PROBLEMS IN THE DIAGNOSIS OF CANCER OF THE STOMACH

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In a recent editorial the statement was made that in 10 per cent of cases a diagnosis of cancer of the stomach is made when no cancer exists, or the diagnosis is missed when cancer is actually present, and that this faulty diagnosis is made by the roentgenologist, by the surgeon after the abdomen is opened, and even by the pathologist examining the specimen under the microscope. The purpose of this paper is to study the course of the disease in this group of cases and, if possible, to determine why mistakes are made, and how they can be avoided. The cases reported below should throw some light on this problem.

Fifty per cent of all gastric cancers occur in the pyloric end of the stomach, 30 per cent occur in the pars media, and 20 per cent in the cardiac end. It is in this last group that the greatest number of mistakes are made so far as the roentgenologist is concerned. It is an interesting observation that whereas surgery in the cardiac end of the stomach is almost impossible, practically all examples of gastric cancer which are benefited by roentgen therapy occur here.

CASE I (Mrs. Y.): In this case the roentgenogram showed the filling defect typical of cancer of the cardiac end of the stomach (Fig. 1). A year earlier the patient had an x-ray examination which was negative (Fig. 2) in spite of the fact that symptoms had then been present for one year. Was there a cancer which could not be shown by x-ray at that time or did the cancer develop in the interval?

While it is true that about 38 per cent of cases give a history of gastric symptoms for years, nevertheless, a careful study will reveal a change in the nature of these symptoms which marks the onset of malignancy. In Case I, even though the x-ray failed to show malignancy at the earlier examination, this must have existed, since the symptoms were always of the same type, with accompanying signs of anemia, loss of weight, and gross blood in the stomach contents. Probably a variation of x-ray technic to include a rugae examination would be helpful in cases of this kind. Even if this were negative, a laparotomy should be done in the presence of the symptoms observed.

CASE II (Mrs. P.): Fig. 3 shows another roentgenogram of the cardiac end of the stomach. For two years this patient had slight indigestion, gross blood in the stomach, loss of weight, and anemia. X-ray examinations by different roentgenologists were repeatedly negative, as this figure indicates. Laparotomy revealed cancer of the cardiac portion of the stomach.

CASE III (Mr. M.): This patient had had symptoms since December 1932. Fig. 4 shows the x-ray film taken several months after the onset of symptoms, which was reported negative. A filling defect is seen near the cardiac end.

1 Thanks are due to Dr. Harry N. Golding, head of the X-ray Department, St. Joseph’s Hospital, Paterson, N. J., for permitting the use of the x-ray films from which the tracings used here were made.
Fig. 5 shows a picture taken at another hospital six months later, when the patient was reported to have an inoperable cancer of the stomach, and was advised against surgery. He was treated symptomatically.

Fig. 6 was taken one year later, when the patient was treated in another hospital, at first for ulcer. At laparotomy an inoperable cancer of the stomach was found and a biopsy was taken, but the patient was sent home before the report was made. On inquiry a report of lymphosarcoma was given and roentgen therapy was administered at this hospital. Three years later the lesion has practically disappeared and the patient feels well. It is of interest that this man's son died a few years earlier of lymphatic leukemia.

Case III represents the value of a biopsy even in inoperable cases and the importance of informing the surgeon as to the report as soon as possible. Often, in large hospitals, as in this case, the librarian is the only person who sees the biopsy report, many days after the patient has been discharged.

Case IV (Mrs. C.): Fig. 7 shows a small filling defect along the lesser curvature of the stomach. This is all that is needed to make a definite diagnosis of cancer of the stomach. It is not necessary to wait until a larger lesion is seen. Roentgen examinations in this case, made elsewhere, were several times reported negative. The patient died with metastases.
Case V (Mr. H.): Fig. 8 shows a small filling defect which was constant in many films, and which undoubtedly represents a cancer. This patient is being treated in another hospital for ulcer. When such a difference of opinion occurs, an exploratory laparotomy should be done.

Case VI (Mrs. Z.): This patient presented a filling defect along the greater curvature of the stomach two months after gastric symptoms appeared (Fig. 9). The diagnosis of cancer of the stomach was made here. Subsequent x-ray examinations done elsewhere were reported negative. A year and a half later two large masses developed in the ovaries. During the course of operation for these the tumor was found in the greater curvature of the stomach. The tumors of the ovaries were presumably metastatic from the gastric cancer, as is usually true of Krukenberg tumors.

Very often the diagnosis of malignant change in a benign gastric ulcer is made because of the prevalent idea that gastric ulcers may become malignant. Sometimes a benign peptic ulcer will present all the characteristics of cancer in the roentgenogram.

Case VII (Mrs. J.): Fig. 10 shows a filling defect along the lesser curvature of the stomach. This patient gave a history of having had an ulcer eighteen years before. At the time of the x-ray examination, and for several months prior to this, she had had cachexia, loss in weight, anemia, gastric symptoms, low acidity, and gross blood and lactic acid in the stomach contents. A diagnosis of cancer upon an ulcer base was made. At operation, a few adhesions were found, attached to a small ulcer.

Case VIII (Mr. T.): Fig. 11 shows a gastric lesion having all the ear-marks of cancer. At operation the lesion proved to be a benign peptic ulcer.

The number of benign ulcers said to undergo cancerous change varies from the modest figure of 5 per cent to as high as 50 per cent. It is in this group of cases that the pathologist makes his mistakes. If those who claim a 50 per cent change are right, then those who place the figure at 5 per cent must miss 45 per cent of cases. On the other hand, if the lower figure is correct, then the others make a mistake in 45 per cent of cases. At St. Joseph's Hospital all the peptic ulcers which have been regarded as possibly
undergoing cancerous change have been found upon operation and follow-up to be benign.

Case IX (Mrs. E.): This patient had had symptoms for one and one-half years. A roentgenogram showed a filling defect along the lesser curvature of the stomach (Fig. 12). At operation a mass was found which proved to be an ulcer surrounded by inflammatory tissue.

Case XI (Mr. H.): Fig. 13 shows a typical x-ray picture of cancer. A five-hour examination showed practically the same picture. At operation a hard mass was found in the pyloric end of the stomach. The surgeon thought he was resecting a cancerous stomach, but the pathologist reported a benign ulcer surrounded by inflammatory tissue.

Undoubtedly the diagnosis of benign ulcer would ultimately have been made in this case, with repeated x-ray examination, but the loss of time that this would have entailed, had the lesion been cancerous—and 99 per cent of cases showing this type of lesion are cancerous—might have been fatal.

Case XI (Mrs. B.): Fig. 14 shows a duodenal ulcer. The five-hour examination showed practically 100 per cent obstruction. The patient was operated on, and instead of
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an ulcer a large, apparently cancerous mass was found at the pyloric end of the stomach. A gastro-enterostomy was done as a preliminary measure, because of the patient's condition and advanced age (seventy-three years). A month later, when the surgeon undertook a resection, no tumor was found. What he had felt at the original examination must have been an inflammatory mass associated with peptic ulcer.

Case XII (Mr. D.): This patient, about fifty years old, gave a history of loss of weight, anemia, and gastric symptoms for a year. X-ray examination was done elsewhere, and a report of cancer of the stomach was given. Later an acute perforation occurred. Of the two surgeons present at the operation for this complication, one, who was aware of the previous x-ray diagnosis, said that he felt a mass without question; the other, who did not know of the previous examination, was equally sure that no mass existed. Fig. 15 shows the x-ray picture after the patient was operated on. This is a picture which is often seen in peptic ulcer.

![Fig. 17. Case XIV](image)
![Fig. 18. Case XV](image)

Fig. 17. Case XIV  
Fig. 18. Case XV

![Fig. 19. Case XVI](image)
![Fig. 20. Case XVII](image)

Fig. 19. Case XVI  
Fig. 20. Case XVII

Cases VII to XII show the difficulties presented both to the roentgenologist and to the surgeon, by benign ulcers with extensive inflammatory reaction and adhesions. If there is the slightest doubt as to the possibility of cancer being present, it is better to remove the lesion, even though it may prove later to be benign, than to leave behind a cancerous lesion under the impression that it is not malignant.

Case XIII (Mrs. V.): Fig. 16 illustrates the possibility of gastric ulcers in cancer tissue. In such cases the roentgenogram may show an apparently benign ulcer. Here are represented two such ulcers along the lesser curvature. However, a mass could be felt in this patient as large as a grapefruit, and death from cancer ultimately occurred.

Case XIV (Mrs. B.): This patient was operated on for gall stones. The stones were removed, but at operation a hard, inoperable cancer of the stomach was suspected. Three years later the roentgenographic findings are normal (Fig. 17). Is it not possible that the hard mass felt earlier was only a chronic pancreatitis associated with gall stones?

In many instances, patients who are not cachectic are treated for ulcers of the stomach, or some other lesion, without the benefit of x-ray examination;
yet when an x-ray examination is finally done, typical cancerous defects are seen, and at operation inoperable cancer is found.

Case XV (Mrs. S.): This patient had been treated for ulcer for months, even in a hospital, without x-ray examination. When a roentgenogram was finally taken, a large, inoperable cancer of the stomach was found (Fig. 18).

Case XVI (Mr. F.): This patient was treated for an ulcer for three years. Fig. 19 shows a filling defect due to cancer. At operation an inoperable cancer of the pyloric end of the stomach was found.

Case XVII (Mr. L.): Fig. 20 shows another cancer of the pyloric end of the stomach which had been treated as an ulcer for three years.

Case XVIII (Mrs. H.): The only symptom this patient had was progressive painless jaundice of six months' duration. The symptoms pointed toward biliary or pancreatic disease, and it was only by x-ray examination that the lesion was found in the stomach (Fig. 21).

Case XIX (Mr. R.): Painless jaundice was present in this patient, also. A cancer of the pyloric end of the stomach was found by x-ray (Fig. 22).

Case XX (Mr. M.): Figs. 23 and 24 show immediate and twenty-four hour x-ray pictures indicating pyloric obstruction. The patient had been ill for two years with gastric symptoms, anemia, and pallor. A roentgenogram taken at the onset of symptoms showed no gastric pathology. Just previous to operation pictures were taken and a cancer of the stomach was found at the pylorus. The lesion must have been too small in the beginning to be demonstrable by x-ray.

Conclusions

If this paper gives the impression that cancer of the stomach is confusing and difficult to diagnose, it must be remembered that this is true only in the 10 per cent of cases mentioned above; the other 90 per cent usually present no problem. In considering this 10 per cent the following points should be borne in mind:

1. Patients with anemia, loss of weight, and gross blood in the stomach contents (and this will always be demonstrable if enough tests are taken),
even though presenting no gross x-ray findings, probably have cancer of the cardiac end of the stomach. Rugae technic might possibly demonstrate such lesions. Even if no lesion is apparent in the roentgenogram these patients should have the benefit of laparotomy, since statistics show that the roentgenologist is more apt to miss an existing cancer than to diagnose cancer when it is not present. A biopsy should be taken, for a lymphosarcoma or other radiosensitive tumor may exist.

2. When several roentgenologists fail to agree on the diagnosis of cancer of the stomach, the patient should have the benefit of surgery.

3. In our experience benign gastric ulcers have never undergone malignant change.

4. Patients should never be treated for more than four to five weeks for any lesion of the stomach without an x-ray examination. Examinations should be repeated as often as is necessary to make a diagnosis.

5. In the presence of painless jaundice one should bear in mind the possibility of hepatic cancer metastatic from the stomach.

6. When the radiologist and the surgeon are in doubt as to whether a mass is cancer or inflammatory it should be treated as cancer.