician twice within the next few weeks, each time being treated for gastric ulcer, but without any full success. Discouraged, she decided to treat herself with home remedies. Doing this for several months, she noticed a gradual loss in weight and strength. She also observed that
the gastric pain became more pronounced and more constant. Yet she still was well able to attend to her business.

About one and a half years after the onset of symptoms the patient experienced a sudden attack of sharp, diffuse abdominal pain. This induced her to consult a physician again. The latter informed her that her complaints might be due to one of three things: inflammation of the gallbladder, a loose right kidney, or appendicitis, most probably the latter. He advised a thorough x-ray examination with the above three possibilities in mind.

The x-ray report, a copy of which was obtained, declared the case to be one of chronic adhesive appendicitis and advised operation. A study of this report proved interesting, especially the part dealing with the gastro-intestinal phase of the examination. After describing the negative findings as to gallbladder and kidneys, the examiner informs us that the patient was given the barium meal at her home and that the roentgenological observations were begun nine hours later and were completed without application of an additional contrast meal. In other words, the stomach was not examined, the examination being confined to the intestinal tract. Thus the gastric condition was missed.

Being promised that appendectomy would give her complete relief, the patient consented to the operation. The appendix was removed and declared "chronically involved." However, the operation failed to bring any relief. The symptoms continued as before.

During the following months the condition was characterized by remissions. At times the patient improved slightly and even gained in weight temporarily, but on the whole she noticed that she was slowly losing ground. Approximately nine months after operation she experienced another sudden increase in abdominal pain, this time in association with constipation. She again consulted a physician, who advised an x-ray examination of the alimentary canal. Being told, however, that such an examination had been done just prior to the appendectomy and that nothing had been found except for the diseased appendix, he felt certain that the pain and constipation were due to postoperative adhesions, for which he advised another operation. This the patient refused. She then dragged along for a few months, still trying to attend to her business. Her gastric pain now was constant, day and night. It had become gnawing in character and was gradually increasing in intensity. Finally, when she could stand it no longer, she consulted Dr. Wolf.

**DISCUSSION**

The story of the above two cases brings home to us most vividly the fact that an early medical consultation by the patient may not be sufficient for a proper solution of the problem of gastric cancer. Notwithstanding the ideal fulfilment of the requirements for successful treatment, in the form of an early medical consultation and even an early x-ray diagnosis of gastric malignancy, both patients were completely deprived of an excellent chance of recovery by a lack of proper understanding of the medical situation. This proves the correctness of the statement made by Wood (15) that "it is useless to educate the public unless the profession can meet the demand so stimulated." In our cases this demand was not met. Failure was due to misconceptions on the part of the attending physicians as to the clinical and roentgenological aspects of the problem at issue. And as this deficiency was exhibited by all the physicians handling the earlier stages of the condition, it
THOMAS SCHOLZ

is fair to assume that this typifies the attitude of the average physician. It is, therefore, self-evident that the success of our fight for an early diagnosis in gastric cancer will to a great extent depend upon a proper correction of these misconceptions, which will be briefly discussed along the lines suggested by our two cases.

**Correction of Clinical Misconceptions**

*Lack of appreciation of the initial symptoms* was clinically an outstanding feature in both instances. The greatest obstacle to a proper realization of the very early symptomatology in gastric cancer evidently is the still existing textbook picture of the disease, with its palpable tumor, cachexia, absence of hydrochloric acid, and coffee-ground vomitus. The urgent necessity for reform in this direction was long ago recognized, and much has been done by publications such as those of Balfour (4), MacCarty (11), Eusterman (7, 8), Dwyer (6), Alvarez (1, 2), and others. However, the archaic textbook picture of the advanced and absolutely hopeless stage of the disease—a picture unfortunately still widely demonstrated to medical students as the classical clinical evidence of the condition—hangs like a millstone around our necks, so that persistent educational work in this respect must still be done in order to obtain more general and more uniform improvement of the situation.

In this educational work it is the general practitioner especially that should be reached, because it is through his hands that practically all gastric cancers first pass, while the clinical specialist, as a rule, sees only the more advanced stages of the disease. It should be pointed out to him again and again that the very early stage of gastric cancer presents none of the above textbook signs and that at the time of the appearance of the first symptoms the patient shows no clinical evidence of malignancy whatsoever, but, on the contrary, may appear as in our two cases, in perfect bodily health. And it is, as Alvarez suggests, these healthy, ruddy, robust-looking individuals with early stomach carcinoma and not the cachectic, hopeless cases that should be demonstrated to medical students and practitioners for an everlasting impression. At the same time it should be realized that when clinical evidence of gastric malignancy has become apparent the condition is usually beyond any hope.

The very first local symptoms are of necessity slight. They may consist, as in our cases, of only an occasional very mild epigastric oppression, or an occasional slight gastric pain with free intervals, so that the less alert physician may feel inclined to brush them aside as unimportant, or they may be of an indefinite general character not even suggesting gastric involvement. A slight feel-
ing of tiredness, loss of energy and "pep," an insignificant loss of weight, or general nervousness, without any digestive disturbance, may be the first warning signal. The frequency of an onset of this general character has been especially stressed by Dwyer, who in an analysis of 100 gastric cancers has shown that one fifth of them presented no symptoms referable to the stomach.

The early symptomatology may not only be slight or indefinite, but not infrequently is even misleading. Thus gastric cancer in its early stages may simulate a great variety of diseases, as gastric ulcer, cholecystitis, appendicitis, esophageal lesion, cardiac disturbance, etc. Operations for appendicitis done erroneously in gastric cancer, as in our second case, are not a great rarity. This mistake is the more disastrous for the patient as practically all removed appendices are declared to be "pathological," so that this apparent confirmation of the clinical diagnosis is likely to cause further costly procrastination.

The most common condition which comes up for differential diagnostic consideration is gastric ulcer. Alvarez, for instance, in a series of 41 cases of gastric cancer in physicians, found a history suggestive of ulcer in 21. This will not appear surprising if we are willing to revise our customary idea that stomach carcinoma is a tumor and ulcer an erosion of the wall. We should remember that both are lesions of the mucosa; that cancer begins as a lesion of microscopic size; that in the course of its enlargement it often is associated with ulceration, so that it may and often does assume a gross anatomical appearance which resembles gastric ulcer so completely that one could not distinguish the two even if he held both excised specimens side by side in his hand. It is, therefore, not strange that early gastric cancer may give rise to the same symptoms and react to dietetic management in the same manner as gastric ulcer. This point is of extreme practical importance, as shown in the two cases reported, in which too great a reliance upon the clinical evidence suggestive of ulcer and the apparent success of the ulcer diet proved so detrimental. The ulcer diet should, therefore, be used as a therapeutic test with very great reserve, especially in elderly people.

This uncertainty in the symptomatology of early gastric cancer is aggravated by the fact that the methods of clinical examination are at that period of no practical value. We obtain no positive diagnostic aid either from physical examination or examination of the blood, stomach contents, or feces. Not even Boas' (5) improved method for the determination of occult blood proves as helpful here as in the more advanced stages. In other words, at the time of the appearance of the very first symptoms there is clinically nothing which would enable us to make a diagnosis of gastric cancer.
Realization of the above state of affairs came only after the development of gastro-intestinal roentgenology. It was on the basis of comparative radiographic and clinical studies and only in the course of many years, that we began gradually to grasp the problem of early diagnosis. Though these experiences proved that the early diagnosis cannot be made clinically, they also showed that clinical medicine does play a very important rôle by preparing the ground for such a diagnosis. By means of a painstaking history, by considering the patient’s age, and by keeping in mind the possibility of this lesion in such obscure cases as those mentioned above, clinical medicine has to establish the status suspicious of gastric cancer. The positive diagnosis, however, rests solely with roentgenology.

_Correction of Roentgenological Misconceptions_

As roentgenology is the sole basis for the diagnosis of early gastric cancer, the practitioner must have a definite and correct idea as to the stage at which the lesion can be shown by the x-rays and the degree of safety with which such a diagnosis may be made, so that he will know when to order such an examination and to what extent to rely upon its result.

Taking it for granted, for the present, that the roentgenological manifestation of the early lesion is characteristic enough for diagnosis, we may say that the x-rays can visualize it as soon as it has reached such a size that its encroachment upon the x-ray silhouette of the stomach becomes visible to the eye of the observer. With our present highly developed technic such an encroachment can be demonstrated no matter whether it is situated on the anterior, lateral, or posterior wall of the organ. The only exceptions are the rare instances of involvement of the cardiac portion and some of the slowly growing scirrhous carcinomas, in both of which roentgenology occasionally fails to reveal the lesion early. In other words, the x-rays, in contrast to clinical methods, can show practically every gastric cancer long before the inoperable stage is reached, as illustrated by our two cases, where the diagnosis was made roentgenologically at a time when there was clinically not the slightest suggestion of malignancy.

The practitioner must, therefore, realize that x-ray examination furnishes him a means of obtaining a diagnosis in practically every instance at a sufficiently early stage to make recovery possible by a timely operation. But to save the patient’s life he must order the x-ray examination _early_ and not late in the disease. It is still a common experience, in fact it seems to be the rule, that patients are treated for digestive disturbances for months and even years without previous roentgen examination, and that the
latter is ordered only after clinical evidence of gastric malignancy has appeared, just for confirmation. Not infrequently great pride is felt in such a confirmation. It apparently is not yet fully grasped that such an attitude is nothing to be proud of. On the contrary, it should be recognized that such a delay in the use of roentgenology is the worst service the physician can possibly render his patient, because thereby he robs him of the only chance of recovery, as a late x-ray examination is quite as useless as a late clinical diagnosis.

The ordering of an x-ray examination in gastric cancer at an early date—which means before there is clinical evidence of gastric malignancy—is not a simple matter, owing to the fact that in these cases it often is impossible for the clinician to decide whether or not the stomach is the seat of the trouble. If we remember the uncertainty and unreliability of the early symptoms, the frequent absence of any evidence referable to the stomach, and the great variety of diseases which may be simulated by gastric cancer, we easily see that the practitioner will often be at a loss to decide which part should be x-rayed. If we further take into consideration that with all the clinical methods at his disposal the best clinician is able to arrive at a correct diagnosis in only approximately 35 per cent of the cases, it is fair to assume that the general practitioner, with his limited opportunity for working up his cases completely, will be wrong in the determination of the part to be x-rayed in the great majority of instances. This difficulty can be obviated only in one way, namely by referring every suspicious, doubtful, or clinically obscure case to the roentgenologist not, as is usually done, with the request for examination of a certain part of the body, but for a general x-ray survey under explanation of the patient’s symptoms. It is then left to the x-ray examiner to work up the case roentgenologically along clinical lines.

These x-ray examinations according to symptoms, the great importance and usefulness of which have been repeatedly pointed out by this writer (12, 13), require on the part of the examiner a thorough experience in general radiology and the ability of quickly translating clinical symptoms into terms of gross pathological anatomy and its roentgenological demonstrability. Possessing both, the x-ray observer will in demonstrable lesions, by a brief general survey, quickly obtain an idea as to the location of the cause of the trouble and will arrange the main examination accordingly. This is the best method of “catching” gastric carcinoma early. It has, however, one great drawback, in that its proper utilization, as stated above, requires a wide experience, so that comparatively few men are yet prepared to do it.

It has occasionally been stated that gastric cancer may sometimes have reached an advanced or even inoperable stage by the
time the first symptoms appear, and that in such instances even an early x-ray examination may come too late. Observations in a large number of cases, to be published later, prove that this is not so. It is true that the time of onset of the initial symptoms depends to a certain extent upon the patient's individual sensitiveness. However, the stomach itself is too sensitive an organ to allow a cancerous growth to attain an advanced stage without revolting. The impression of the so-called short histories is produced by the intermittent growth of the lesion. The course of stomach carcinoma more than most other cancers, is characterized, as pointed out by Ewing (9) and Konjetzny (3), by periods of marked remission. During such periods there may be complete absence of symptoms and even, as systematic roentgen observations made in the Montefiore Home during the years 1915-1920 have shown, a temporary anatomical regression. A superficially taken history in such cases, especially if the previous early symptoms have been definitely ascribed to another cause, as for instance in our second case to appendicitis, easily accounts for these apparently short histories.

The positive diagnosis of very early gastric cancer is one of the most difficult chapters in roentgenology. While the demonstration, recognition, and differential diagnosis of the well developed lesion are, in view of the sufficiently large opportunity for personal observation and the abundance of material published in textbooks, a matter of common knowledge among roentgenologists, the situation in regard to the early stage of the disease is quite different. Here textbooks give very little practical information, if any, so that the examiner is dependent mainly upon his own previous experience. And as opportunity for such early observations has been in the past and still is very scarce, it takes many years to acquire the proper technical skill in demonstrating the fine outline defects, especially if they are situated in less accessible parts of the organ, and a sufficient interpretative ability to diagnose these small irregularities correctly. Having once acquired this experience, however, the examiner often will be able to spot the lesion almost intuitively where the less experienced man will completely miss it. The clinician should, therefore, realize that the extent to which he may rely upon the x-ray diagnosis depends to a great extent upon the experience of the examiner. The question is not only one of an early x-ray examination, but of a competent one.

Differential diagnostic possibilities are many and important. In view of the frequency with which gastric ulcer intrudes itself into the diagnosis of gastric carcinoma, and the impossibility of early distinguishing between these two conditions clinically, roent-
genology assumes a very important rôle, especially in elderly people. It is true that an immediate and direct distinction is not always possible roentgenologically, because not infrequently both conditions may present exactly the same x-ray appearance. However, this can be accomplished indirectly. Alvarez has suggested the size of the visible x-ray defect as a valuable differential point, assuming, on the basis of his previous experience, that lesions up to the size of a quarter are usually benign, above that size usually malignant. This means of differentiation, however, has a great drawback in the fact that the x-ray image is an unreliable basis for judging such small differences of size. A much better method is that of repeated x-ray observations. This method, also referred to by Alvarez, has proved very reliable in the hands of the present writer. A benign ulcer will show definite roentgen-anatomical evidence of regression within one to two weeks after the beginning of the ulcer treatment, and still later will entirely disappear, while the malignant lesion will show x-ray evidence of continued enlargement or of only temporary arrest, even if the symptoms, following the ulcer diet, for a time completely subside. The importance of these repeated roentgen observations for differential diagnostic purposes and also as a check-up of the result of the ulcer treatment is not yet properly realized. By accepting them as a routine procedure in every ulcer case, especially in patients above forty years of age, one would avoid the disastrous consequences experienced in our two cases. This routine method would furthermore prove that a good percentage of those "benign" ulcers which on clinical grounds are believed to undergo malignant degeneration later, really are cancerous lesions from the beginning.

Small benign intragastric tumors like fibromyomata, polypi, etc., may be difficult or impossible to differentiate from early cancer, but such lesions are extremely rare. Besides, they require operative procedure anyhow, so that a definite distinction is of only academic interest. Extragastric conditions producing stomach defects can, as a rule, be ruled out. Very rarely do they lead to diagnostic errors. Two such cases have been described by us (14) in which a carcinoma of the tail of the pancreas, on account of adhesions to the stomach wall, led to the diagnosis of gastric cancer. Spastic contractions can always be differentiated by proper roentgenological handling and reexaminations after the application of antispasmodics.

Negative x-ray findings do not, of course, exclude the presence of gastric cancer, because the lesion may not have reached the visible stage. Therefore, if the symptoms continue, a reexamination should be ordered. The latter should be made soon, within
a week or two, and if necessary should be repeated later. These reexaminations are just as important as those mentioned above for the differentiation of gastric ulcer from cancer. The interval between the radiographically recognizable incipient gastric cancer and its inoperable stage is, with the exceptions pointed out before, wide enough to allow, with the aid of these repeated examinations, a diagnosis at an operable stage in practically every instance. One previous negative x-ray examination is, therefore, no alibi. Especially should one bear in mind that a negative x-ray examination of the stomach made several months or years ago is absolutely useless for the consideration of the present gastric condition.

Roentgenology in gastric cancer diagnosis is, of course, not infallible. Like any other method, it, too, is subject to errors which may be made even by the best examiner. However, with proper experience and judiciously ordered and arranged reexaminations as suggested above, diagnostic errors may be brought down to a negligible minimum. It should again be pointed out, and most urgently, that the value of the x-rays very often lies not in the immediate diagnosis, but in the proper arrangement of the examination method according to the clinical aspect of the case and in the judicious timing of reexaminations. The decision as to the advisability and the timing of such reexaminations rests entirely with the roentgenologist and not with the clinician.

Roentgenology, especially in gastric cancer, is not a purely laboratory method. It is a searchlight which must be directed under close observation of the clinical aspect of the individual case. In the proper sizing-up of the clinical aspect the roentgenologist may be of great help to the clinician. We must not forget that the general practitioner may see only one or two gastric carcinomas in a year, usually not even that many, while the fairly busy roentgenologist may see twenty to thirty or more. Therefore, if the x-ray specialist does not do his work blindly, if he makes it his business, as he ought, to become acquainted with the clinical aspects of each case, he will acquire in the course of years such a familiarity with the clinical intricacies of the various stages of stomach carcinoma that his advice may safely be taken as a reliable guide. In addition, the breadth of his examination method, including all the extragastric diagnostic possibilities in obscure cases, will prove of further value to the clinician. A beginning pulmonary tuberculosis, an aortic aneurysm, a gall-bladder lesion, a chronic appendicitis, a metastasis to the lower part of the spine secondary to a clinically non-recognizable primary focus, a renal calculus, or other radiographically demonstrable cause of the symptoms, will not be overlooked by the alert and experienced specialist. The roentgenological office should be con-
sidered an exchange on which all such cases are handled diagnostically with close cooperation among all the physicians concerned, to the sole interest of the patient.

The above outlined prerequisites for the success of the x-ray examination definitely and completely place roentgenology in early gastric cancer outside the sphere of the pseudo-roentgenologist and the clinician who chooses to do his own x-ray work. Neither of them is qualified to do this important, difficult, and highly specialized type of work. If as practitioners we continue referring patients to incompetent men, or if as clinicians we persist in doing these examinations ourselves, or leaving them to our nurses or technicians, we will not make much progress in the diagnosis of early gastric cancer. To what an extent this question of qualification enters into the shaping of the roentgen diagnostic result is shown by an analysis of a large number of incorrectly diagnosed cases, which revealed that in slightly more than 75 per cent the x-ray examination had been done by incompetent examiners or technicians.

Finally, proper utilization of the x-rays for the early diagnosis of gastric cancer may be greatly influenced by the cost of such examinations. Attention has been called to this repeatedly, especially by Heald (10), who pointed out that the problem of gastric cancer is greatly aggravated by the fact that the fees charged by competent men for gastro-intestinal surveys are prohibitive for the average patient. This is true, especially if we take into consideration that approximately 75 per cent of the patients are persons of small means. About 5 per cent of patients are from the well-to-do class and can afford the best and most expensive examination; approximately 20 per cent belong to the poor class and are, as a rule, excellently taken care of in institutions. The remaining 75 per cent, whose means are small, fall into the hands of cheap, incompetent examiners or, for financial reasons, delay examination until it may be too late, or must undergo a great financial strain in order to pay for competent work. This point must not be lost sight of in the further drive for an early diagnosis. Full success in this respect will depend upon finding means to make accessible the best type of x-ray examination to the 75 per cent of private patients of small means. Practical experience definitely proves that a perfectly adequate x-ray examination can be made at a price well within the financial capacity of any private patient.

Conclusions

1. Misconceptions on the part of the practitioner as to the clinical and roentgenologic aspects of the early diagnosis of gastric
cancer may completely offset the benefit of early medical advice sought by the patient. A correction of these misconceptions is therefore imperative.

2. As to the clinical aspect the practitioner must realize:

   (a) That the initial symptoms of gastric cancer are very slight, uncertain, and unreliable, or even misleading

   (b) That at that time there are none of the customary clinical evidences of malignancy, gastric or otherwise, but that the patient, in contrast to the usual textbook picture, may present a perfectly healthy, ruddy, and robust appearance

   (c) That usually neither the symptoms nor clinical examination methods permit an early diagnosis because at the time of the appearance of clinical evidence of gastric cancer the condition as a rule is beyond any hope

   (d) That an unusually large percentage of gastric cancers present the same symptomatology and the same favorable response to ulcer diet as benign gastric ulcer. The ulcer diet should, therefore, be used as a therapeutic test with great reserve.

3. As to the roentgenological aspect, the clinician has to consider the following points:

   The x-rays are the only means at our disposal to make the diagnosis of gastric cancer, in the vast majority of instances, early enough to permit the saving of the patient’s life by a timely operation.

   To serve this purpose the x-ray examination must be ordered early and not late in the disease, because a late roentgen examination is just as useless as a late clinical diagnosis.

   In ordering the examination the clinician should refer the patient to the specialist not with the request for radiography of a certain part of the body, but, under explanation of the symptoms, for a general x-ray survey.

   Such roentgen examinations according to symptoms, ordered in every suspicious, doubtful, or obscure case, are the best way to “catch” gastric cancer early and also to detect important obscure extragastric conditions.

   In roentgenologically doubtful or negative cases with persisting symptoms the x-ray examination should be repeated at short intervals. The interval between the first visible x-ray evidence and the inoperable stage is sufficiently long so that, by means of such reexaminations, practically every case can be diagnosed within the operable stage.
Repeated x-ray examinations are also of decisive value for the differentiation between gastric cancer and ulcer in cases presenting an identical clinical and radiographic picture. The benign ulcer will be shown to regress and gradually disappear upon ulcer diet, while the cancerous lesion will continue its growth, notwithstanding the temporary disappearance of the symptoms following the diet. For this reason, a roentgenologic check-up is of great importance in ulcer cases, especially in elderly people.

X-ray examinations for early gastric cancer are difficult. The benefit derived by the patient depends almost entirely upon the examiner's experience.

Early, proper and universal utilization of the x-ray method in gastric cancer is greatly impeded by the high cost of competently made private gastro-intestinal x-ray examinations. Means should be devised to make adequate examinations accessible to the 75 per cent of patients of moderate and small means.

References