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Benign Gastric Tumors

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C O U R T E S Y O F C I T I Z E N S A I D S O C I E T Y

I. ABSTRACT

BENIGN GASTRIC TUMORS

By Theodore M. Berman

With the development of the field of X-ray diagnosis, the subject of benign tumors of the stomach has been attracting increasing attention. As a result, this condition, formerly considered extremely rare, is now being recognized more and more frequently.

Incidence

There is a very marked variation in the statistics on the frequency of these neoplasms. Eusterman in 1922 estimated their incidence as compared to malignant tumors of the stomach at 1 to 200 (.5%). Hillstrom (1928) in a study of the records of the Department of Pathology of the University of Minnesota found 5% of gastric tumors to be benign. Lockwood, of Detroit (1932), reported 12 cases in a series of 278, an incidence of 4.5%. Righer in a 5½ year period comprising 4236 gastro-intestinal examinations found 25 cases in a series of 237, an incidence of 10.5%.

Age and Sex

Benign tumors of the stomach occur at almost all ages. The average age is from 45 to 50 years. The Mayo Clinic series ranged from 8 to 69 years. The sex distribution shows a preponderance of males in the ratio of approximately 2 to 1.

Pathology

As might be expected a considerable variety of tumors is represented, but only a few occur with appreciable frequency. Below is a table of incidence of the various types in the larger collections in the literature.

	Eliason & Wright (from Literature)	E&W (Personal)	Balfour & Henderson	Univ. of Minn. Hosp.
Polyps (including single and multiple tumors, adenomata, and diffuse polyposis)	119	38	23	35
Myomata	321	4	23 (including fibromata	12
Fibromata	23	6	Above	2
Dermoid Cysts	3	-	3	-
Angiomata	10	-	4	-

In addition to the above, myxomata, lipomata, osteomata, and miscellaneous cysts have been reported.

Polyps

Fibro-epithelial tumors of the gastric mucosa are referred to in the literature as papillomata, adenomata, polyps, polyposis and a confusing array of compound names. Polyps range in number from one to several hundred, about 40% presenting two or more tumors. They are gray to reddish-yellow in color, and vary greatly in size from a few millimeters to several inches in diameter. They usually lie on the anterior or posterior wall away from the curvatures. The pyloric third is most often involved, the middle third next, and the cardiac third least. Most of them are less than 3 cm. in diameter. They are smooth or lobulated, and the consistence varies from soft to firm,

depending on the density of the connective tissue and the amount of gland formation. They are sessile or pedunculated and usually freely movable, over the submucosa. Microscopically the polyp shows a connective tissue core covered with columnar epithelium which may contain mucus. The glandular component varies from a few branching tubules to a true adenomatous structure.

Carcinomatous Regeneration

There is a definite tendency to carcinomatous degeneration. Brunn & Pearl in 84 cases of diffuse polyposis report 12% showing malignant histological changes. McRoberts, of the Mayo Clinic, in an intensive histological study of 5 cases of adenomatous polyp found malignant characteristics in 4, one of which returned later with a proved carcinoma of the stomach. The early carcinomatous changes are variation in size and shape of the epithelial cells, hyperchromatism, and a few mitoses. There was no breaking through the basement membrane. These changes occurred not in the pedicle but in the peripheral portions. McRoberts feels that these polyps are stages in the development of polypoid carcinoma. Five of the Mayo Clinic series were associated with a supposedly independent carcinoma of the stomach. Estimates as to the precancerous potentiality of this condition vary from about 10% to 80% - the lower figure being probably more accurate clinically. The larger, more adenomatous tumors are more likely to become carcinomas.

Myomata

In recent literature this tumor is somewhat less frequent than those just described. It is usually single, may be multiple, and the site of predilection is the greater curvature in the cardiac third of the stomach. The tumor is firm, smooth or lobulated, encapsulated, varies from one up to 6000 gm., and may be submucosal, intramural, or subserous. There is a slight tendency to sarcomatous degeneration. A case was recently reported showing metastases to the liver in which both primary and metastases presented a benign histological appearance. Death occurred from gastric hemorrhage.

Fibromata

These tumors are much like fibromata elsewhere. They are smooth, globular or elongated, firm, single or multiple, sessile or pedunculated, and usually lie in the pyloric third.

Cysts

Various types occur. Some are degenerated fibromata or myomata, or traumatic hemorrhagic lesions. A few dermoid cysts weighing up to 1000 gm. have been reported. These are usually subserous. Obscure mucosal cysts, some of which may be due to obstruction of gastric glands, have been observed. Hydatid cysts also occur occasionally.

Hypertrophy of Gastric Mucosa

This interesting condition is not a tumor but may well be mentioned here. It consists of an enormous thickening and redundancy of a placque-like portion of the mucosa which can be moved freely over the submucosa and is readily delivered into a gastrotomy incision for removal. There is no true polyp formation here.

Hemangiomata

This rare tumor is usually submucous, single, soft, blue-red, non-malignant, and shows a marked tendency to mild hemorrhage.

All types of benign gastric tumors may cause obstruction if they lie in the pyloric third; and if the pedicle is long enough they may prolapse through the valve into the duodenum. Many ulcerate, usually at their summit and cause mild to severe hemorrhage. Associated gastritis often occurs. Intussusception, torsion of the pedicle; cystic, hemorrhagic, and calcareous de-

generation - all are rare developments.

Etiology

Numerous conflicting theories obscure this phase of the problem. Syphilis, arteriosclerosis, alcohol and improper diet have all been mentioned.

Symptoms

Many, if not most, cases of benign tumors of the stomach are symptomless. In Eliason & Wright's series 75% were incidental autopsy findings. If histories are carefully taken this figure may be found to be too high.

Benign tumors in themselves are symptomless unless complicated by bleeding, ulceration, intermittent obstruction of the pylorus, or interference with gastric motility and secretion due to size of the tumor. There is no characteristic clinical picture and the diagnosis can only be suspected. Vague dyspepsia, nausea, vomiting, melena, anorexia - all may be present. The history may simulate ulcer or cancer. Pyloric obstruction occurs in 10%. If a pedunculated tumor prolapses through the pylorus an acute gastric crisis results with prostration, violent pain, and vomiting. These crises are intermittent. A mass is palpable in only 10-15%. Anacidity is frequently associated with polyps, more rarely with the other tumors. Melena, hematemesis, and secondary anemia are often found and may be the outstanding symptoms. A blood picture indistinguishable from pernicious anemia is occasionally observed; this usually clears up after surgical treatment.

Roentgenology

The only reliable means of diagnosis of these tumors is the X-ray. Priot to 1924 the condition was rarely recognized. As technic improved the Roentgen accuracy increased. The Mayo Clinic figures of 1927 show that of 58 cases the X-ray diagnosed a gastric lesion in 93%, and it specifically diagnosed correctly a benign lesion in 48%. At present the diagnostic accuracy is still higher.

The characteristic X-ray findings are:

1. Smooth, oval or round, sharply outlined filling defect, usually on anterior or posterior wall.
2. Peristalsis passes through gastric wall in region of the defect, and the walls are flexible.
3. The defect is often movable.
4. Prolapse into duodenum may be observed.
5. Diffuse polyposis presents multiple rounded defects.

The tumors are easily overlooked and the examination must be carried out in various positions with a small amount of thin barium, so as not to obscure the small defects by overfilling.

Prognosis and Treatment

Cases without symptoms are best left alone. The vast majority of clinical cases are completely cured by gastrotomy, excision of the tumor and cautery of the pedicle. The extent of surgery depends on the individual case. If the tumors are large or numerous partial gastric resection is adsivable. A few operated cases of polyps in which only excision was done, will return later with carcinoma of the stomach.

Points of Special Interest

1. Benign tumors of the stomach are not as rare as formerly thought - 10% of all gastric tumors.
2. 10-20% of polyps are definitely precancerous.
3. The clinical picture may be suggestive, but is not characteristic.

4. X-ray is the only accurate means of diagnosis.

5. Simple excision or partial gastric resection cures most uncomplicated cases.

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II. CASE REPORT

1 - Male - Age 44 -
Entered University of Minnesota Hospitals 6-5-29. Discharged 8-13-29.

Present Complaint

Epigastric pain, weakness, flatulence - 7 months. There is no relationship to meals. Weight loss is slight.

Physical

Significant findings:

1. Healed herniotomy scar - no masses or tenderness in abdomen.

2. Blood - 60% hemoglobin; 3,800,000 erythrocytes; 4,250 leucocytes.

3. Stool - Occult blood test negative.

4. X-ray - 2 smooth filling defects in stomach, one in pyloric third and one in middle third characteristic of benign polyps.

Operation

6-12-29 - Gastrotomy with resection of 2 sessile polyps 4x4x3 cm., and 3x3x2 cm.

Microscopic diagnosis - Benign polyps with infection.

Discharged - 8-13-29 - after moderate wound infection cleared up.

Readmitted - 2-1-33

Chief Complaint

Since December 1932 patient has had a continuous marked epigastric pain with occasional vomiting. He has lost 34 pounds in 2 months.

Physical Examination

The patient is markedly emaciated. There is a large incisional abdominal hernia.

Blood - Hemoglobin 44%; erythrocytes 2,490,000; leucocytes 8,950.

Gastric Analysis - Free HCl 0°.

Stool - Occult blood absent.

X-ray - Irregular defect in pyloric third of stomach characteristic of carcinoma.

Patient transferred to another hospital 2-6-33 and died. No autopsy.

Comment

This is a case of polyps followed by carcinoma. It is impossible to say whether the carcinoma developed in the site of the previous benign tumors or was an independent development.

III. CASE REPORT

- Age 46 - Entered University of Minnesota Hospitals 10-16-31. Expired 1-8-32.

Chief Complaint

Arthritis - 21 months.

There is no history of Gastro-Intestinal distress. Marked dyspnea on exertion has been present for 6 months.

Physical Examination

Significant findings:

Swollen tender ankles with limitation of motion.

Laboratory:

Urine - 2++ albumen on entrance. Many casts, leucocytes and occasional erythrocytes.

Blood - 60% Hemoglobin; 3,000,000 erythrocytes; 6,400 leucocytes; Toxic polymorphonuclears.

Wassermann - negative.

Progress

Patient was treated for arthritis and given vaccine therapy. X-ray showed chronic arthritis in spine; sacroiliacs and ankles. Weakness and anemia continued.

12-16-31 - Gastro-Intestinal examination shows benign polyp in pyloric third of stomach.

12-21-31 - Gastric analysis shows no free HCl.

Course was rapidly downhill. Sustained a pathological fracture of right humerus, first observed 1-4-32.

1-4-32 - X-ray of bones - shows osteoporosis of upper ends of femora and of pelvis and skull, suggesting osteoclastic malignancy. There is also a pathological fracture of upper end of the right humerus.

Urine shows much albumen - No Bence-Jones protein.

Blood - Marked secondary anemia characteristics. White cells show toxic changes and shift to the left with myelocytes, rare promyelocytes, occasional stem cells and plasma cells.

Died 1-8-32.

Autopsy

Leukemia, atypical.
Polyp of Stomach - benign.

Discussion

This is a complex case of obscure anemia in which Gastro-Intestinal examination showed benign tumor of stomach without symptoms. Multiple bone lesions suggested a possible metastasis from stomach (rare) or more likely a malignant tumor of multiple bones. The anacidity is to be noted.

IV. STAFF MEETING

Date: February 28, 1935

Place: Recreation Room, Nurses' Hall

Time: 12:15 to 1:15

Attendance: 90

Program: Kidney Tumors

Discussion: L. G. Rigler
C. D. Creevy
K. W. Stenstrom
O. H. Wangensteen
H. Mattson

Theme: L.G.R.: Simple film of urinary tract did not show anything. Next, July 1934, first entrance, at which time we found apparent defect in lower calyx, right kidney. Left showed some congenital anomaly not of much significance. This defect shown here at the time suggested it might represent tumor. Examined with retrograde pyelogram month later, defect more extensive. Diagnosis of kidney tumor definitely made. Films of chest to determine presence of metastasis; none found.

Second case: This examination did not help much because of inability to visualize kidneys. There is apparently a little enlargement of the left kidney. None of the opaque media would go any further. We got typical reduplication of kidney pelvis and hydronephrosis. Intravenous given with idea of visualization entirely unsuccessful because function of the kidney impaired.

Third case: Retrograde made on both sides shows peculiar appearance of left kidney pelvis. This irregular appearance later observed on the same side, perhaps to the same degree. Pelvis filled out better. Multiple non-opaque stones producing defects or some type of carcinoma of pelvis (papillary tumor) which in same way might produce defects made question of the diagnosis. We were unable to observe stones (gas overlying).

C.D.C.: Three main reasons why prognosis of renal neoplasm is so poor:

In the case of tumors in childhood not seen until late. Practically all the patients die despite the method of treatment employed. Tumor develops from parenchyma of the kidney and gives no symptoms until mother notices tumor. (Prominent abdomen). The fact that a number of patients have recovered in spite of the rather late operation suggests that we find some means of discovering tumor earlier to make prognosis better.

As far as tumor in adults is concerned, hypernephroma is commonest. These tumors are not epithelial in origin in the sense epithelial tumors of the skin are example. Difficulty here is patient usually goes from 1 to 15 years with hematuria before consulting physician. Presents himself with clinical picture of tumor, pain, and hematuria, and comes back with recurrence and metastasis. If we could only get across the idea that patients with pain without obvious cause in the region of the kidney, no matter how small, should have x-ray and investigation of urinary tract. Urogram preferably. I think most of these cases would be picked up earlier and prognosis improved enormously.

Tumors grow very slowly, usually metastasize late in the course. Many instances on record of patients with kidney tumors 15 to 30 years before being subjected to operation. Patient too often first consults physician because of symptoms due to metastasis, usually in the lungs or bones, very frequently in nervous system. Fever is very uncommon (usually a complication).

I have an idea stones in this case were probably blood clots. He had passed lots of stones, looked like pebbles. I talked it over with his home physician who thought patient extremely neurotic fellow who would like to lie in bed and not work. Later passed stone in his presence.

L.G.R.: Bone metastasis in so-called hypernephroma is not frequent. I do not know whether papillary carcinoma of the kidney pelvis is frequent or not. Not enough experience with them. Hypernephroma metastases are a pretty distinctive thing. More distinctive in that it tends to show metastasis to the cortex of the bone. Number of punched out areas in the cortex around the periphery of the bone. We think metastasis occurring in the bone should arrive in the medullary cavity. Diagnosis of sarcoma elsewhere apparently was justified in one case. At amputation, slide showed hypernephroma removed 13 years before appearance of metastasis. Eventually developed multiple lesions which helped to identify process.

K.W.S.: Not much experience with children. I think they should have preoperative radiation. If I remember correctly some reports of tumors that can be cured with radiation. We have some cases which responded? I believe that Hodgkin's more common in children than this tumor. The metastasis usually respond to a certain extent. Metastasis to the bones in the hypernephroma usually respond.

O.H.W.: We find quite a few children's tumors. I remember patient Dr. Stenstrom referred to, on Dr. McQuarrie's ward. Found mass fixed, closed wound, gave her x-ray treatment. Tumor got considerably smaller. Learned since she has died. When I was in the Mayo Clinic Dr. Will was asked to see a childhood tumor. Dr. Will said he would not operate upon the patient because he had never cured one. There have been some cures. Worth while to have patient radiated first, inasmuch as there are some cured by radiation. Mortality 100% otherwise.

During years I have been attached here a few adult patients came under observation, in which no tumor was found. We had patient here in 1925 who had all evidence of renal tumor, hematuria, pain, palpable tumor. She was studied by a urologist who came to same conclusion and explored her. No tumor was found. One cannot examine the kidney as well at the time of operation as he can before operation. Surgeon unless he cuts kidney from stem to stem cannot tell. More recent case, 4 or 5 years ago, we explored kidney with the idea of neoplasm. Dr. Creevy took her in hand, reexplored patient, found it after taking kidney out. Patient had had hematuria and pain for 2 years, perfectly normal pyelogram. We had interesting patient here who had no treatment at all for his tumor, widespread metastasis after 12 years. Probably dead now.

C.D.C.: 50 years is average age of adult tumors. We recently had case with hypernephroma in patient 25. Our cases are usually late.

O.M.: Saw case few years ago. Pulsating tumor in sternum. First thing considered was aortic aneurysm which had eroded through. Urinalysis negative, no blood cells in the urine. On looking through the fluoroscope no connection between the tumor and the aorta found. Thought probably carcinoma of the thyroid eroding. Finally urine examined again. One red blood cell found. Pyelogram done. Hypernephroma found.

Gertrude Gunn,
Record Librarian.

V. MOVIES

Title: Some Characteristics of Sound.

Produced by: Electrical Research Products, Inc.

1 Reel.