CANCER SEMINAR

FALL 1963, VOL. III, NO. 3

PENROSE CANCER HOSPITAL
Sisters of Charity
COLORADO SPRINGS, COLORADO

CANCER SEMINAR

VOLUME THREE OCTOBER, 1964 NUMBER THREE

JUAN A. DEL REGATO, M. D., *Editor*

CONTENTS

EDITORIAL CONSULTANTS

EDITORIAL OFFICE

PENROSE CANCER HOSPITAL

2215 NORTH CASCADE AVENUE, COLORADO SPRINGS, COLORADO

The CANCER SEMINAR is published annually by the Democrat Publishing Company and edited by the Penrose Cancer Hospital of Colorado Springs, Colorado. J. A. del Regato, M. D., editor. Subscription rate: $3.00 annually in the United States, Canada and Mexico. Address all correspondence to the editorial office.

TUMORS OF THE SMALL AND LARGE INTESTINES

THIS WAS OUR FIFTEENTH ANNUAL CANCER SEMINAR and it was held at the International Center of the Broadmoor Hotel, in Colorado Springs, on November 2, 1963. The subject chosen proved to be most interesting from a radiological as well as from a histopathological point of view. As usual on previous occasions, our audience was rewarded by the remarkable skill in the radiographic interpretation of our Guest Radiologist: this year we had the honor to have with us Professor Solve Welin, of Malmö, Sweden, whose reputation as an expert in the radiographic examination of the bowel is widespread. Dr. Benjamin Castleman, a known authority in the field of surgical pathology, made an excellent display of didactics in his well arranged presentation. Dr. John Spratt, of Columbia, Missouri, punctuated the discussion with his pertinent remarks on the surgical treatment of these tumors.

We owe to the kindness and dedication of Dr. Benjamin Castleman, the excellency of the histopathological illustrations of this issue and we are all most grateful to him.

For this CANCER SEMINAR, the demand from pathologists who wished to attend highly exceeded the availability of sets of slides to be offered to them. In consequence, about fifty pathologists who attended the CANCER SEMINAR did not have a set of slides of their own. This increasing demand puts us under an obligation of exercising some discrimination in the distribution of available sets of slides but we are well aware that it is impossible to satisfy everyone. With the benevolence of the participants we will continue to do our best in satisfying the increasing interest in this exercise.

Once again, our thanks to those who by their presence or participation have made these CANCER SEMINARS a success.

J. A. del REGATO, M.D.
Colorado Springs, September, 1964

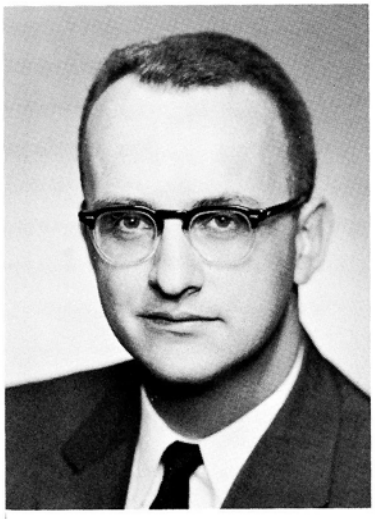
OUR GUEST SPEAKERS

SOLVE WELIN, M.D.

Professor of Radiology, University of Lund, Sweden, and staff radiologist at the Institute of Radiodiagnosis, Malmö Allmanna Sjukhuset, Dr. Welin is very well known in Europe, as well as in the United States because of his contributions to the radiodiagnosis of the gastro-intestinal tract.

BENJAMIN CASTLEMAN, M.D.

Professor of Pathology, Harvard University Medical School and Chief Pathologist, Massachusetts General Hospital, Boston. Dr. Castleman is a recognized authority in the field of tumor pathology and an eminent contributor to this specialty.



JOHN S. SPRATT, M.D.

Assistant Professor of Surgery, University of Missouri Medical School and Chief Surgeon, Ellis Fischel State Cancer Hospital, Columbia, Missouri. Dr. Spratt has dedicated himself to the study of cancerous and pre-cancerous lesions of the intestines.

1. *Leiomyosarcoma of the Jejunum*

Contributed by CATHERINE ANTHONY, M.D.

Denver, Colorado

THE PATIENT was a 37-year-old man in June, 1962, when he gave a six months' history of tarry stools with progressive anemia, weakness and low dorsal pain. Examination revealed an enlarged liver and tenderness in the right upper abdominal quadrant. The hematocrit was 38%; bilirubin 0.6 mgm %; total proteins 6.9 gm %; alkaline phosphatase 38 units; thymol turbidity 1.5 units. The heterophile test was positive 1:1.

Dr. Welin: The reproduced roentgenogram in your brochure demonstrates but one portion of the study, the jejunal lesion alone. The original roentgenograms, which I saw, demonstrated the entire abdomen. I did not think the liver was significantly enlarged even though it was reported as being clinically enlarged; but the spleen was moderately enlarged.

The jejunum reveals a 4 cm lesion. It is characterized by a marked decrease in the lumen of the bowel, effacement of its mucosal surface, and a definite overhanging edge. While the lesion suggests, in some respects, a classical napkin ring deformity, it does not have the sharp step-like margins which characterize the former. Actually it looks as though the mucosa is being lifted and pushed upward. I am presuming the rest of the small intestine is normal; certainly there were no other definite lesions demonstrable in the examinations I saw.

Let us first dispose of the enlarged liver and spleen. For the purpose of this discussion I shall consider the liver as being within normal limits in size. The enlarged spleen could be due to malaria, or to leukemia, and, as you shall see later, it might be related to the patient's jejunal lesion. There is no question in my mind that the jejunal lesion is malignant. Of the malignant tumors of the jejunum, adenocarcinoma is the most common. In contrast we find lymphomas more common in the ileum. Significant also is the fact that this patient seems to have a solitary lesion whereas lymphomas commonly are multiple. In my experience, lymphosarcoma, reticulum-cell sarcoma and Hodgkin's disease more commonly produce nodular lesions and filling defects rather than this napkin ring type of deformity. Also, not infrequently they are associated with fistulas and sizable peri-focal soft tissue masses. In Hodgkin's disease, however, particularly in long standing Hodgkin's disease, the fibrosis associated with the disease may cause contraction of the lumen. The sub-mucosal changes seen in the distal end of this patient's jejunal lesion may be the clue to the diagnosis. As indicated above, it does not have the usual sharp step-like deformity. Instead, it looks as though the mucosa is being lifted from the muscle wall by the infiltrate. This would be expected of mesothelial lesions, not lesions of mucosal origin. Although the history does not suggest carcinoid, it, too, must be considered for we have seen sizable carcinoids involving the small intestine and other portions of the body which have not been hormone secreting. If the splenomegaly is related to the small bowel lesion, one does not think of metastatic disease but rather of lymphoma which also may involve the small intestine. Whereas I have seen metastasis involve the spleen, this is rare. A patient at our hospital with a myosarcoma of the small bowel had associated metastasis to the spleen and liver. The splenic enlargement could be explained if this patient's tumor invaded the portal vein. This might also account for the slight enlargement of the liver. Logic dictates that the splenomegaly and small bowel tumor must be related.

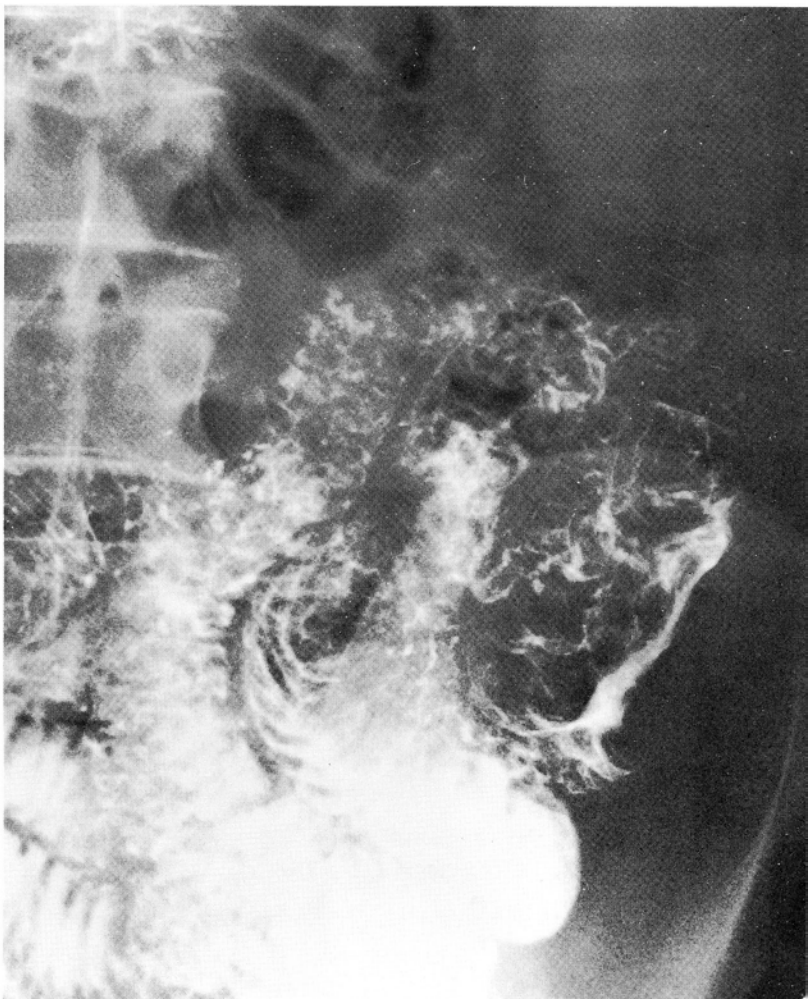
Dr. Welin's impression: A MALIGNANT JEJUNAL LESION which may be occluding the portal vein: 1. MALIGNANT LYMPHOMA. 2. ADENOCARCINOMA.

Roentgenologic Impressions Submitted by Mail

Carcinoma of jejunum	54
Lymphoma	46
Carcinoid	6
Plasmocytoma	3
Others	5

Dr. Regato: Dr. R. N. Cooley, of Galveston, and Dr. R. Calderón, of Managua, made a diagnosis of adenocarcinoma of the jejunum with liver metastases. Dr. W. Martel, of Ann Arbor, suggested lymphoma.

Fig. 1.—Roentgenogram of the jejunum showing narrowing of the lumen and effacement of the mucosa with overhanging edges.



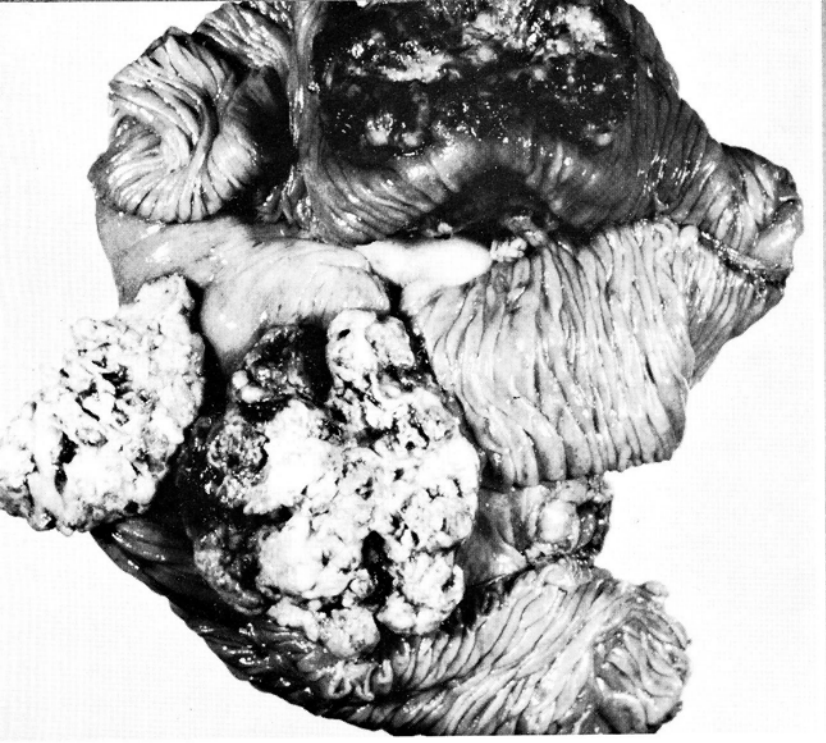


Fig. 2.—Gross photograph of jejunal lesion.

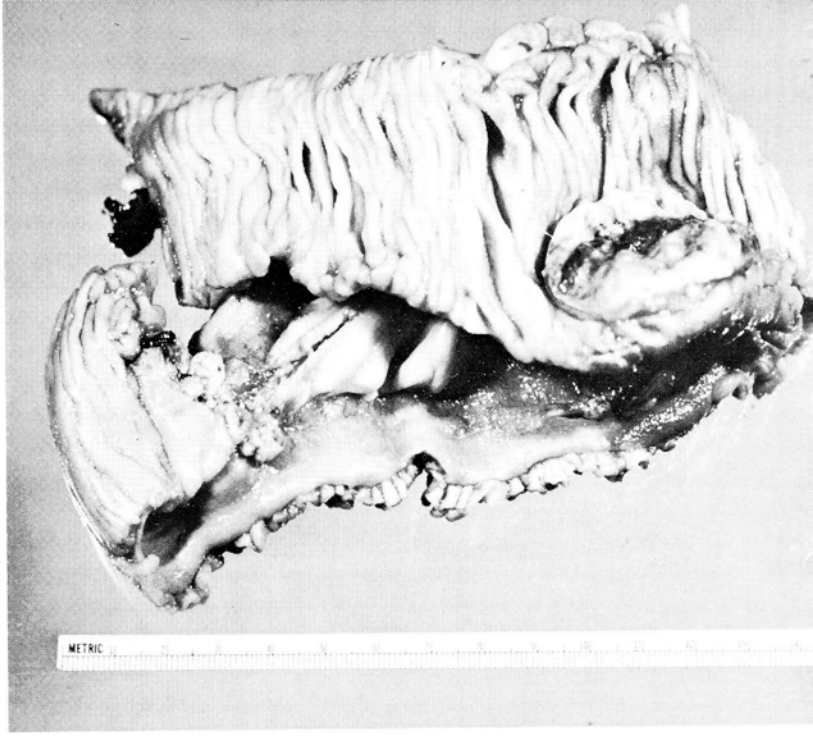


Fig. 3.—Another jejunal lesion 30 cm apart from the precedent.

Operative findings: On August 6th, 1962, the patient was operated upon. Two tumors of the jejunum, 30 centimeters apart, were found. A large segment of the jejunum containing both tumors was removed; the tumors measured 7x6 and 8x5 cm; they thickened the wall and protruded in the lumen and appeared whitish in cut section. There were several enlarged lymph nodes, 2x3 cm in diameter in the mesentery and retroperitoneal space. The liver was enlarged but there was no gross evidence of metastases; a biopsy was done.

Dr. Castleman: A low power view of this lesion shows an intramural tumor that has ulcerated and destroyed the overlying mucosa. The surface is covered with a purulent exudate; necrotic foci of the tumor are located nearer the surface than at the serosal side. The serosal surface of the adjacent bowel is covered with chronic inflammatory tissue, indicating a previous perforation of tumor or possibly merely adhesion to the tumor. At this low power, one also gets the impression that the tumor is fanning out sharply from the muscularis of the contiguous bowel. This sharp transition from normal bowel to a bulky tumor is more characteristic for a tumor arising intramurally than for one arising from the mucosa. The usual carcinoma that has extended down into the muscularis to this extent would have penetrated the adjoining muscularis in crab-like fashion. Of course this barrier-like separation is not foolproof but my first impression was that this was not a carcinoma. There is almost a 90-degree angle between the tumor and adjacent mucosa and in a carcinoma the angle would be more obtuse. This should be evident on the roentgenograms.

Since the most common intramural extramucosal tumor in the gastrointestinal tract is a leiomyoma or its malignant counterpart, I looked for spindle-shaped cells and found several areas that had cells with elongated nuclei but not very much cytoplasm. However, a Masson stain did show very suggestive muscle staining fibrils. The unusual feature here is the presence of large ovoid and polygonal cells without any muscle fibers but with an eosinophilic staining cytoplasm. A reticulum stain showed fibers around single cells rather than groups, ruling out an epithelial tumor. Many cells had a vacuolated clear cytoplasm and some with a clear halo around the nucleus—a finding that Stout has reported in a series of tumors of the stomach, which he calls "bizarre smooth muscle tumors." Unlike Stout's series of 69 cases which were almost all benign and with few mitoses, this case has numerous mitoses; there is no question in my mind that this is a malignant tumor. Stout had only one case that died with metastasis; he hesitated to call these tumors sarcomas and preferred the term bizarre leiomyoblastoma. In Stout's paper on these tumors in the stomach, he states that he has seen them in the intestine and uterus and, in another paper, in the mesentery.

Some of the large areas of clear spaces represent degeneration of tumor, I believe, rather than fat (no tissue available for fat stain) and even if it were fat, I should not entertain a diagnosis of liposcarcoma. There are several small foci that certainly do not suggest a smooth muscle tumor; these are composed of islands of round contiguous cells that faintly resemble a carcinoid. But a more careful look at a higher magnification discloses that these cells appear to fuse with elongated cells that are probably leiomyoblasts.

Dr. Castleman's diagnosis: LEIOMYOSARCOMA.

Histopathologic Diagnoses Submitted by Mail

Leiomyosarcoma	64
Melanoma (metastatic?)	37
Sarcoma	16
Metastatic carcinoma	12
Carcinoid	10
Others	37

Fig. 4.—Photomicrograph of entire histologic section submitted showing intramural tumor with ulceration of the overlying mucosa. Note sharp line of demarcation from contiguous normal bowel. (H & E x 3.5)

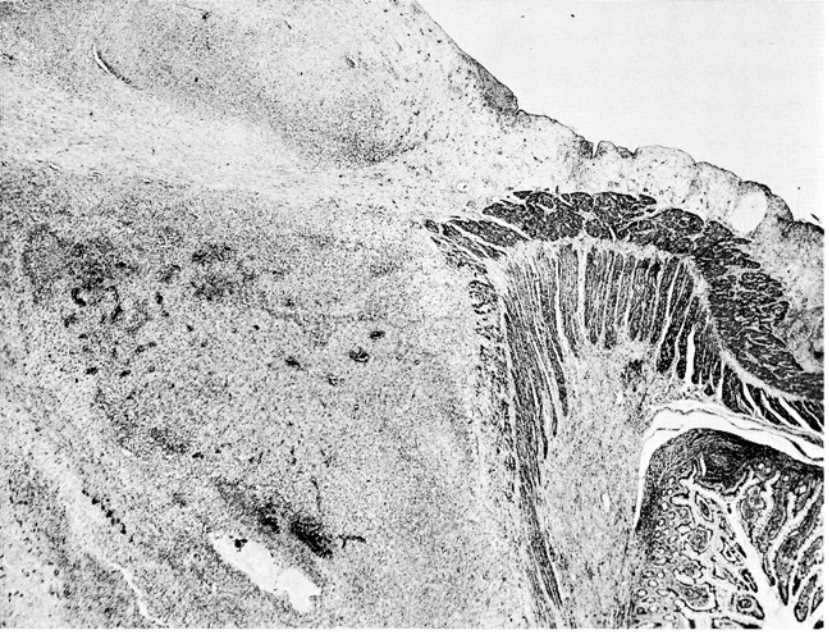


Fig. 5.—Close-up of tumor adjoining normal muscularis. Note serosal reaction. (H & E x 15)

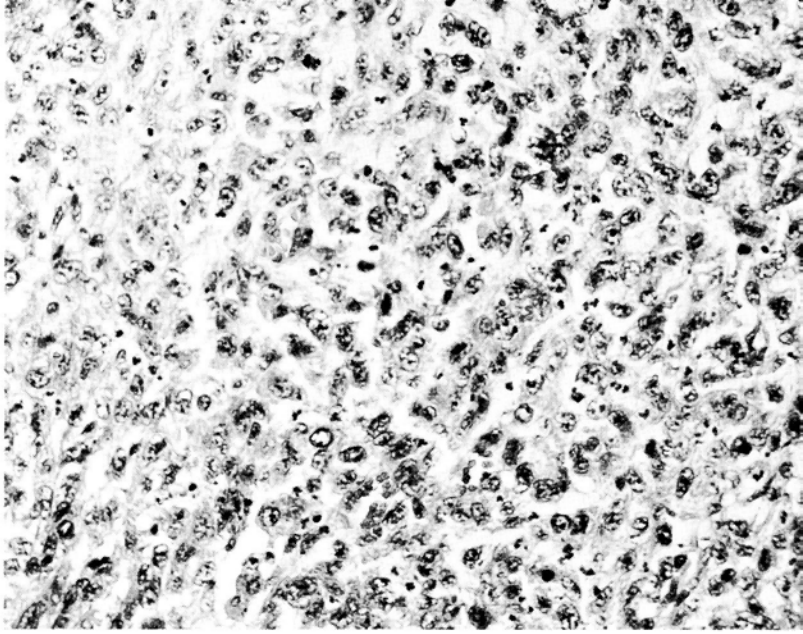


Fig. 6.—Bulk of tumor composed of large polygonal cells with eosinophilic cytoplasm. (H & E x 240)

Dr. Castleman: I had not thought of a metastatic malignant melanoma; I was unable to see any pigment or didn't recognize any; it is conceivable but the finding of what I thought were definite myofibrils would still lead me to a diagnosis of leiomyosarcoma; the finding of two nodules certainly would fit in with a metastatic malignant melanoma. I have never seen a radiographic appearance with such a long lesion due to a metastatic malignant melanoma.

Dr. Regato: Dr. G. M. Edington, of Nigeria, Dr. P. W. Gikas, of Ann Arbor, and Dr. R. M. Delcourt, of Brussels, also made a diagnosis of leiomyosarcoma. Dr. W. Black, III, of St. Louis, and Dr. R. Willis, of Glasgow, suggested an anaplastic carcinoma. Dr. E. Geever, of New York, preferred a metastatic hepatoma; Dr. M. Berthrong, of Colorado Springs, and Dr. L. V. Ackerman, of St. Louis, a metastatic melanoma.

In August, 1962, this slide was examined at the AFIP (accession 1052765); the report dictated by Dr. E. B. Helwig stated: "The sections show a malignant tumor replacing the intestinal wall, but do not show any apparent transition of intact mucosa. Since the tumor is undifferentiated, it is impossible to name the primary site, and it is entirely likely that it is a metastasis. It is probably a carcinoma but the diagnosis of malignant melanoma cannot be completely excluded."

A. P. Stout, M.D., New York City (by mail): This tumor does not belong to any of the well recognized groups of malignant neoplasms primary in the intestinal tract. Therefore, I presume it is metastatic. Because of the way it forms cords of cells in several areas, I presume it is an epithelial tumor. The liver appears to have been involved but that does not help much for its involvement may also be metastatic. I can see nothing that will exactly determine the primary site but I will guess that this might be a metastasis from an occult primary melanoma. I do not recognize primary malignant melanomas of the intestine.

Subsequent history: The lymph nodes showed signs of hyperplasia only; the liver biopsy was negative for evidence of tumor. Following operation the patient regained forty pounds in weight. In December, 1962, a recurrence of symptoms led to a new resection of another segment of the jejunum; a metastatic lesion of the left lobe of the liver was removed and verified histologically. In March, 1963, the patient developed severe headaches. An arteriogram revealed the presence of a right frontal tumor; a craniotomy was done and a hemorrhagic tumor removed. The gross appearance was that of a brownish-red tumor with an adjacent hematoma; the microscopic examination revealed the presence of an undifferentiated malignant tumor. The patient had additional episodes of bowel obstruction; his general condition deteriorated and in August, 1963, he was discharged for terminal care in his own community. On September 23rd, 1963, he expired. At autopsy no residual evidence of tumor was found in the abdomen or in the cranium. There was cerebellar softening and necrosis but no evidence of lung or liver metastases.

Dr. Spratt: I think that it was fortunate that this lesion was resectable. In our experience these high jejunal lesions tend to remain occult for a long period of time and frequently present an abdominal crisis from cavitation into the base of the mesentery or in the retroperitoneal cavity.

Osman O. Hull, M.D., Monterey, California: I would like to ask if Dr. Anthony or the others who originally had this case did do a fat stain on this particular tumor.

Dr. Castleman: I should also like to ask Dr. Anthony whether a search was done for a mole of the skin or whether there was any previous history of a treated mole. Was the spleen enlarged?

E. L. Benjamin, M.D., Santa Barbara, California: Was a dopa reaction done?

Dr. Anthony: We did examine very carefully; we removed two or three very benign intradermal nevi and there was absolutely no evidence of any malignant melanoma any place that we could find. We did not do a fat stain. Unfortunately, the surgeons got the tissues in formalin before we got hold of each one of the tumors, so we were unable to do a dopa reaction. The spleen was removed at one of the surgical interventions and it showed nothing; it was not enlarged.

Dr. Welin: In Malmö if we have a spleen and we do not know if it is enlarged or not we give the patient a mouthful of Coca-Cola or Vichy water, take a roentgenogram and we can see the upper pole of the spleen and the lower pole; the patient then drinks one liter of water and

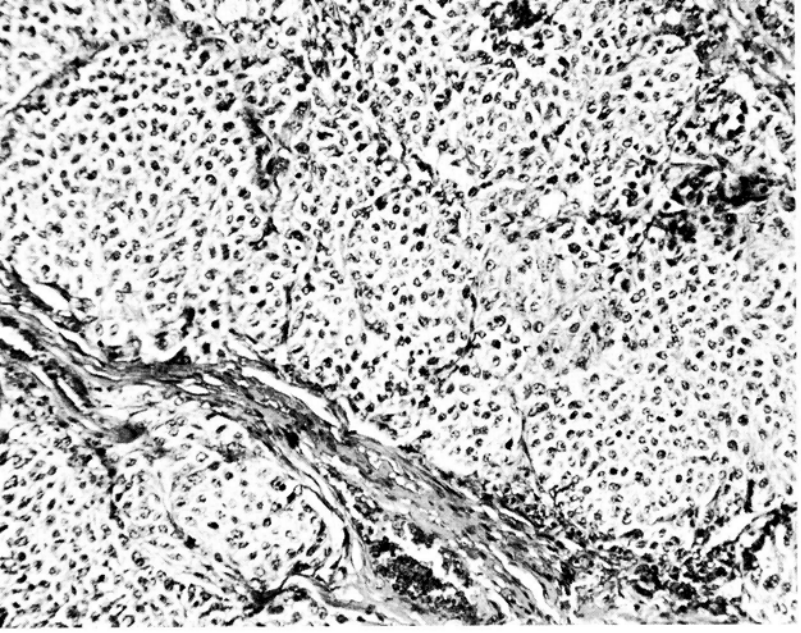


Fig. 7.—Foci of round cells with pale cytoplasm that suggest a carcinoid. (H & E x 150)

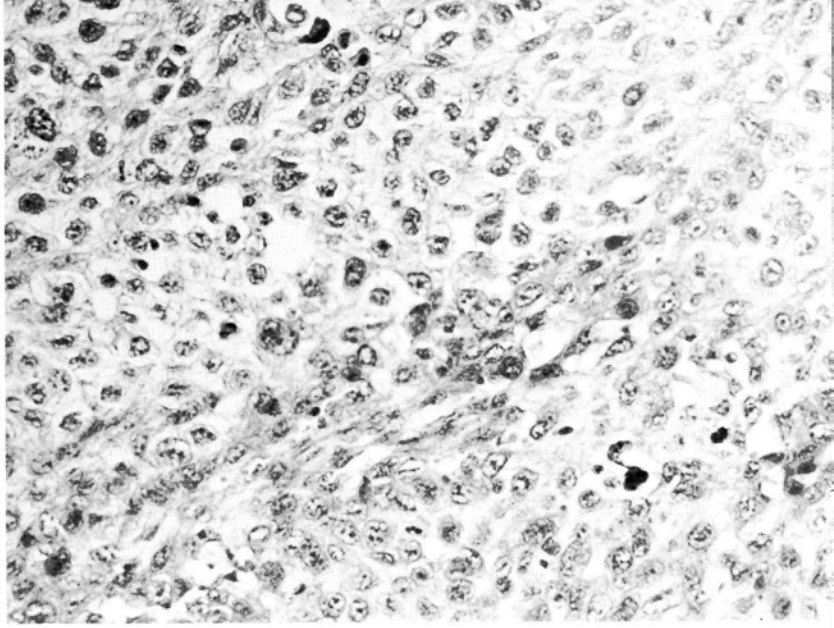


Fig. 8.—Fusion of round cells with spindle shaped cells. (Masson x 270)

we take a film ten minutes later. If the spleen is normal, it appears one to two centimeters longer in the standing than in prone position. One hour later we take a new film and if the spleen is healthy it is smaller in size than before drinking the water.

References

Good, C. A.: Tumors of the small intestine. Amer. J. Roentgenol, **89**: 685-705, 1963.

Smetana, H. F. and Scott, W. F., Jr.: Malignant tumors of nonchromaffin paraganglia. Mil. Surgeon, **109**: 330-349, 1951.

Stout, A. P.: Bizarre smooth muscle tumors of the stomach. Cancer, **15**: 400-409, 1962.

2. Eosinophilic Granuloma of the Jejunum

Contributed by C. E. Lischer, M.D. and F. T. Kraus, M.D.

Saint Louis, Missouri

THE PATIENT was a 45-year old man in September, 1961, when he complained of left sided abdominal cramping pain of three months duration; the pain became increasingly frequent and vomiting and weight loss followed. On examination a cylindrically shaped transverse mass could be palpated below the umbilicus and peristalsis was visible.

Dr. Welin: In this single roentgenogram one notes scattered dilated loops of small bowel. The increase in distance between some of the loops is either due to thickening of the bowel wall or the presence of fluid in the abdomen. There are multiple fluid levels in the dilated loops. The ascending and transverse colon are also filled with air and are normal in caliber. The descending colon is not definitely visualized but it does contain some air. A hazy density is seen in the left lower abdomen. In the pelvis we note a rounded density with a partially encircling halo. The halo is more likely due to air than fat. Within the rounded mass lies a crescent shaped radiolucency. There may also be a small calcification at this site, however it is vague.

The total picture is that of a partial small bowel obstruction. The unusual rounded lesion in the pelvis is probably the site of the obstruction. The halo suggests pneumatosis intestinalis, the submucosal variety, seen more frequently in children. The adult form is subserosal and cystic; however, linear pneumatosis has been reported. The bowel usually is more diffusely involved. Pneumatosis itself has little if any clinical symptoms but it may be associated with an obstructing agent. Gas in the wall of the bowel may be seen with gangrene or an inflammatory process due to a gas forming organism.

I believe that this is intraluminal air surrounding a mass, a large polypoid tumor of the small bowel, which is causing intussusception. I say "polypoid" because polyps are more likely to act as the cause of intussusception. A more precise diagnosis is difficult. Of the benign lesions a leiomyoma would be most common. Of the malignant tumors a lymphomatous lesion or a submucosal metastatic focus would fit the picture. An inverted Meckel's diverticulum could also cause intussusception.

Dr. Welin's impression: A polypoid tumor of the distal ileum. 1. LEIOMYOMA. 2. LYMPHOMA.

Roentgenologic Impressions Submitted by Mail

Lymphoma	42
Leiomyoma	36
Regional enteritis	13
Benign polyp	12
Intestinal obstruction	11
Others	8

Dr. Welin: Most participants were in agreement with me. I did not think of enteritis as a possibility in this case.

Dr. Regato: Dr. R. P. Spurck, of Denver, suggested obstruction due to a polypoid lesion of the small bowel. Dr. R. Rapp, of Ann Arbor, suggested a Meckel's diverticulum, and Dr. B. Felson, of Cincinnati, a possible amyloid.

Operative findings: On September 28th, 1961, a laparotomy was done and an intussusception of the jejunum

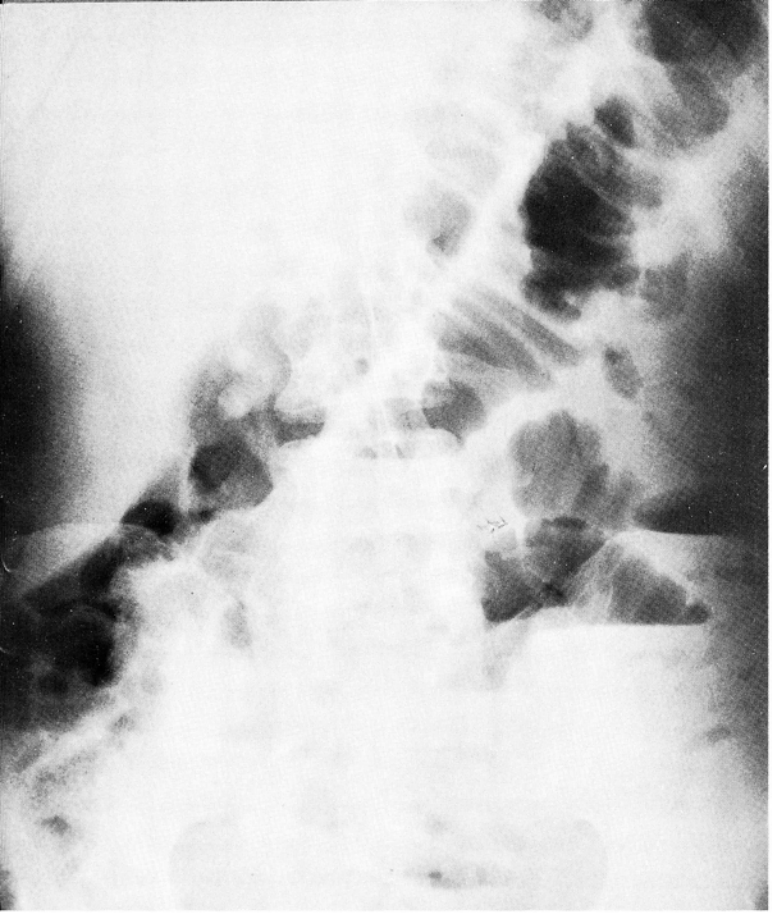


Fig. 1.—Roentgenogram showing dilated loops of small bowel suggesting obstruction.

was found. The distal end of the intussusception contained a mass 3 cm in diameter; it was removed with a 45 cm segment of the jejunum. The tumor was polypoid in appearance, it was solid with a superficial ulceration; the cross section revealed a tan-gray uniform color.

Dr. Castleman: The low power view of resected small bowel shows complete replacement of the muscularis and submucosa and possibly some of the mucosa (although the section is not adequate to determine any actual ulceration of the mucosa) by a definite lesion. In some places the muscularis mucosa seems spared. The lesion grossly seems to be sharply separated from the adjacent muscularis, but a closer view reveals that there is no encapsulation but rather an intermingling of the cells comprising the lesion in question and the adjoining normal muscle fibers. From the sections there is no way of knowing whether the serosa is involved.

The lesion itself has a matrix of loose edematous areolar and vascular fibrous connective tissue in which are scattered a variety of cells—lymphocytes, eosinophils, and histiocytes, as well as a rare plasma cell. None of the cells are arranged in islands or groups, but are scattered single cells. The eosinophils and histiocytes are by far the predominant cells. There is no atypicality of the histiocytes or any suggestion of neoplasia. I was unable to find epithelioid cells, foreign body giant cells or any tubercles. Although there obviously had been destruction of muscle cells, no giant cells of the degenerating-muscle-fiber type were seen, indicating that this has been a very slow process. The vessel walls throughout the lesion are edematous and the endothelial lining cells are prominent and many apparently newly formed small blood vessels are evident. This lesion fits with the condition often called eosinophilic granuloma in a stage where there is still a large number of histiocytes. Lichtenstein would call it Histiocytosis X.

This lesion is more common in the stomach than in the intestine and may occur in a circumscribed form or as a diffuse infiltration either monoenteric or polyenteric. The patient with the diffuse form often has a blood eosinophilia, a finding not usually present in the patient with the circumscribed form and for this reason it is believed to originate on an allergic basis. Grossly this diffuse form is more like regional enteritis, the stenosing segments extending over long distances. The solitary circumscribed form which I believe is the diagnosis in this case, simulates a tumor and may measure up to 10 cm in diameter and usually produces obstruction.

Before leaving this subject I should mention a polypoid lesion with a similar histology. This lesion has more lymphocytes and eosinophils than histiocytes, and I believe does not really belong in the group of so-called eosinophilic granuloma. These are relatively common in the stomach and are rare in the intestine. Helwig first called our attention to these in the stomach and called them inflammatory fibroid polyps. McGee has reported two cases in the ileum and cecum. They originate probably on a mechanical irritative basis with secondary inflammation affecting redun-

Fig. 2.—Gross appearance of mass in the lumen of the jejunum.

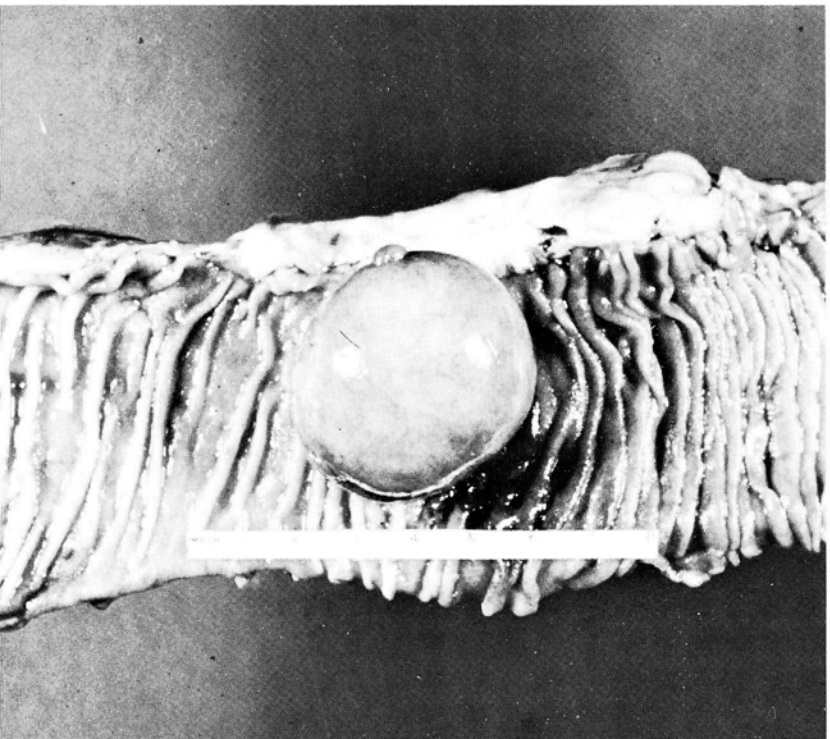
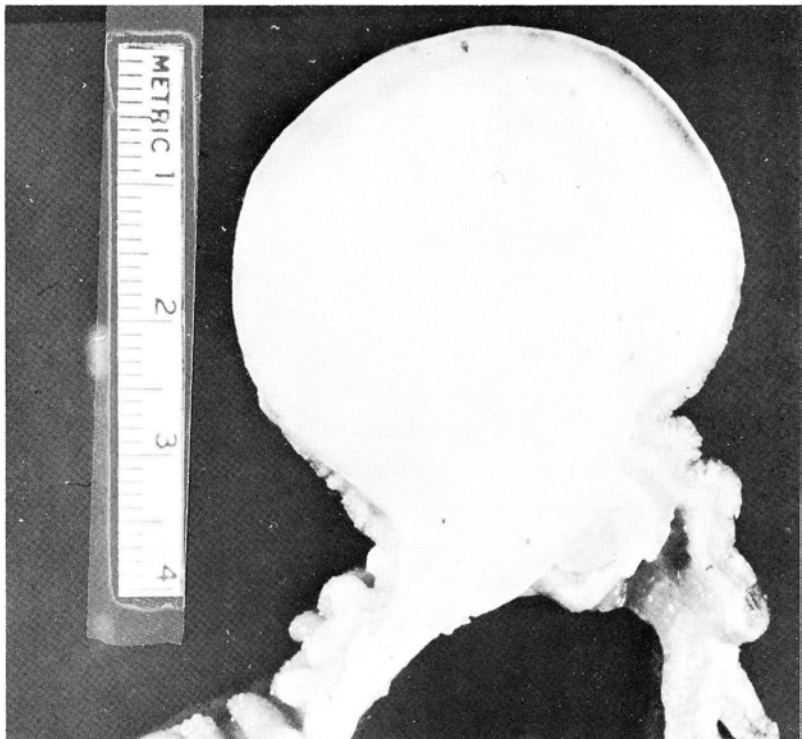


Fig. 3.—Cross section of mass.



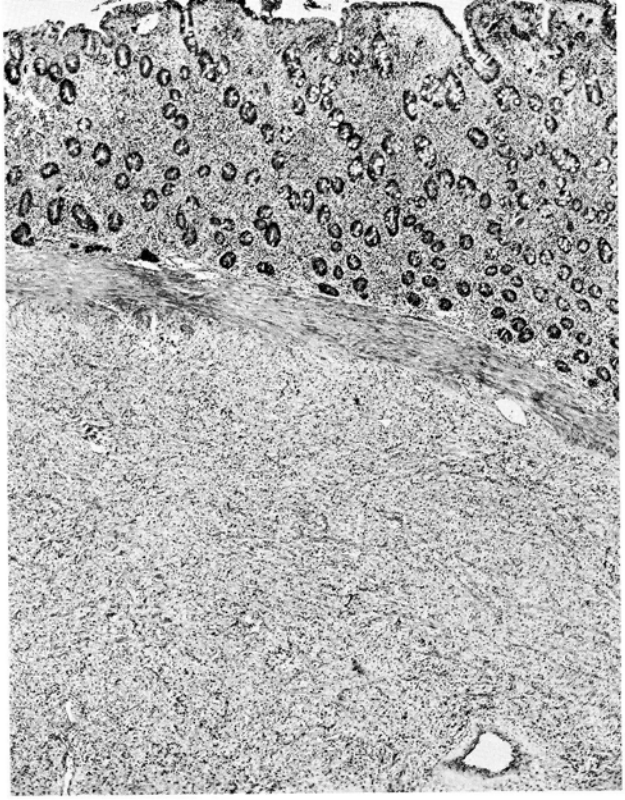


Fig. 4.—Low power view to show intramural lesion abutting the muscularis mucosa. (H & E x 26)

dant and prolapsed mucosa. The higher incidence in the stomach may be related to coarser contents of the stomach than the intestine.

A recent paper summarizing and classifying this group of lesions, by Ureles and his collaborators, uses the diagnosis of idiopathic eosinophilic infiltration rather than that of eosinophilic granuloma which they reserve for the bone disease. This is their classification:

CLASSIFICATION OF IDIOPATHIC EOSINOPHILIC INFILTRATION OF THE GASTROINTESTINAL TRACT

Class I. Diffuse Eosinophilic Gastroenteritis
- Group A. Polyenteric
- Group B. Monoenteric
- Group C. Regional

Class II. Circumscribed Eosinophilic-Infiltrated Granuloma
- Group A. Regional
- Group B. Polypoid

In their review of the literature, the lesions in Class I, Group A were almost all in the stomach, duodenum and intestine; those in Groups B and C were all in the stomach. There were twenty-two cases in Class II, Group A, ten of which were in the intestine, and this is where our case today belongs.

Dr. Castleman's diagnosis: EOSINOPHILIC GRANULOMA.

Histopathologic Diagnoses Submitted by Mail

Eosinophilic granuloma	63
Inflammatory pseudopolyp	30
Hemangiopericytoma	15
Angiofibroma	11
Liposarcoma	8
Lipogranuloma	7
Others	36

Dr. Castleman: I didn't see very much fat, and I would doubt that it would fit into the liposarcoma or the lipogranuloma.

Dr. Regato: Dr. W. J. Frable, of Chicago, Dr. G. D. Toll, of Denver, and Dr. C. Ozlu, of Louisville, also made a diagnosis of eosinophilic granuloma. Dr. F. T. Kraus, of St. Louis, and Dr. A. O. Severance, of San Antonio, preferred a designation of inflammatory fibroid polyp. Dr. L. V. Ackerman, of St. Louis, offered a diagnosis of benign mesenchymoma; he offered the explanation that this diagnosis is particularly helpful when you do not know exactly what the trouble is!

Subsequent history: Following operation the patient did well. He was reported in good health in July, 1963.

Dr. Spratt: I was a little surprised that such a great length of small intestine was resected with a benign polypoid lesion. The only explanation for this would be that the intussusception was not reducible. Actually benign polypoid lesions are the most frequent cause of intussusception in adults, and if the intussusception is reducible, then a much simpler resective procedure would have been possible. I think that some of the more recent studies on the multiplicity of benign polypoid lesions in the small intestine warrant a more conservative approach toward these lesions. Once in a while one sees a patient who has had several such resective procedures and there is not much small intestine left, and then the problems become a little more intense.

H. Braunstein, M.D., Cincinnati, Ohio: I would like to ask Doctor Castleman what he believes the pathogenesis of this lesion to be; he said he didn't think it was inflammatory.

Dr. Castleman: I haven't any idea.

Fig. 5.—Extension of lesion into muscularis. Note eosinophils and histiocytes between muscle fibers (H & E x 220)

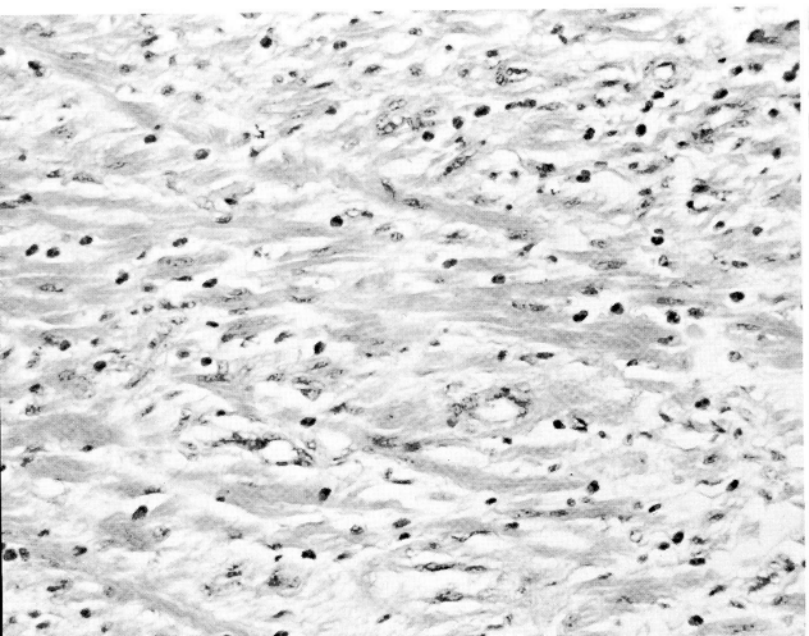
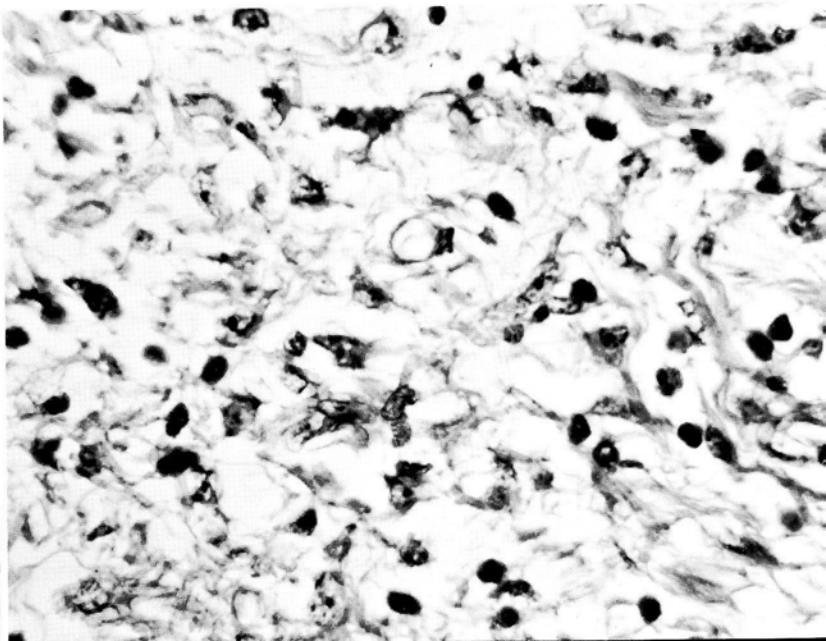


Fig. 6.—High magnification of cellular components, eosinophils and histiocytes, of lesion. (H & E x 570)



References

Carlson, E. and Ward, J. G.: Inflammatory gastric polyps (eosinophilic granulomas of the stomach). Amer. J. Surg., **99**: 352-357, 1960.

Deeb, P. H. and Stilson, W.: Roentgenologic manifestation of lymphosarcoma of the small bowel. Radiology, **63**: 235-240, 1954.

Helwig, E. B. and Ranier, A.: Inflammatory fibroid polyps of the stomach. Surg. Gynec. & Obstet., **96**: 355-367, 1953.

McGee, Hugh J., Jr.: Inflammatory fibroid polyps of the ileum and cecum. Arch. Path., **70**: 83-90, 1960.

Polayes, S. H. and Kreiger, J. L.: Eosinophilic granuloma of jejunum; hitherto undescribed lesion of intestines. JAMA: **143**: 549-551, 1950.

Ureles, Alvin L., Alschibaja, T., Lodico, D. and Stabins, S.: Idiopathic eosinophilic infiltration of the gastrointestinal tract, diffuse and circumscribed. A proposed classification and review of the literature, with two additional cases. Amer. J. Med., **30**: 899-909, 1961.

3. Ischemic Ulcer (Incomplete Infarction) of the Jejunum

Contributed by P. G. Cornish, M.D., E. Salzman, M.D. and G. Ogura, M.D.

Denver, Colorado

THE PATIENT was a 68-year old man in October, 1962, when he complained of vomiting and tarry stools of three days duration; in the previous six months he had suffered vague abdominal discomfort, anorexia and thirty pound weight loss. On physical examination there were no palpable abnormalities; the hematocrit was 46% and the EKG showed signs of an old infarct which had taken place in 1943.

Dr. Welin: This is a segment of a small bowel revealing an isolated jejunal loop which is obviously affected. The diseased portion of the jejunum is about 10 cm in length and is characterized by tubular narrowing. Its mucosal surface is destroyed. The wall of the jejunum is thickened with some separation from the adjacent loops. The jejunum proximal to the lesion is slightly dilated and is conical as it merges with the diseased segment. This is also true of the distal portion of the jejunum to a lesser degree. There are two linear projections which extend beyond the lumen of the affected jejunum which look like fistulas. We shall presume that this is the only lesion of the small bowel this patient had.

In the aged individual, particularly one who has been hemorrhaging, one always thinks of regional enteritis. Malignant tumors of course; but one must always remember the granulomas because they are so commonly misdiagnosed or overlooked entirely. The tubular configuration and fistulous tracts demonstrated radiologically are consonant with the diagnosis of regional enteritis. The presenting symptoms need not include diarrhea; bleeding alone is enough. And the onset of the patient's symptoms late in life is also consistent with the diagnosis. Other inflammatory lesions must also be considered. Tuberculosis, more frequently, involves the terminal ileum. Fungus disease, actinomycosis particularly, has been described in the small intestine. To be complete, one must include sarcoid and amyloid of the small intestine. Neoplasms can produce similar changes. Carcinoma, the most frequent malignant lesion in the jejunum, usually has a more step-like margin with a tumor shelf when they are annular in character. Carcinoids have been known to masquerade as regional enteritis. This patient's history does not support the diagnosis of a functioning carcinoid. Of course, this need not be present. Malignant lymphomas, including lymphosarcoma, reticulum cell sarcoma and Hodgkin's disease, can produce lesions like this. The latter are more frequently multiple, however. Lymphosarcomas and reticulum-cell sarcomas can resemble regional enteritis even to the inclusion of perforations and fistula formation.

In view of the fact that this patient had a cardiac infarct, twenty years previously, one wonders whether the small bowel lesion is related to the infarction. It is difficult to believe that this patient would have lived for twenty years following his cardiac infarction if, subsequently, he had developed also a small bowel infarction. However, this is not impossible. There is no reason why an inflammatory process could not be superimposed upon an old area of infarction. Nor can one gainsay the possibility that this is a recent infarction with a recently superimposed granulomatous process.

Dr. Welin's impression: Inflammatory jejunal disease: 1. REGIONAL ENTERITIS. 2. INFLAMMATORY PROCESS, SUPERIMPOSED ON INFARCTION.

Roentgenologic Impressions Submitted by Mail

Regional enteritis	47
Infarct	38
Lymphosarcoma	20
Other tumors	11
Others	9

Dr. Regato: Dr. M. E. Bischoff, of Denver, submitted an impression of lymphosarcoma of the jejunum; Dr. J. A. Campbell, of Indianapolis, and Dr. R. N. Cooley, of Galveston, preferred occlusion of the mesenteric artery with infarction of the jejunum.

Operative findings: On October 24th, 1962, a laparotomy was done; a constricted segment of the jejunum was found and excised. The serosal surface of the specimen was hyperemic with local areas of hemorrhage. The wall was thickened in the narrow area which extended for 8 cm. A diverticulum was identified in the narrowed segment.

Dr. Castleman: Under low magnification there is a sharply demarcated ulcerated lesion of the jejunum with destruction of the entire mucosa and submucosa, and parts of the muscularis. Where serosa is present, there is marked congestion, edema and a slight cellular reaction. This same congestion, and dilation of vessels is apparent in the ulcerated lesion, especially in the space formerly occupied by the submucosa. It is also apparent in the submucosa of the adjacent bowel. Thus, at this first glance, one gains the impression that the lesion may have a vascular component. A closer view shows the extreme vascularity and destruction extending into muscularis. Except for the ulcerated fibrin-covered inner surface, the cellular reaction is primarily composed of lymphocytes and plasma cells. The presence of only a rare eosinophil and neutrophil and the fibrous tissue replacement of the submucosa (better brought out by the Masson stain) and parts of the muscularis, indicate

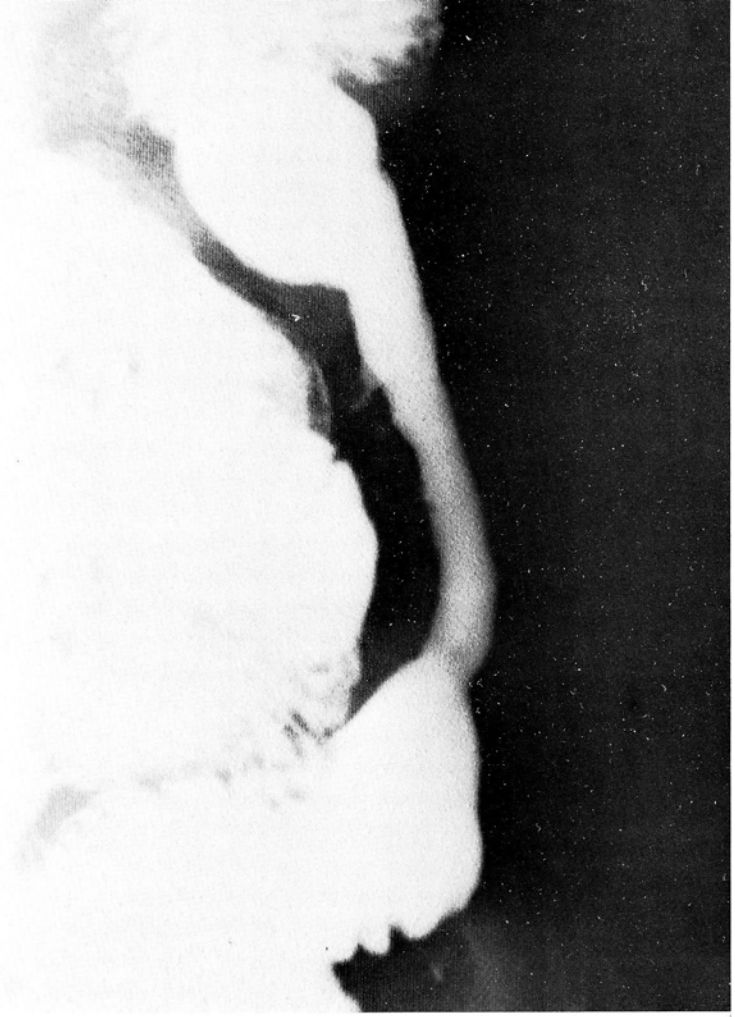


Fig. 1.—Roentgenogram revealing a tubular narrowing of a loop of the jejunum.

that the lesion is not too recent. This is in contrast to regional enteritis. A few hemosiderin-laden monocytes suggest previous hemorrhage. An important clue to the vascular nature of the lesion is the presence of organized and recanalized thrombi in vessels of what I believe was the submucosa. Similar sized vessels, with an organized mural thrombus in one, are seen in the adjacent bowel.

Thus, I believe this lesion is ischemic in origin. With the previous history of a myocardial infarct, the patient may have had an embolus from a mural thrombus over the infarct or a left atrial thrombus associated with atrial fibrillation. The embolus may have lodged in the superior mesenteric artery without complete obstruction, thus allowing for slow collateral circulation and fragments of this thrombus may have reached this segment of bowel. One could also assume that this endarteritis obliterans is localized thrombosis secondary to infarction caused by an obstruction in a larger mesenteric vessel. Under these circumstances I should have expected similar thrombosis in the veins. Incomplete infarction of the bowel, of course, is well known to the surgeon who has to decide at operation whether a strangulated segment of bowel in a hernia, for example, will remain viable. Several of these cases in which the segment has not been resected have later healed with some stenosis.

There have been several reports, and we have had a few in our laboratory, of cases of embolism to a small segment of small bowel that is not fatal, but in which the resulting infarct heals by cicatrization and leads to stenosis. The superimposed infection that usually accompanies bowel infarction can be prevented by antibiotic and anti-coagulant treatment, thus preventing complete dissolution of the bowel with perforation and peritonitis. In this scarred and stenotic stage, the lesion may resemble regional enteritis grossly. In fact it is believed by some that many of the cases of regional enteritis in the elderly may be ischemic in origin, such as the Eisenhower syndrome. It is well known that the earliest change in ischemia of the bowel is in the mucosa which ulcerates and sloughs first, and that if the obstruction is not complete, there is a good chance that the muscularis will be spared by collecteral circulation. This is what I believe occurred here.

Dr. Castleman's diagnosis: ISCHEMIC ULCER (Incomplete Infarction).

Histopathologic Diagnoses Submitted by Mail

Regional enteritis	62
Chronic ulceration	45
Vascular lesion	16
Infarction	14
Plasmocytoma	13
Syphilis	10
Irradiation effects	6
Others	24

Dr. Regato: Dr. V. Areán, of Gainesville, Florida, also made a diagnosis of ischemic ulceration. Dr. L. Lowbeer, of Tulsa, suggested a vascular lesion with focal infarct. Dr. C. Masó, of Chicago, offered a vascular malformation, perhaps a racemous aneurysm with secondary ulceration. Dr. J. P. Ray, of Lubbock, preferred angiitis obliterans. Dr. L. V. Ackerman, of St. Louis, wrote that this is *not* cicatrizing enteritis and that the lesion is probably related to vascular damage.

Subsequent history: Following operation, this patient was put on anticoagulants. He did well until about three months after the operation when he was admitted to the hospital, comatose because of an apparent cerebral hemorrhage; this was attributed to excessive depression of prothrombin time. There was no autopsy.

Dr. Spratt: We have had occasion to study endarteritis in the small intestine in three different situations; one being this particular condition with vascular infarction; another being the condition Dr. Castleman referred to of segments of intestine incarcerated in hernias, and the third condition being segmental irradiation. In all three instances, the response to injury seems to be very similar: initially, the ulceration; if the segment is of sufficient length, intestinal obstruction will occur early and the segment, of course, is at risk to perforate and may be subject to secondary septic complications. However, with shorter segmental infarctions, a different pattern takes place: first, the ulceration, then a very rapid shortening of the infarcted segment; and, in dogs, we have actually quantitated this rate of shortening and it is about one-half inch every fifty days. It is an exponential longitudinal shortening of the intestinal segment. Then the omentum comes into play very early and usually envelops the segment; this secondary fibroblastic infiltration, in our experience, has come from the omentum or the adjacent mesentery and we have actually been able to show on our histological section the engrossing of strands of fibroblasts from these adjacent structures. The infarcted portion

Fig. 2.—Photomicrograph of entire histological section submitted showing area of destruction of mucosa, submucosa and large portion of muscularis. (H & E x 4)

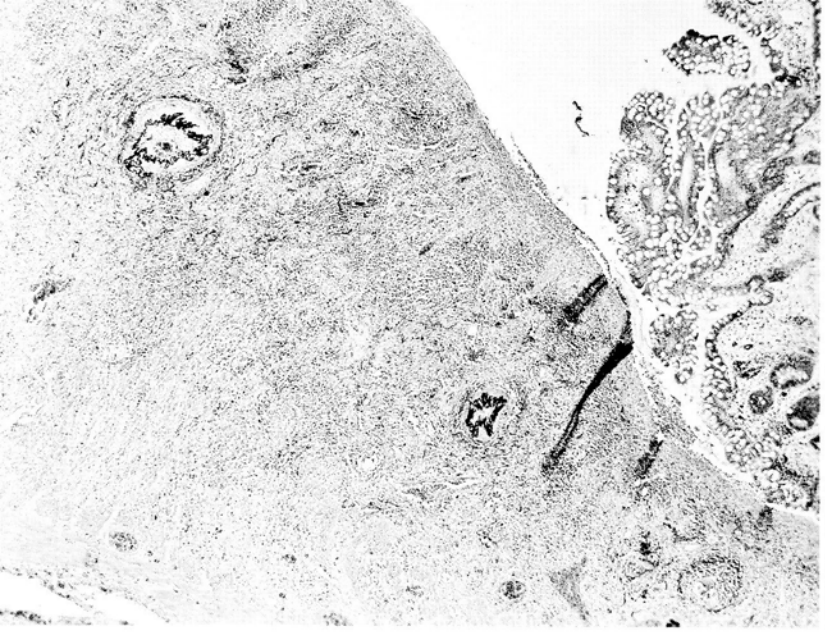


Fig. 3.—Low magnification of lesion showing ulceration of mucosa and replacement of wall by vascular and cellular connective tissue. Note three large vessels with thrombosis and recanalization. (Verhoeff elastic tissue x 39)

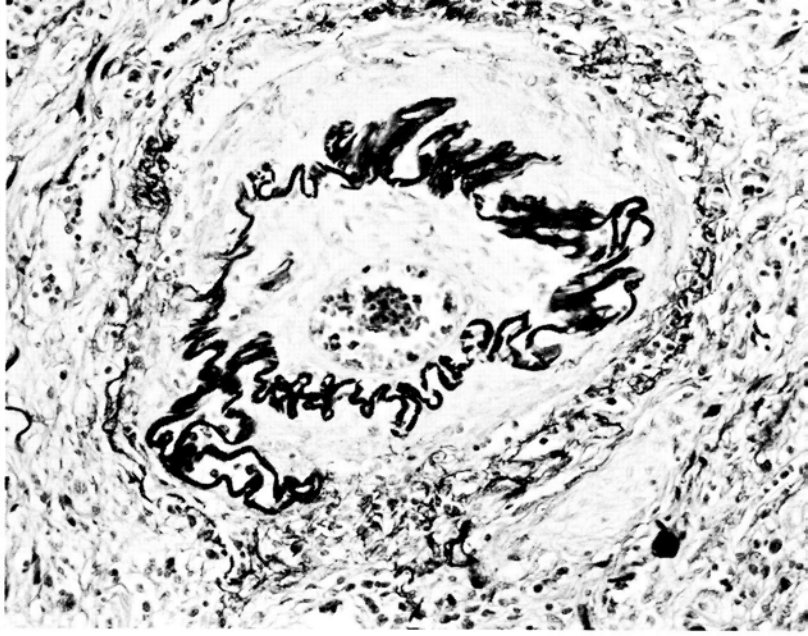


Fig. 4.—Close up of one of the thrombosed and recanalized vessels shown in previous figure. (Verhoeff elastic tissue x 240)

of the small intestine is completely absorbed with the passage of time and nature actually tries to effect a spontaneous anastomosis of the proximal and distal non-injured intestine. This does not always proceed to completion and sometimes we are left with a cicatricial ream at the site of these old infarctions; they may not be the source of intestinal obstruction for many, many years subsequent to the injury. As for the general symptoms of this patient, they are rather classic of abdominal angina as described by Dunphy. Somewhere in the workup of this patient he should have had a celiac angiography to determine whether or not he had a correctible vascular lesion.

Leo Lowbeer, M.D., Tulsa, Oklahoma: A few years ago we had a very similar case which involved a 38-year old man who had a history of some cardiac trouble and then suddenly developed pain in the left upper abdomen. This pain subsided but two weeks later he developed signs of upper intestinal obstruction. A permanently constricted jejunal loop was discovered and removed. This looked exactly like it, grossly like an ulcerated enteritis and, microscopically, it contained exactly the same lesions which were obstructive after three weeks only. The patient died a few days after the operation and had an embolus of the mesenteric artery with a complete embolization and mesenteric thrombosis again. I would like to mention that similar lesions, of course, are observed after irradiation.

Philip J. Hodes, M.D., Philadelphia, Pennsylvania: I think it is well to remember that infarctions of the gut, when seen early, may reveal nothing radiologically. We have seen massive infarctions which resulted in long segment resections and yet, radiologically within the first week, there is no disordered motor function; the appearance of the mucosal pattern is well within normal limits, and one overlooks it entirely. What threw me off in this case were these fistulae erroneously called by the pathologist "diverticuli," unless happenstance grew some diverticuli at the site of this subsequent abnormality. I have never seen such isolated small bowel changes as a result of irradiation. One would expect that the changes would be more diffuse in the large bowel.

References

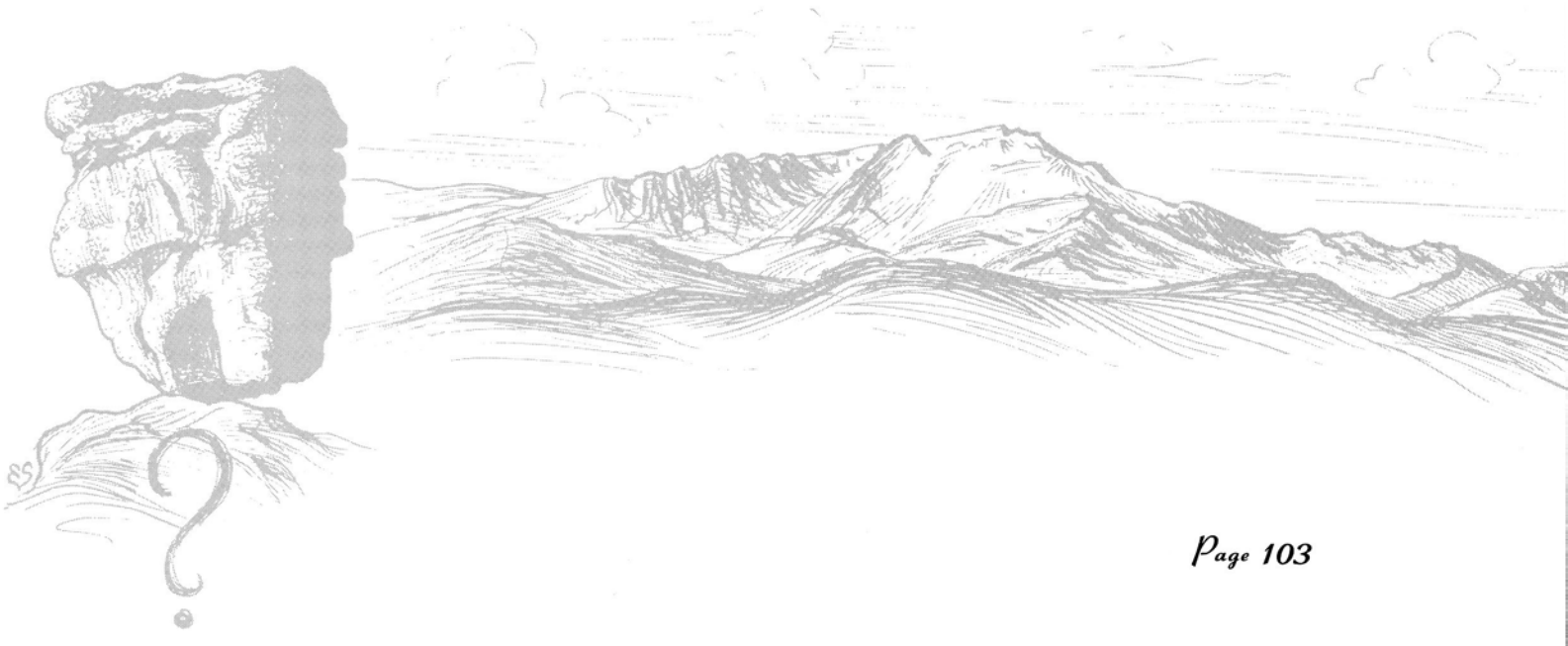
Dunphy, J. E.: Abdominal pain of vascular origin. Amer. J. Med. Sci., **192**: 109-113, 1936.

Durrance, F.: Regional enteritis of the duodenum. Amer. J. Roentgenol, **88**: 658-661, 1962.

Hawkins, C. F.: Jejunal stenosis following mesenteric-artery occlusion. Lancet, **II**: 121-122, July 1957.

Rosenman, L. D. and Gropper, Angel N.: Small intestine stenosis caused by infarction: An unusual sequel of mesenteric artery embolism. Ann. Surg., **141**: 254-262, 1955.

Wolf, B. S. and Marshak, R. H.: Segmental infarction of the small bowel, Radiology, **66**: 701-707, 1956.



4. Leiomyosarcoma of the Retroperitoneal Space

Contributed by D. Alcott, M.D. and J. McCort, M.D.

San José, California

THE PATIENT was a 72-year old man in May 1955, when he complained of severe epigastric pain of six months duration, anorexia and weight loss. Thirteen years previously he had been operated upon for a "retroperitoneal sarcoma." On examination the patient appeared cachectic and a non-tender, large, movable mass could be palpated in the left upper abdominal quadrant. The hemoglobin was 3.5 gm%.

Dr. Welin: This film reveals the left upper quadrant of the abdomen of an upper intestinal examination. The oblique projection reveals a huge mass which is fairly well outlined and which contains calcific debris. There is evidence of extrinsic pressure by the mass upon the greater curvature of the stomach. The lesion invades the jejunum; the jejunal mucosa is being lifted by the tumor which extends into the lumen. There is distention but no obstruction of the gut.

Among the left upper abdominal masses, one must consider masses of renal, pancreatic and splenic origin. Hypernephromas notoriously contain calcific debris and can invade adjacent structures. This tumor mass lies somewhat lateral to the renal fossa. Teratocarcinomas of the kidney frequently contain calcific debris and may assume unusual configurations. Carcinomas arising in the tail of the pancreas may calcify and these too, sometimes invade adjoining structures. The lesion we see seems to lie below the spleen and is not related to it.

Malignant lymphomas, including reticulum-cell sarcoma, lymphosarcoma, and Hodgkin's disease involving the retroperitoneal structures, may secondarily invade the bowel; usually, they do not contain calcific debris. This patient was operated upon thirteen years previously. It is conceivable, if his present disease was first manifest thirteen years ago, that hemorrhage could develop in the slowly growing mass, thus accounting for the calcific debris.

The retroperitoneal space commonly harbors other sarcomas, particularly liposarcoma, fibrosarcoma, rhabdo- and leiomyosarcoma. Liposarcomas are not uncommon and frequently occur as radiolucent densities rather than radiopaque densities. It is only fair to state, however, that they are more frequent in patients between 40 and 60 years of age; our patient is 72 years of age. These tumors grow slowly and may reach a tremendous size; they spread by local extension and infiltration and may contain calcific debris. The fact that this patient's tumor is not radiolucent, does not militate against liposarcoma as only about 50% demonstrate classical radiolucencies. This is particularly true in those liposarcomas that contain a great deal of fibrous tissue.

The fact that this patient's abdominal tumor was described clinically as being "movable" disturbs one. This suggests a tumor of renal origin or a tumor arising in the intestine itself, a large "ice-berg" type of muscle tumor most of which lies outside of the intestine. A slowly growing leiomyosarcoma with central necrosis and calcification could do this even though I have never seen one this large.

Dr. Welin's impression: 1. Retroperitoneal LIPOSARCOMA. 2. LEIOMYOSARCOMA.

Roentgenologic Impressions Submitted by Mail

Liposarcoma	55
Leiomyosarcoma	36
Other sarcomas	17
Carcinoma pancreas	9
Others	10

Dr. Regato: Dr. R. Calderón, of Managua, and Dr. J. Barber, of Cheyenne, also suggested a retroperitoneal lipo-

Fig. 1.—Roentgenogram revealing large mass invading the jejunum.

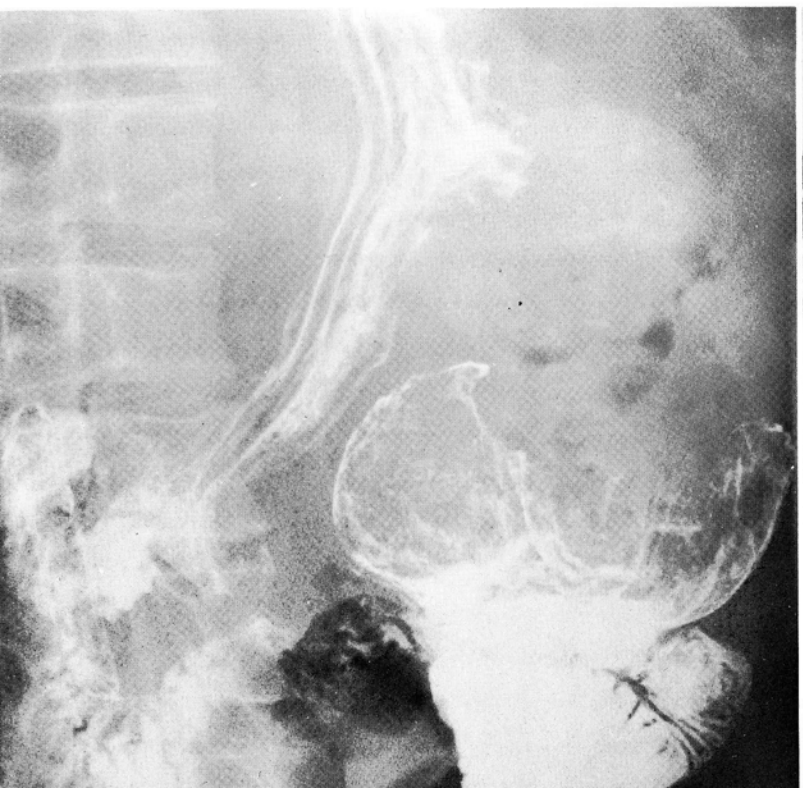
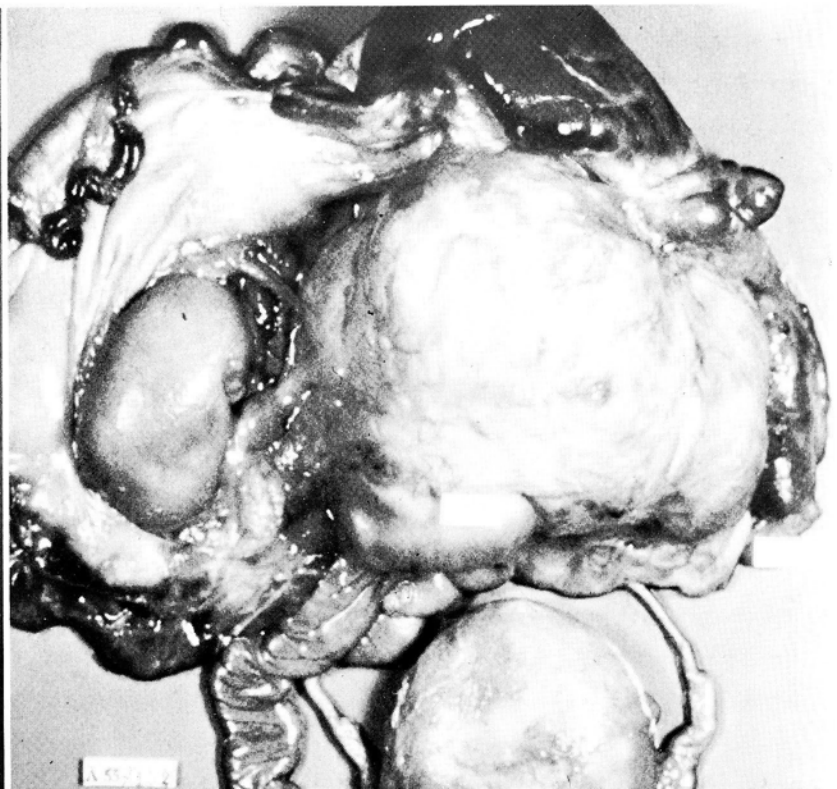


Fig. 2.—Gross photograph of retro-peritoneal tumor adhering to jejunum and spleen.



sarcoma secondarily invading the small intestine; Dr. E. Salzman, of Denver, offered a leiomyosarcoma of the jejunum.

Subsequent history: In spite of repeated transfusions, the patient continued to weaken and on May 27th, 1955, he expired. At autopsy a mass 10x13x15 cm was found which was densely adherent to the jejunum, left kidney and spleen; it was covered by a firm, thick, yellow capsule. On cut section the mass was cystic and contained large amounts of blood and necrotic material; the major portion consisted of a friable reddish-purple tissue, but in some other areas it was rubbery in consistency.

Dr. Castleman: This is, I believe, a mesenchymal tumor that is apparently invading the small bowel from without and, in one spot, seems to have reached the mucosa. We are given the history of a previous retroperitoneal sarcoma and the burden of proof therefore rests on those who deny that this present tumor is a recurrence, even if it is of thirteen years duration.

From a morphological point of view, this is a classical leiomyosarcoma. The cells are long, thin and spindle shaped and are aligned in almost parallel rows. The nuclei are also long and thin and have the characteristic rounded blunt ends. The proof is obtained from a Masson stain in which intracellular myofibrils appear to be brown and the only collagen present is in the scant stroma. Although this is a very well differentiated tumor it is quite cellular and would have to be called a sarcoma. It is certainly of a very low grade of malignancy and would fit in with the long history. Mitoses are rare.

Recurrences of leiomyosarcoma are common but their incidence is second only to liposarcoma of the malignant tumors of the retroperitoneal region, and metastases are rare. Without the history of a previous retroperitoneal origin one could not rule out that this is an intramural extramucosal tumor of the bowel. These tumors may spread either by implantation or metastasis. In the large series from the Mayo Clinic, of 26 patients available for evaluation, 50% survived 5 years and 12 of these 13 patients had low grade lesions. I'm not at all sure that I would not call most of these twelve cases from the Mayo series benign leiomyomas, since the histology, as published, showed very characteristic palisading. It is true, however, that we have all seen metastases from very well differentiated mitosis-free tumors composed of smooth muscle and cures from obvious morphologically malignant lesions. In our own series at the Massachusetts General Hospital of eight patients, only two had five-year survivals.

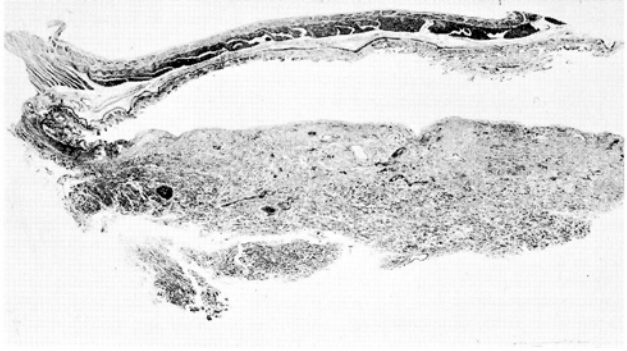


Fig. 3.—Photomicrograph of entire histological section submitted showing replacement of all layers of wall of portion of small bowel. (H & E x 4)

Dr. Castleman's diagnosis: LEIOMYOSARCOMA, recurrent.

Histopathologic Diagnoses Submitted by Mail

Leiomyosarcoma	47
Pheochromocytoma	18
Granular cell myoblastoma	13
Fibrosarcoma	11
Angiosarcoma	11
Leiomoma	14
Rhabdomyosarcoma	8
Carcinoid	7
Hemangiopericytoma	6
Mesothelioma	6
Nebuloma!	1
Others	21

Dr. Castleman: I do not see where a pheochromocytoma could be considered in this case; I did not think that it had any resemblance to one.

Dr. Regato: Dr. R. M. Delcourt, of Brussels, Dr. H. K. Griffen, of Omaha, and Dr. G. M. Edington, of Nigeria, also made a diagnosis of leiomyosarcoma. Dr. R. A. Keffler, of Lubbock, and Dr. P. W. Gikas, of Ann Arbor, offered pheochromocytoma. Dr. W. R. Platt, of Saint Louis, and Dr. H. L. McGaffey, of Idaho Falls, preferred malignant granular cell myoblastoma.

A. P. Stout, M.D., New York City (by mail): I have tried hard to determine the nature of this tumor but without success: it is outside my experience. I think that it is probably malignant, but whether epithelial, mesenchymal or neurogenous, I am unable to guess.

Dr. Spratt: One sees frequently in the literature case reports of a clinician who has come across an isolated case where there has been a long interval between the treatment of the primary and the development of the recurrence. In a recent report a surgeon observed development of adenocarcinoma of the colon in the abdominal scar at least some seventeen years after resection of the primary. In one of the recent issues of *Obstetrics and Gynecology* there is a collection of various reports of carcinoma of the cervix recurrent fifteen years or more after treatment of the primary. This is in perfect keeping with the natural history

Fig. 4.—Close up of involved mucosal (lower) in contrast to normal mucosa (upper). (H & E x 39)

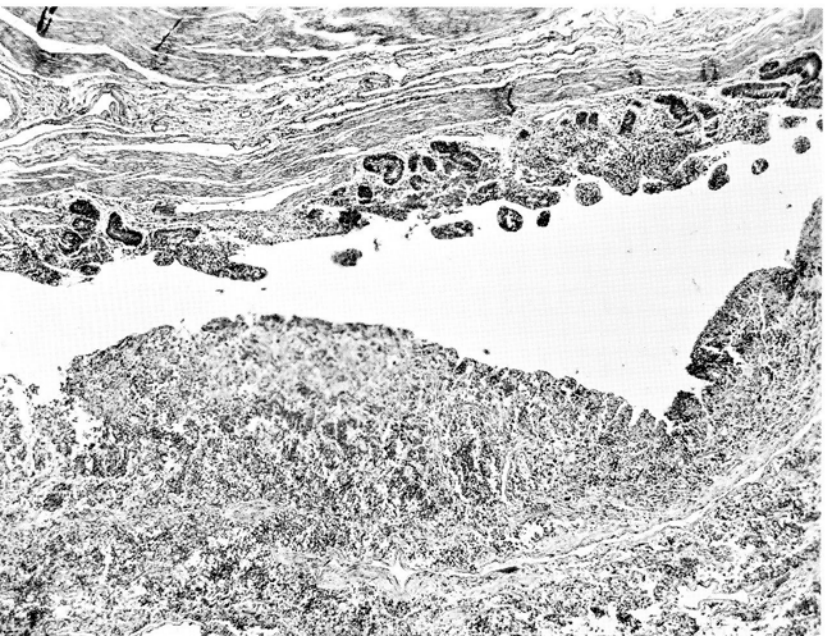
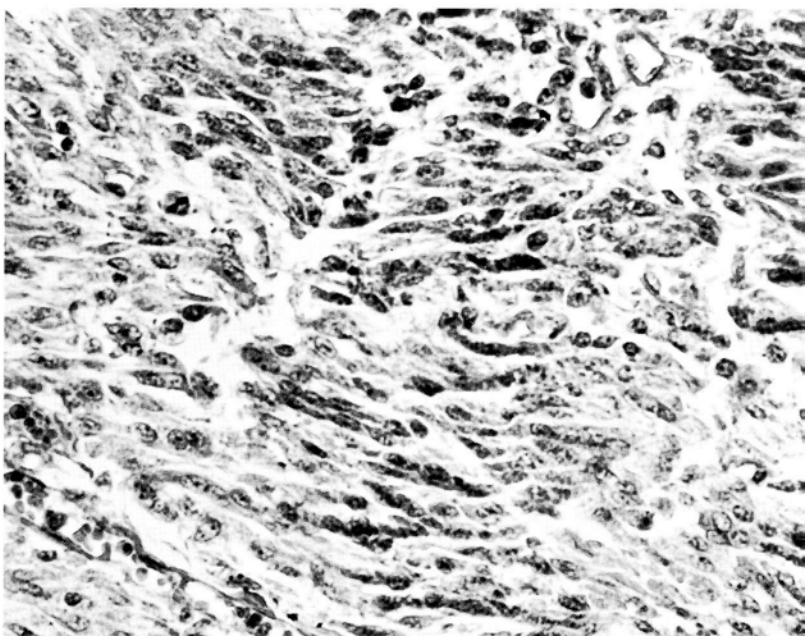


Fig. 5.—Long spindle-shaped cells forming the bulk of the tumor. (H & E x 370)



of neoplasms. Most of our studies on growth rates today indicate that each morphological group of neoplasms has a normal distribution of growth rates; in each category of neoplasms at the slow growing end of the normal distribution curve there will always be a small number of neoplasms that will have very slow rates of growth in each morphological category, so that there will be these cases that come up from time to time where a very long interval of time elapses between the treatment of the primary and the development of the recurrence.

Most frequently I see these left upper quadrant sarcomas present with hemorrhagic crises. The most frequent single crisis that I have seen from them is the secondary erosion into the stomach and massive gastrointestinal hemorrhage.

Leo Lowbeer, M.D., Tulsa, Oklahoma: I believe that many of these cellular leiomyomas are under-diagnosed and are actually leiomyosarcomas. On the other hand, it is not generally appreciated that there is sometimes a tremendous interval between the recurrence and the primary tumor and, byond that, there are some cases in which a tumor regresses and disappears. For instance, we had a case in which a patient had just a simple hernia operation. Ordinarily, herniated sacs are not examined microscopically, but this one was because it seemed to be indurated and it contained a tumor which we diagnosed as a peculiar looking leiomyosarcoma. The history then revealed that seven years before this patient had a leiomyosarcoma of the small intestine which filled the entire pelvis and was considered inoperable. The patient did not receive radiation treatment, but in these seven years the tumor completely receded.

F. P. Bornstein, M.D., El Paso, Texas: There is a tide, not only in the affairs of men; there is also a tide in diagnoses. If this case were presented twenty-five years ago when Ewing's teachings were more popular than now, I am sure at least a few of the diagnoses would have been in the neurogenic field. The neurogenic sarcoma had so much exercise that we have stopped even thinking about it. Do we really know if a cellular process has fibrils, that they have to be myofibrils? I am not sure that this is specifically applicable to this case but the total disappearance of any sort of soft tissue neurogenic sarcoma has gone a little bit to the other extreme.

D. R. Alcott, M.D., San José, California: I did have the advantage of seeing a lot more material and also sent quite a number of slides of various portions of the tumor to Dr. Carson at the time of the autopsy or shortly thereafter, and he felt that this was a malignant nonchromaphine paraganglioma and, of course, that is what I happen to think this is; other sections show more or less some atypical picture of a pheochromocytoma.

Mark Wheelock, M.D., Chicago, Illinois: I am accepting Dr. Castleman's interpretation on the basis of the special stain. I would like to find out, however, if calcification as demonstrated here is not quite frequently seen in these parasympathetic tumors; would it not be a little bit on that side from a clinical point of view? Was this material chromated?

Dr. Castleman: I think it is true that one sees calcifications usually in the more undifferentiated form, such as the neuroblastoma or the ganglioneuroblastoma, but one certainly also sees calcification in leiomyomas, and in leiomyosarcomas, so I don't believe calcification would be any clue to either diagnosis.

Dr. Alcott: We did chromate this material, some of it, and I thought it showed a good positive chromatin reaction on the cells.

John Kepes, M.D., Kansas City, Kansas: I thought that on our slide the cytoplasm was granular and that probably explains why some people called it malignant granular-cell myoblastoma. It looked undoubtedly malignant and I wonder if such granular cytoplasm does occur in certain forms of leiomyomas or leiomyosarcomas.

Dr. Castleman: I do not recall seeing any granules. My impression of the granular myoblastoma would be a much fatter cell. These to me were long, thin, spindle-shaped, which does not fit in with my idea of a granular myoblastoma, whatever that is.

References

Ackerman, L. V.: Atlas of tumor pathology. Tumors of the retroperitoneum, mesentery and peritoneum. Armed Forces Institute of Pathology, Washington, D.C., 1954.

Darling, R. C. and Welch, C. E.: Tumors of the small intestine. New Engl. J. Med., **260**: 397-408, 1959.

Starr, G. F., and Dockerty, M. B.: Leiomyomas and leiomyosarcomas of small intestine. Cancer, **8**: 101-111, 1955.

5. "Pseudo-Lymphosarcoma" (?) of the Cecum

Contributed by J. W. THOMPSON, M.D. and J. D. BAUER, M.D.

Saint Louis, Missouri

THE PATIENT was a 52-year old woman in April, 1963, when she complained of nausea and abdominal cramps; she had been operated upon for an esophago-gastric "tumor" in January, 1963. Examination revealed a palpable mass in the right lower abdominal quadrant.

Dr. Welin: The examination performed in April, 1962 reveals extensive infiltration of almost the entire lesser curvature of the stomach. In addition, there is a nodule high in the fundus near the esophago-gastric junction. There are changes along the greater curvature of the stomach which may be due to reflex spasm. Noteworthy, also, is the peculiar appearance of the diverticulum springing from the region of the ligament of Treitz which appears to point upward.

The second roentgen examination, the barium enema, done in April, 1963, reveals a large mass apparently arising in the cecum or ascending colon causing intussusception. The liver may be slightly enlarged. The appendix is well visualized through the intussuscepting mass.

The reasonable diagnosis is extensive carcinoma of the lesser curvature of stomach extending into the esophagus with evidence of metastasis in the right side of the colon. What is disconcerting is the fact that eight months were allowed to elapse between the time of the original roentgen examination in April, 1962, and the occasion of the surgical procedure in January, 1963. I hardly believe the lesion was overlooked.

From roentgen findings alone one cannot differentiate between carcinoma of the stomach and lymphosarcoma of the stomach. Whereas, statistically it has been said that malignant lymphomas of the stomach tend to be bulky and are placed lower in the stomach, one cannot apply statistics to the individual case. The patient was then operated upon in January, 1963. One must presume that at that time she did not have the colonic lesion. It could have been overlooked.

A lymphoma will explain the entire picture. Lymphomas commonly have been confused with gastric carcinoma. They commonly are multiple in the intestinal tract. They commonly are associated with intussusception.

Melanosarcoma of unknown origin occasionally may cause the most bizarre gastrointestinal metastatic foci. I mention this because of the peculiar "bull's eye" appearance of the filling defect in the proximal end of the stomach seen in the examination made in April, 1962. This "bull's eye" is common in metastatic gastrointestinal melanosarcoma.

Dr. Welin's impression: 1. Malignant gastric disease with metastasis: LYMPHOSARCOMA of the stomach. 2. MELANOSARCOMA, unknown origin.

Roentgenologic Impressions Submitted by Mail

Lymphoma	57
Polypoid carcinoma	33
Ileocolic intussusception	18
Metastatic melanoma	6
Carcinoid	5
Others	12

Dr. Regato: Dr. B. Felson, of Cincinnati, offered a diagnosis of lymphoma. Dr. E. Salzman, of Denver, preferred an intussuscepting carcinoma of the cecum. Dr. R. Spurck, of Denver, suggested a carcinoid.

Operative findings: On April 23rd, 1963, a right hemicolectomy was done; the cecum was occupied by a large tumor 6x5x2.5 cm which involved the ileocecal valve. On cut section the tumor was whitish-gray, semitranslucent and encephaloid in appearance; it was covered by superficially ulcerated mucosa. There were many enlarged lymph nodes.

Dr. Castleman: A low power view of this case is similar to Case No. 1 in that the bulk of the lesion has replaced the submucosa and muscularis. It has extended to the surface and ulcerated the mucosa. The chances, therefore, are high that this is not a carcinoma. Morphologically this obviously highly malignant lesion is composed of large polyhedral cells with a goodly amount of acidophilic cytoplasm but with indefinite cell borders. The cells seem to be separated from each other by artifactual spaces; because they are not contiguous I am led away from a diagnosis of carcinoma. The nuclei are ovoid, irregular and often horseshoe-shaped, but rarely round. There is no suggestion of acinar arrangement or mucous secretion. The findings are quite characteristic of a malignant lymphoma of the reticulum-cell sarcoma type. Further proof is the large amount of reticulin around many of the cells.

Malignant lymphomas involving the gastrointestinal tract probably originate in the submucosal or deep mucosal lymphoid tissue and usually elevate the mucosa and project into the lumen as a large mass—a finding present in the case under discussion. By the time the patient has symptoms, the tumor has usually ulcerated in one or more places on the mucosa. My section did not show ulceration, but perhaps some of yours did. Although, by and large, malignant lymphoma is a disseminated disease, in a series of cases from our hospital collected from 1913 through 1957, there were 25 cases of solitary malignant lymphoma of the small bowel. Of the 20 cases that could be followed, only 5 survived for five years. The type of lymphoma in the solitary form in the gastrointestinal tract is often of this reticulum-cell sarcoma type; in one of our series of 79 cases, approximately 45% was of this type and 40% of the lymphosarcoma type. The history of an esophagastric tumor in the case under discussion is in line with the multicentric origin of this lesion.

*TABLE I. SOLITARY GASTRO-INTESTINAL MALIGNANT LYMPHOMA.

Massachusetts General Hospital
1913-1953 79 Resections

	Stomach	Small Bowel	Colon & Rectum	Total
Stem cell	5	2	2	9
Clasmatocytic	15	9	2	26
Lymphoblastic	13	7	4	24
Lymphocytic	4	2	0	6
Hodgkin's Lymphoma	3	2	0	5
Hodgkin's Sarcoma	4	1	1	6
Follicular	0	2	0	2
Total	44	25	9	78
Oesophagus—1 Lymphoblastic Lymphoma				1
				79

*(from Allen, A. W., Donaldson, G., Sniffen, R. C. and Goodale, F., Jr.: Ann. Surg. **140**: 428-438, 1954.)

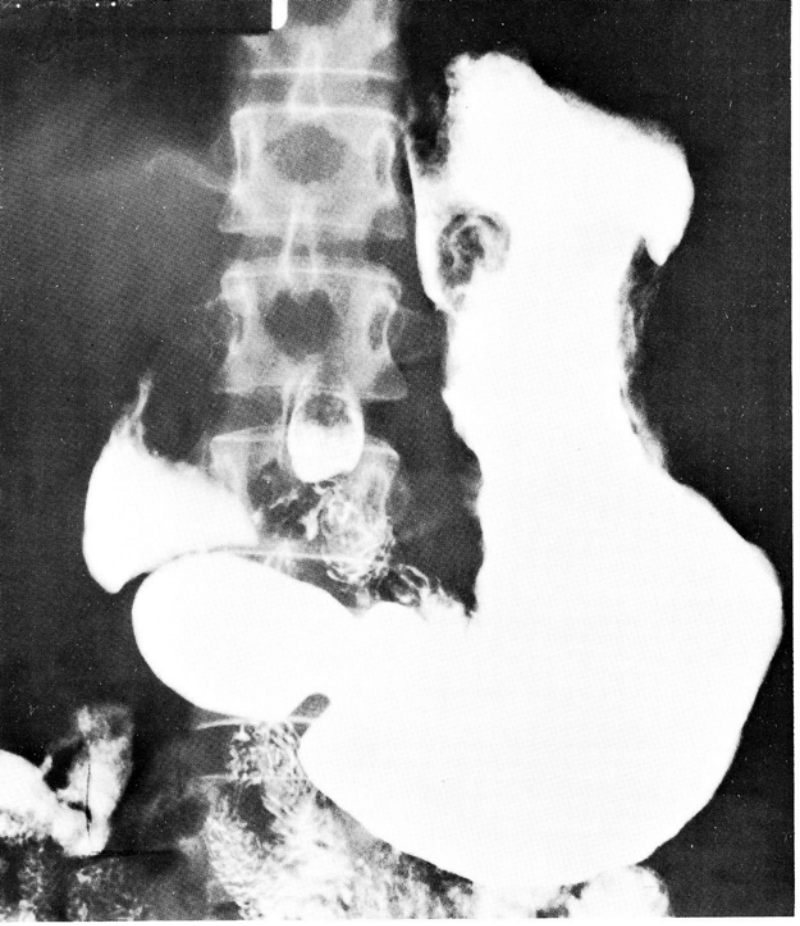


Fig. 1.—Roentgenogram of the stomach in April, 1962, showing infiltration of the lesser curvature and a nodule near the esophagus.

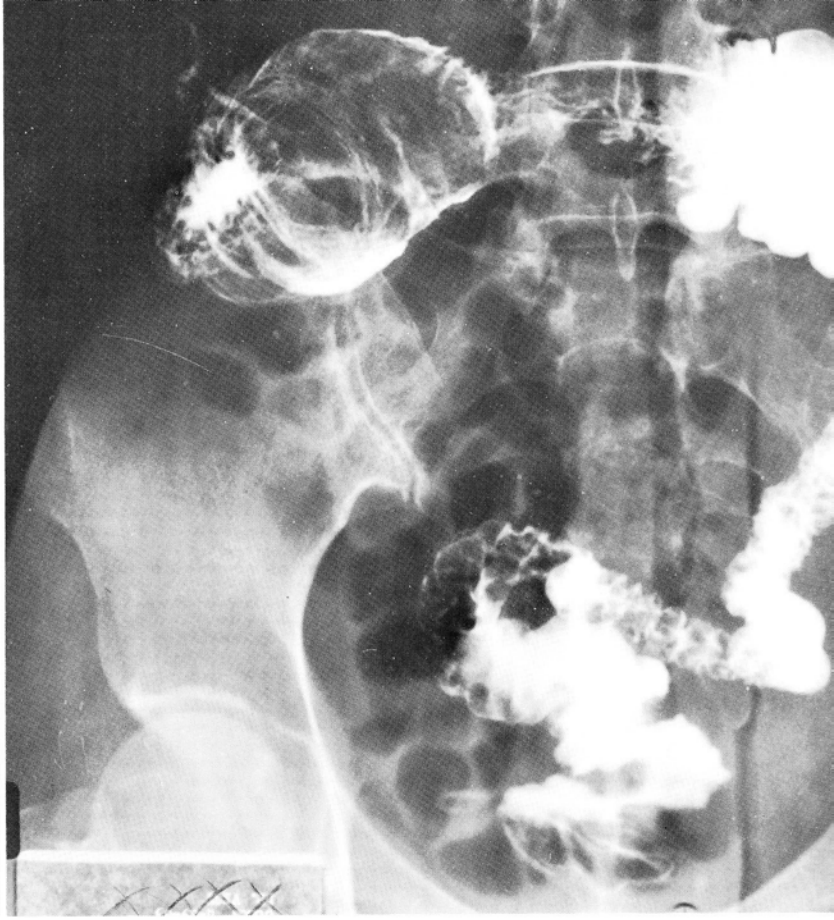


Fig. 2.—Barium enema revealing large cecal mass causing intussusception.

Dr. Castleman's diagnosis: MALIGNANT LYMPHOMA, RETICULUM-CELL TYPE.

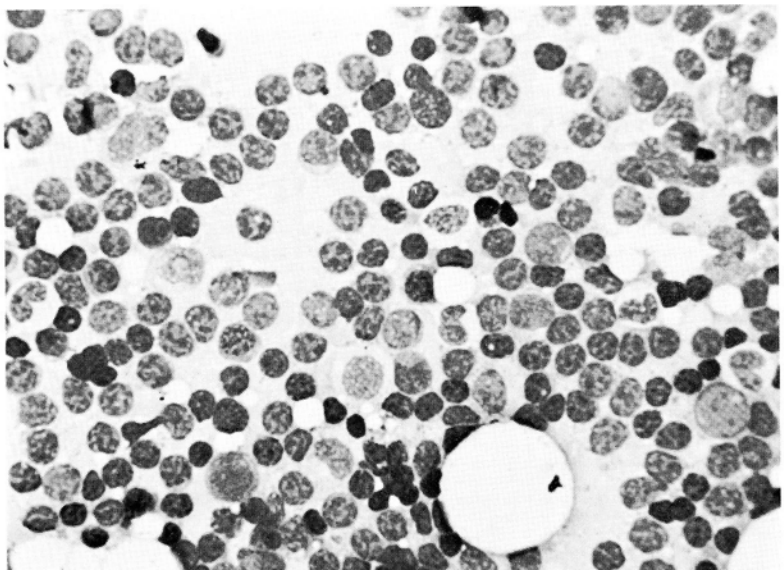
Histopathologic Diagnoses Submitted by Mail

Reticulum-cell sarcoma	111
Anaplastic carcinoma	15
Metastatic melanoma	14
Lymphosarcoma	12
Hodgkin's	9
Others	8

Dr. Regato: Dr. M. R. Abell, of Ann Arbor, Dr. R. Lattes, of New York, and Dr. A. J. Valdés, of Danville, Virginia, also made a diagnosis of reticulum-cell sarcoma. Dr. R. Willis, of Glasgow, suggested the possibility of an epithelial nature. Dr. J. P. Ray, of Lubbock, saw definite signet-ring cells. Dr. L. Lowbeer, of Tulsa, made a diagnosis of metastatic melanoma.

Subsequent history: The thirty-one lymph nodes examined showed no evidence of tumor. Following operation the patient did well. The blood count showed no abnormality but a bone marrow biopsy revealed evidence of chronic lymphogenous leukemia. A previous bone marrow biopsy, done in April, 1962, showed an identical typical picture of leukemia.

Fig. 2A—Bone marrow biopsy showing evidence of leukemia.



(The slide of the bone marrow smear was projected).

Dr. Castleman: This certainly looks leukemic. The exact type of leukemia I would not be able to say. One wonders whether this could be a monocytic leukemia, although the nuclei seem awfully round for that. (The slide was subsequently examined on the microscope and Dr. Castleman agreed that it showed lymphogenous leukemia).

Dr. Regato: I had purposely left this little surprise for Dr. Castleman because it raises the question that one might make a diagnosis of reticulum-cell sarcoma when actually one is dealing with leukemia.

Dr. Castleman: I think there is no question that many lymphomas are associated with leukemia. In this particular type of tumor, if the patient had leukemia, the cells would resemble more monocytes than lymphocytes, that is mature lymphocytes. I think if the hematologists tell us that this is a characteristic lymphatic leukemia with mature lymphocytes, then I would feel that the patient had two diseases. I have a hunch that he might tell us that they are much bigger than the mature lymphocytes and very atypical and perhaps resemble more the monocyte.

Dr. Regato: I know that one cannot gainsay the possibility that these two conditions might be associated: that is a pretty good way out! I had particular interest in this case because, as clinicians, we are convinced that we are being fed a number of cases that come to us with a biopsy of a lymph node diagnosed as lymphosarcoma and in which further clinical investigation and bone marrow biopsy often, or at least in many cases, prove that this is actually a case of leukemia misdiagnosed as lymphosarcoma, what we like

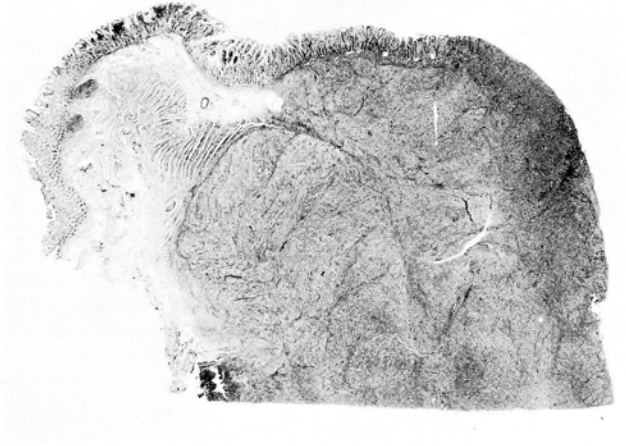


Fig. 3.—Photomicrograph of entire histological section submitted showing intramural tumor extending to and involving mucosa. (H & E x 3.8)

to call *pseudolymphosarcoma*. Most instances that we encounter are cases of initial lymph node biopsy; we wonder if the same is true of initial visceral manifestations of leukemia where the lesions are, perhaps, not so definitely lymphocytic as to betray their nature.

Dr. Spratt: To take the discussion back into the operating room: although I would have attempted to reduce the intussusception of the small intestine, I would not have attempted to reduce a colocolic intussusception in an adult, since these are generally due either to cancer or a very large adenoma.

Unidentifiable Pathologist, Detroit, Michigan: There was a paper by Custer in 1948 reporting on about 750 cases of the Armed Forces Institute of Pathology where they showed that there are transitions from the various kinds of lymphomas like Hodgkin's and chronic lymphatic leukemia; that they do for a time coexist; they move back and forth from one to the other. I don't think that many of us hold to the idea any more that a tissue diagnosis of a lymphosarcoma is necessarily incorrect if you find leukemic cells in the marrow; it is actually aleukemic leukemia at this point.

Dr. Regato: The implication is that they are both the same thing or that they are transitions from one thing to the other; this is quite accommodating. From my point of view, as a clinician, I do know that lymphosarcomas of the upper air passages, of the nasopharynx, of the base of the tongue, of the tonsil, of the nasal fossa, may be permanently cured, even though they have metastasized to the cervical region, provided they are limited to those two areas; and this is in contrast with leukemia, which is an incurable disease. The pathologist and the experimental worker often assume that both conditions are equally hopeless.

Philip J. Hodes, M.D., Philadelphia, Pennsylvania: I think that there is a kind of correlation between the histological kind of leukemia seen in the tissue and the actual leukemia manifested in the blood. About fifty per cent of the cases of lymphocytic type of lymphoma eventually develop a leukemic blood picture; and as they become more and more undifferentiated toward the reticulum-cell type, less and less of those cases will actually produce the leukemic picture. It is impossible to predict from tissues which case will have the leukemic picture and which will not.

Dr. Regato: As I said, this is very accommodating but are we really explaining away the fact because we cannot tell? I do agree that, indeed, you might have a transition of one thing to the other but I will ask myself: "Is it really that there is a transition or is it that one cannot understand the process?" This is a reasonable question, it seems to me.

Dr. Castleman: In Custer's series most of his transitions involved Hodgkin's disease, where one made a diagnosis of lymphocytic lymphoma and that, at a later date, one found Hodgkin's disease. In many of those cases, in going to the original slide of the so-called lymphocytic lymphoma, we were able to find an occasional Reed-Sternberg cell, indicating that, really, this was Hodgkin's all the time. The same thing can be stated between Hodgkin's disease and reticulum-cell sarcoma. We believe that Hodgkin's disease is a disease, perhaps, of the reticulum-cell: I recall a child that was studied at the Boston Children's Hospital in whom a diagnosis of Hodgkin's disease was made at age 9 or 10; the patient lived for about 10 or 12 years, to die of a very characteristic reticulum-cell sarcoma, so that there was a transition; but I do not recall that there were transitions from a reticulum cell sarcoma to a mature lymphocytic form of lymphoma. This would be to me quite unusual. In this particular case there are, as I see it, two possibilities: (1) that this is an independent chronic lymphatic leukemia with mature round lymphocytes or (2) that the bone marrow cells are not that mature, that they could be interpreted as monocytes and, therefore, would fit in with a monocytic form of leukemia, which has been seen with reticulum-cell sarcoma throughout the body.

Morgan Berthrong, M.D., Colorado Springs, Colorado: When we see a lymph node completely replaced by small lymphocytes and make the diagnosis of lymphocytic lymphosarcoma, we are exceeding the limits of our technique, and we probably should always make the diagnosis of lymphocytic lymphosarcoma or chronic lymphatic leukemia. It depends then upon the clinician instituting further studies, including perhaps bone marrow in addition to the blood

Fig. 4.—Polyhedral cells with ovoid and horseshoe-shaped nuclei. Not arranged in any pattern. (H & E x 260)

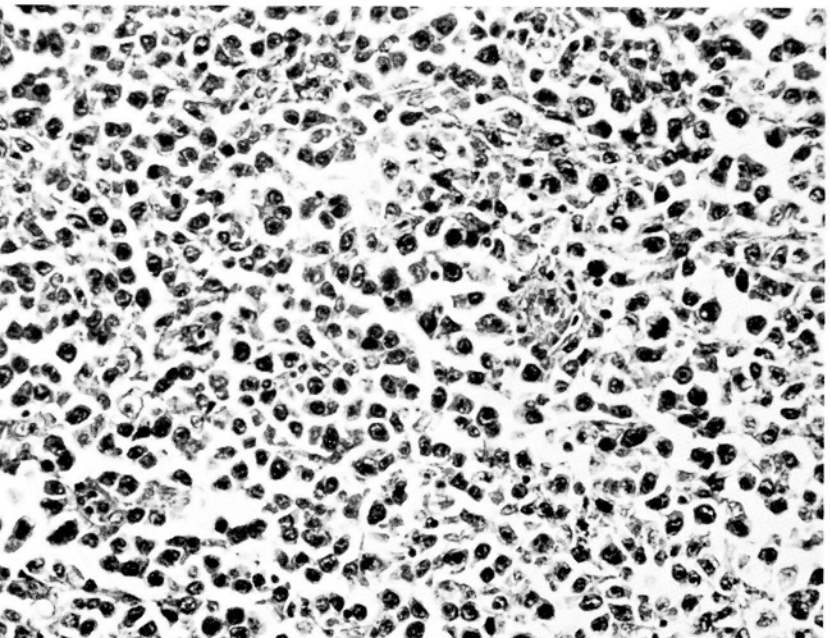
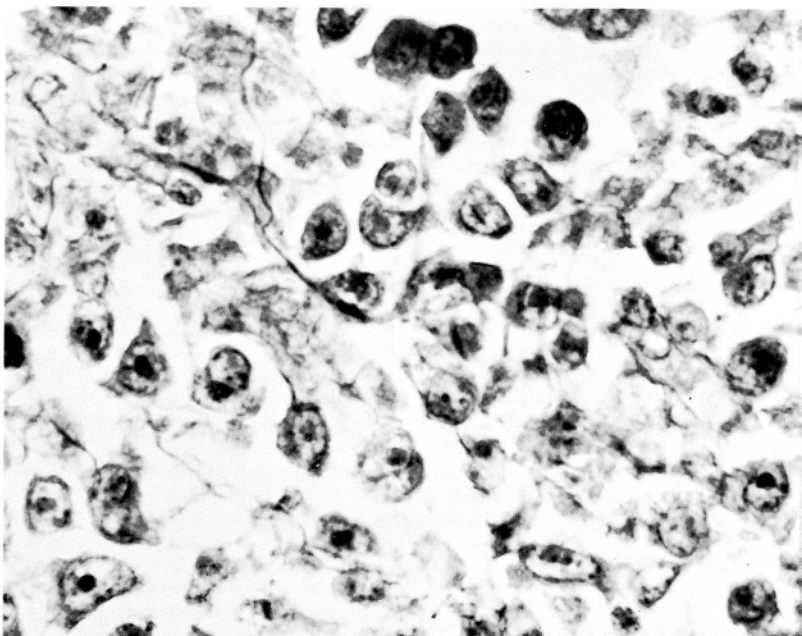


Fig. 5.—High magnification showing abundant reticulin fibers between cells. (Foot x 800)



studies, to rule out the possibility that the local manifestations sent the the pathology department are not just part of a generalized disease. I certainly agree totally with Doctor Castleman that we have very seldom given a report of reticulum-cell sarcoma in a leukemic lesion. I assure you, it does not happen here in Colorado Springs either. In the slide of bone marrow smear which was submitted in this case, the cells look remarkably like lymphocytes to me; they look like mature or only slightly immature lymphocytes and I don't see anything that I could squeeze into a monocytic series although I tried terribly hard.

Dr. Regato: Far be it from me to try to reflect on the excellence of the surgical pathology in our hospital, although if differences do arise I would expect Dr. Berthrong to lie with his brethren and not with us. Actually, it is not our intention to convince you; we just wish to shake you up a little bit; there are clinicians looking over your shoulders, not necessarily through the thick glasses of the microscope, and they are critical of the diagnoses that you are returning. Doctor Berthrong often renders us a diagnosis of "lymphosarcoma, also compatible with chronic lymphogenous leukemia;" I think this is a proper diagnosis. But, in the majority of reports that I read on patients that are referred to us from other parts of the country, the pathologists might not be aware of the fact that they have rendered a definitive diagnosis of lymphosarcoma on what is actually leukemia. Moreover, they are often unaware of the fact that lymphosarcoma in certain of its manifestations is curable, as leukemia is not, and it does make a difference from the point of view of the patient who, having a diagnosis of lymphosarcoma compounded by assumed incurability, may be submitted to the drug "du jour" and its potential dangers.

Mark Wheelock, M.D., Chicago, Illinois: I know the fact that many lymphosarcomas are primary in the nasopharynx and that when we see them in a later phase the primary lymphosarcoma may not have been recognized. However, it can be pretty well substantiated that it may start out as a macrofollicular lymphoma, go through a lymphosarcoma and terminate in leukemia; I am quite sure that we have all seen such cases. I would like to call Dr. Castleman's attention to three cases which were seen at the Huntington Memorial Hospital, of Boston: These cases were diagnosed as Hodgkin's and terminated as acute leukemia. I don't know that I have ever seen or heard of other than those three cases of Hodgkin's which went into leukemia. When we diagnose a lymphosarcoma or a reticulum-cell sarcoma or a Hodgkin's on lymph nodes or whatever tissue it is, I know there are clinicians who automatically do study the peripheral blood and also do aspirations. They could aspirate the bone marrow and find an associated leukemia; but I truly believe that you can go through this whole series of events from a macrofollicular lymphoma through a lymphosarcoma and into a leukemia.

H. Braunstein, M.D., Cincinnati, Ohio: I would like to point out that, in our experience, a very large proportion of the lymphocytic type of lymphoma of lymph nodes will have leukemia. As a matter of fact, in trying to collect a group of them I found it difficult to find the lymphocytic type of lymphoma diagnosed on a lymph node that at some phase in its course did not have a leukemic manifestation. I would also like to point out that there is a lesion which has been clearly delineated which enables the pathologist to predict that the patient does have at least the chronic lymphocytic type of leukemia: the pathologic picture is that of an incomplete effacement of nodal architecture. We have, in several instances, been able to suggest this diagnosis when the clinicians were unaware of the existence of leukemia and, subsequently, have been proven to be correct.

Dr. Regato: Our contention, Dr. Braunstein, is that the first group of cases you alluded to were cases of leukemia misdiagnosed on their lymph node manifestations as lymphosarcoma; this is what we refer to as *pseudolymphosarcoma.* The second group of cases suggests that you have now found refinements of observation that may allow you to avoid the error in some cases. May I call your attention to the fact that in this case we have a visceral rather than a nodal manifestation, that maybe this has to do with the reticulum-cell appearance, and that in spite of the bulk of the lesion and its designation by our guest expert as an "obviously highly malignant" reticulum-cell type lymphoma, none of the nodes examined showed evidence of metastasis.

Leo Lowbeer, M.D., Tulsa, Oklahoma: Dr. Berthrong said that if one looks at a lymph node which is effaced and has nothing but lymphocytes and an infiltration of the capsule, one cannot tell whether it is a lymphosarcoma or lymphocytic type of leukemia, and then it is incumbent upon the clinician to make a diagnosis. I believe that it behooves the pathologist to find out the hematologic evidence and incorporate that in his report. Furthermore, as Rappaport has pointed out, in most cases there is a difference between the effacement of a lymph node in leukemia and in lymphosarcoma. In leukemia the lymphocytes are usually extremely uniform; there are always irregularities and differences in cells in lymphosarcoma. If you come out and say that it is a lymphosarcoma and it proves to be a lymphatic leukemia, I think it is the pathologist's fault.

References

Allen, A. W., Donaldson, G., Sniffen, R. C. and Goodale, F., Jr.: Primary malignant lymphoma of the gastro-intestinal tract. Ann. Surg., **140**: 428-438, 1954.

Burnett, H. W. and Herbert, E. A.: The role of irradiation in the treatment of primary malignant lymphoma of the stomach. Radiology, **67**: 723-728, 1956.

Cook, James C. and Corbett, David P.: Roentgen therapy of primary gastrointestinal lymphoma. Radiology, **78**: 562-569, 1962.

Custer, R. P. and Bernard, W. G.: The interrelationship of Hodgkin's disease and other lymphatic tumors. Amer. J. Med. Sci., **216**: 625-642, 1948.

Darling, R. C. and Welch, C. E.: Tumors of the small intestine. New Engl. J. Med., **260**: 397-408, 1959.

Delahaye, R. P., Isnar, J., Pyard, M.: Les Lymphosarcomes du caecum. J. Radiol. Electrol. **44**: 625-634, 1963.

Gall, E. A. and Mallory, T. B.: Malignant lymphoma: A clinicopathologic survey of 618 cases. Amer. J. Path., **18**: 381-429, 1942.

Marshak, Richard H., Wolf, Bernard S., and Eliasoph, Joan: The roentgen findings in lymphosarcoma of the small intestine. Amer. J. Roentgen, **86**: 682-692, 1961.

Rappaport, H., Winter, W. U. and Hicks, E. B.: Follicular lymphoma. A reevaluation of its position in the scheme of malignant lymphoma, based on a survey of 253 cases. Cancer, **9**: 792-821, 1956.

6. Ileo-Cecal Plasma-Cell Myeloma

Contributed by M. R. ABELL, M.D. and W. MARTEL, M.D.

Ann Arbor, Michigan

THE PATIENT was a 60-year old man in November, 1961, when he complained of vomiting, bleeding and sharp mid-abdominal pains. One year previously an epidural "tumor" of the spine had been removed by laminectomy. On physical examination there was an 8 cm mass on the right lower abdominal quadrant; the hemoglobin was 13.6 gm% and the total serum proteins 6.7 gm%.

Dr. Welin: We have been given one roentgenogram demonstrating the proximal portion of a barium enema study, the region of the hepatic flexure. In the left upper abdomen are several dilated loops of small intestine. The gastric air bubble is irregular along its lesser curvature. The liver is not enlarged. The psoas muscle shadow is unusually well defined. The right kidney is normal. The roentgen examination reveals operative changes in the lower lumbar spine, the site of the previous laminectomy. Also, one observes subarachnoid opaque material due to the previous myelogram. In the neck of the right femur, demonstrable in the original roentgenograms, is a defect which looks suspiciously metastatic.

The barium enema reveals an extrinsic tumor mass encroaching upon the proximal transverse colon and its hepatic flexure. The lumen of the colon is narrow; the cecum cannot be identified, due either to incomplete filling of the colon or to the mass itself. The proximal colon and hepatic flexure are displaced down toward the pelvis by the extrinsic abdominal mass. There is obvious invasion of the wall of the colon.

The patient has multiple lesions. His lumbar spine was first involved; some months later the barium enema depicted the large extrinsic mass; I suspect there is a malignant process in the neck of the right femur. Logic dictates that the mass originates in an organ close to the hepatic flexure. We know that the right kidney is normal. This leaves us with either the liver or the gallbladder as a possible primary site. Whereas carcinomas of the gallbladder are rare, they can infiltrate the neighboring colon. This patient gives no history of jaundice of the type seen in 60% of patients with carcinoma of the gallbladder; nor has there been evidence of the biliary tract disease one sees in 70% of patients with carcinoma of the gallbladder. The patient is a man; carcinoma of the gallbladder statistically appears more commonly in women. It is fair to state, however, that carcinomas of the galllbadder tend to surprise us by their insidious onset and atypical clinical course.

There is a possibility that the mesentery is the site of the primary involvement. Metastases to the mesentery from other portions of the intestinal tract, indeed even from intrathoracic tumors are known; these can extend into the adjacent intestinal tract. Primary malignant tumors arise also within the mesentery.

Of particular interest is the unusual brilliance of the right psoas muscle shadow and the ease with which the right kidney can be seen radiographically. The unusual radiolucency of the mass in the wall of the colon must be significant. The usual intramural muscle tumors are dense. Liver tumors or gallbladder tumors would be dense. The evidence favors multiple lesions. Therefore, among other multiple lesions one must suspect plasma cell myeloma. These masses can be radiolucent, and they invade bone.

Dr. Welin's impression: 1. METASTATIC CARCINOMA. 2. MYELOMA.

Roentgenologic Impressions Submitted by Mail

Metastatic carcinoma	48
Lymphosarcoma	21
Adenocarcinoma	18
Liposarcoma	15
Biliary carcinoma	12
Others	10

Dr. Regato: Dr. B. L. Pear, of Denver, and Dr. R. Rapp, of Ann Arbor, suggested lymphosarcoma. Dr. N. Glazer, of Akron, and Dr. J. Barber, of Cheyenne, preferred a metastatic carcinoma.

Operative findings: On November 10th, 1961, a right colectomy and terminal iliectomy were performed. The iliocecal region was diffusely infiltrated by a growth with polypoid projections in the lumen of the ileum and cecum. On cut section the growth was uniformly gray in color. Several adjacent lymph nodes were enlarged.

Dr. Castleman: A view of the entire slide shows that the lesion involves primarily the submucosa and the serosa. Thus, we cannot rule out that the lesion did not arise from outside the bowel. At a slightly higher magnification it is obvious that the infiltrate is neoplastic and that there is some infiltrate of the muscularis and of the mucosa, even up to the surface epithelium.

These cells are certainly not epithelial and the first thought is that they are lymphomatous. However, when studied at higher magnification, these cells are large, about twice the size of a normal lymphocyte, round to polyhedral in shape with very sharp cell borders. The cytoplasm is abundant and distinctly purple—not pink as is the surrounding stroma. The nuclei are for the most part round although some are ovoid or even elongated, often huge and quite atypical. Mitoses are frequent. Usually the nuclei are centrally located, and in some of the smaller cells the nucleus is eccentrically placed and suggests the plasma cell. The nuclei have abundant chromatin and in many, especially in the smaller cells, there is a suggestion of a cartwheel arrangement of the chromatin. To corroborate the plasma cell nature of this lesion there are many giant cells containing two, three, and four nuclei typical of the multinucleated plasma cell. With methylene blue stain a beautiful blue is present in the cytoplasm. Once having concluded that the large cells are of plasma cell origin, I was able to find many small unquestionable plasma cells in areas where there were no inflammatory cells.

Thus, we have a combination of mature plasma cells and what can be called plasmoblasts, which may resemble reticulum-cells. It is believed by some that the precursor of the plasma cell is the reticulum or stem-cell and that, as the plasma cell differentiates from the reticulum-cell, RNA accumulates in its cytoplasm. This is the specific site of protein synthesis and, ultimately, of the gamma globulins which are so intimately involved in myeloma.

The history of an epidural tumor of the spine removed a year earlier does not tell us at what level it was located.

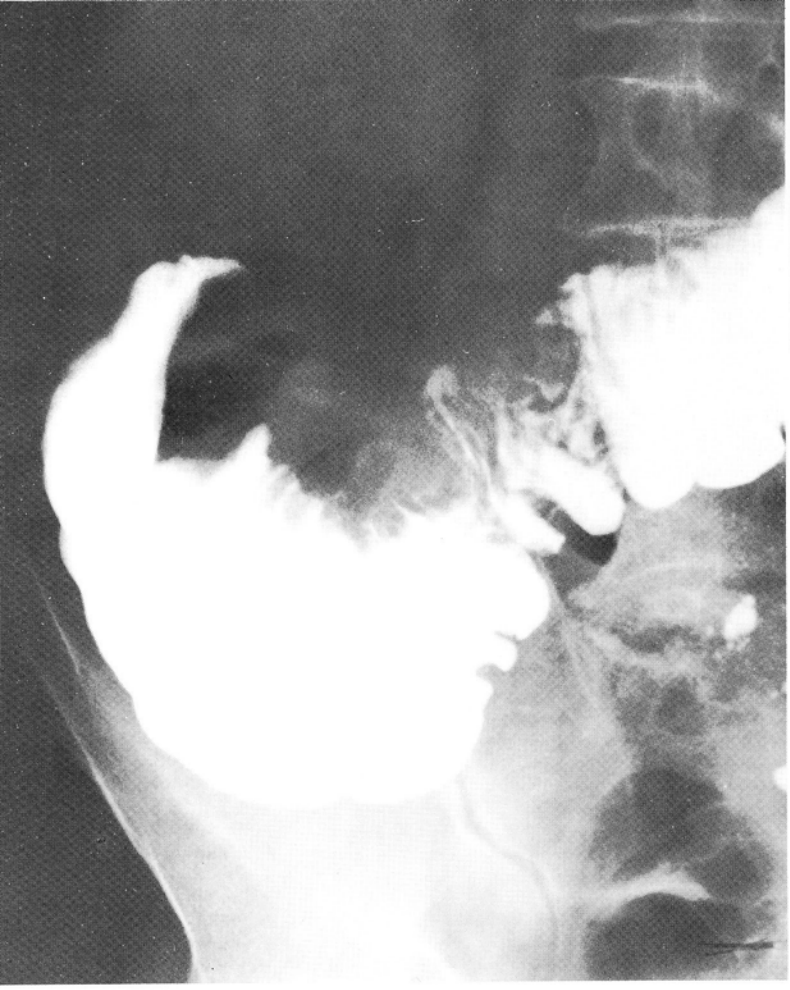


Fig. 1.—Barium enema showing an extrinsic mass encroaching upon the ascending colon.

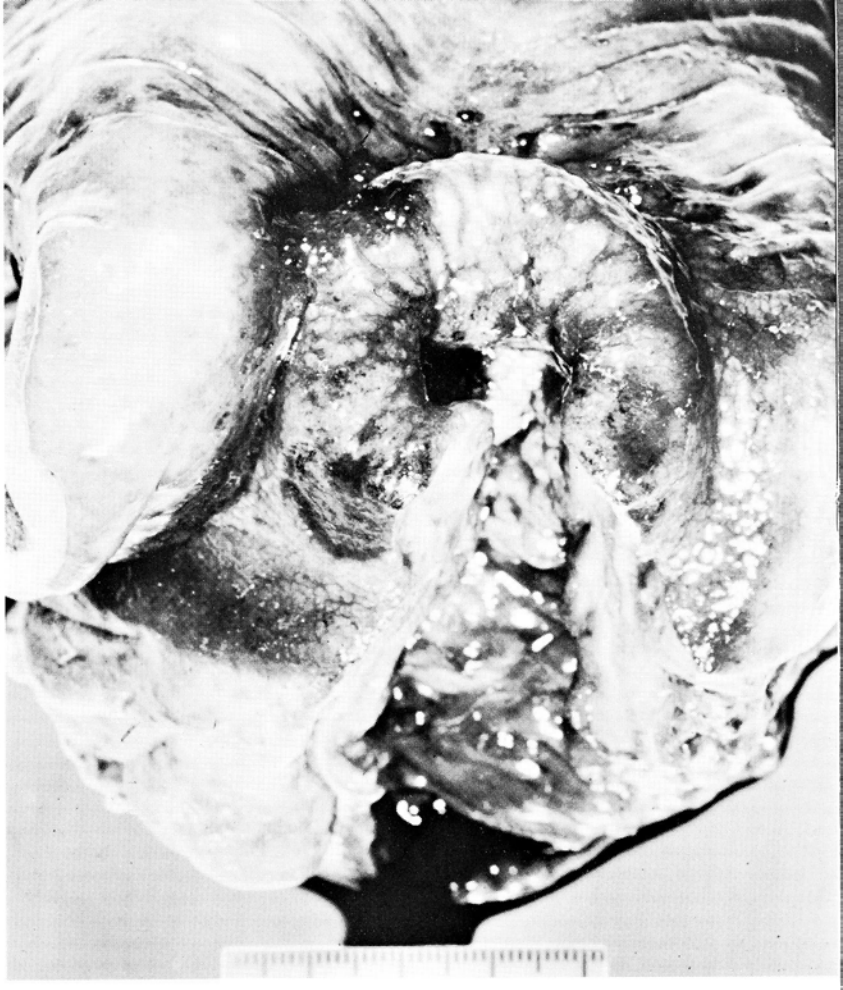


Fig. 2.—Gross appearance of the cecal lesion.

Conceivably the epidural tumor (which showed the same histology as the slide under discussion) was an outgrowth from the vertebrae to form a large paravertebral mass (very common in myeloma) and was located low enough to be part of the tumor that involved the right colon. I can't recall this having happened before, but it is possible. The other alternative is to consider the lesion in the colon an extraosseous mass of myeloma. Extraosseous myeloma, however, occurs usually in patients with so-called plasma-cell leukemia or in sites of hematopoiesis such as spleen, liver and lymph nodes. Extrahematopoietic myeloma is extremely rare.

Whenever the subject of myeloma is raised I always think of James Homer Wright. Of course I am partial to Wright since he was the first Director of Pathology at the Massachusetts General Hospital holding this post from 1896-1926, and our new laboratories are named in his honor. Most physicians think of Wright only in connection with the Wright stain, which he described in 1902; a few might remember that he discovered the origin of platelets from the megakaryocytes in 1906; and some of you, who heard me discuss a case of neuroblastoma at an ASCP Seminar several years ago or at the meeting of the pathologists and radiologists of the California Peninsula in Carmel, last Spring, may recall that I mentioned that it was Wright who first described and named that tumor. However, I wonder how many of you know that in 1900 it was Wright, in a paper contributed to the Science of Medicine which was dedicated by the pupils of William Welch upon the 25th anniversary of his Doctorate (and published in the Johns Hopkins Hospital Bulletin) who showed that the disease, called multiple myeloma by von Rustizky in 1873 and believed to be a form of sarcoma in 17 cases reported up until 1900, was derived from the plasma cell. This work was performed in our laboratory.

Dr. Castleman's diagnosis: PLASMA - CELL MYELOMA.

Histopathologic Diagnoses Submitted by Mail

Plasmocytoma	87
Multiple myeloma	19
Lymphosarcoma	22
Reticulum-cell sarcoma	16
Hodgkin's	12
Others	19

Dr. Regato: Dr. E. Geever, of New York, and Dr. M. Berthrong, of Colorado Springs, diagnosed multiple myeloma. Dr. M. Neely, of Lincoln, Nebraska, suggested lymphoblastoma. Dr. W. J. Frable, of Chicago, offered Hodgkin's disease.

Subsequent history: Following operation the patient was well for about two months then developed fatigue and lumbar pain. The roentgenograms showed evidence of multiple bone lesions compatible with a diagnosis of multiple myeloma. In April, 1962, he expired; no autopsy was done.

Dr. Spratt: This problem is again the same one of metastatic lymphoma or multicentric primary lymphoma in the right colon and the region of the cecum. This is not an infrequent problem in surgery. Dr. Castleman mentioned enlarged nodes as being a frequent cause of obstructive jaundice about the hepatic biliary tree. Actually, with lymphomas (we have done a little work on this) we find this is a very infrequent cause of the jaundice, and that the cause is usually the extensive intrahepatic involvement and the involvement of the ductal system within the liver which can be demonstrated very well by a good cholangiogram. Much to our amazement, enlarged nodes around the common duct are relatively infrequently the cause of obstruction.

Dr. Castleman: That is, nodes involved with lymphoma, not carcinoma.

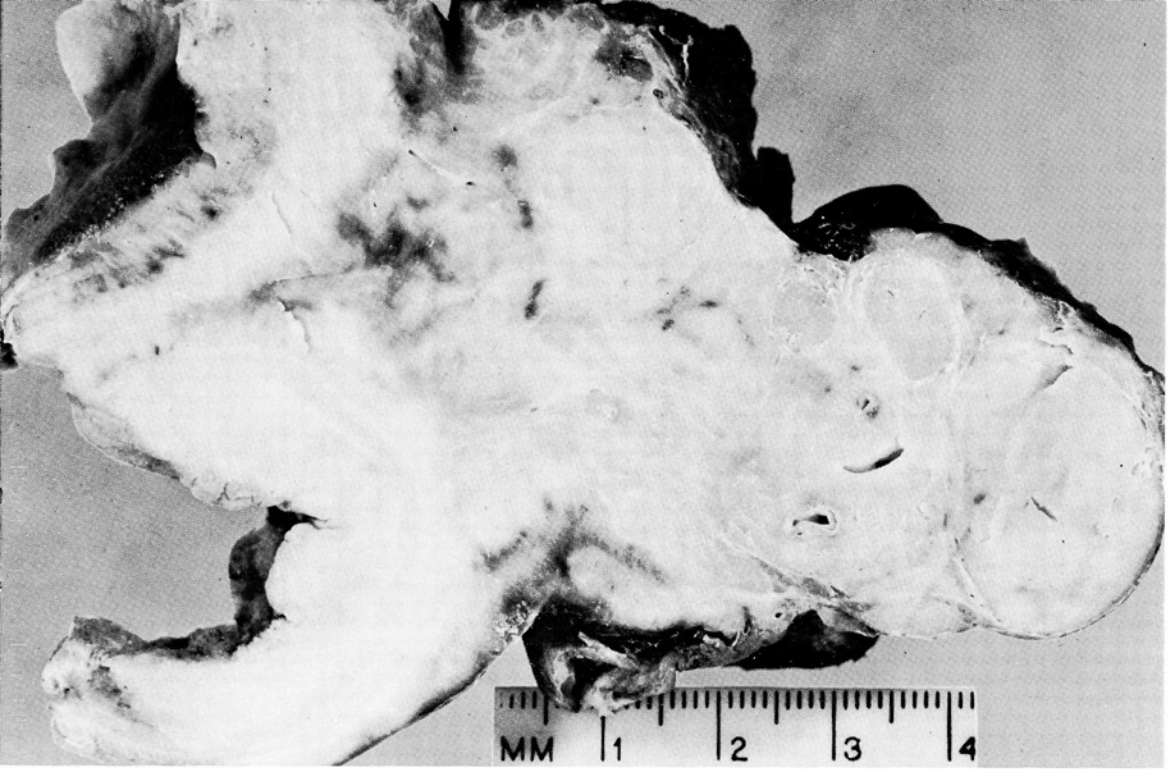


Fig. 3.—Cross section of the tumor.

Fig. 4.—Photomicrograph of entire histological section submitted showing tumor involving primarily serosa and submucosa and preservation of a large part of the muscularis. (H & E x 3.7)

Henry King, M.D., Sioux City, Iowa: Were any bone marrow studies done in the case and were there any studies for abnormal proteins? I would also like to ask Dr. Castleman what the findings are in his laboratory as far as dysproteinemias are concerned involving soft tissues; I would like to ask also about the relation of plasmacytomas apparently involving soft tissue without bone involvement and those with myelomas or plasmacytomas in bone.

Dr. Castleman: Well, I haven't any experience as to whether the dysproteinemia is associated with the non-osseous plasmacytomas. Most of the non-osseous plasmacytomas occur in the region of the nasopharynx. I think most of the cases of soft tissue myeloma, if you follow the patient, will develop the full blown picture of bone involvement and of true myeloma. I know of one particular case (I think it was reported by Parker some years ago) of a man having a lymph node involved in his neck which Dr. Parker called a plasmacytoma. The patient happened to be an uncle of mine, so I know all about it, and I think it was four years later that he developed a full blown picture of bone involvement and plasmacytoma.

Now there are cases I know of, and perhaps Dr. del Regato has treated many of these, where one seems a plasmacytoma in the region of the nasopharynx that may remain as the only solitary lesion. There are cases of involvement of the bone where one so-called solitary myeloma has been found and the patients have been followed up to fifteen years without any dissemination; these are extremely rare.

Dr. Regato: There are plasmacytomas of the soft tissues of the upper air passages, of the larynx, hypopharynx and nasopharynx, of which numerous cases have been reported in the literature; we have seen a few of those but the majority of them are diagnosed after they have been surgically excised. Occasionally, there is a residual in the place of the excision; they are very radiosensitive indeed. In a previous Seminar (Scott) we had a patient with a history of a lesion removed from the larynx who developed an osteolytic lesion of the upper end of the tibia.

Murray R. Abell, M.D., Ann Arbor, Michigan: There were many studies of bone marrow made and they were all negative for plasma cells up until the terminal episode. Also, serum plasma studies were perfectly normal until the terminal episode. Before this operative procedure and before the removal of the spinal cord tumor, no blood abnormalities of significance were noted; the Bence-Jones protein was negative.

Dr. Castleman: May I ask you, Dr. Abell, at the operation when the right colon was removed, was there evidence that this was a direct extension from the previous epidural mass or was this an independent soft tissue tumor?

Dr. Abell: We felt that there was no definite connection and that this was an independent soft tissue tumor; this is the reason the case is so unusual and why it was presented. We cannot prove this without autopsy, of course, but the surgeon, as far as he could tell, felt that this was not connected with the paravertebral area. There were no signs of local recurrence or compression of the spinal cord.

Dr. Castleman: Dr. Welin, would you agree that the seeing of the psoas shadow so clearly rules that out?

Dr. Welin: Yes.

Philip J. Hodes, M.D., Philadelphia, Pennsylvania: I would first like to direct myself to the comments of Dr. Abell: In our experience when you see the solitary bone lesion you do not have the systemic manifestations of the disease, the electrophoresis and other protein changes. Secondly, Dr. Castleman, it is rare but not unique in our experience to see carcinoma of the gallbladder in the absence of jaundice.

Dr. Castleman: With metastases?

Dr. Hodes: I do not remember carcinoma of the gallbladder going to bone.

Dr. Castleman: What I was getting at is: you certainly see carcinoma of the gallbladder without jaundice, but not when they have developed metastases.

Dr. Hodes: I remember well a case that had to be taken out "en masse" and the common duct was perfectly patent. As a matter of fact, the mass held the duct open;

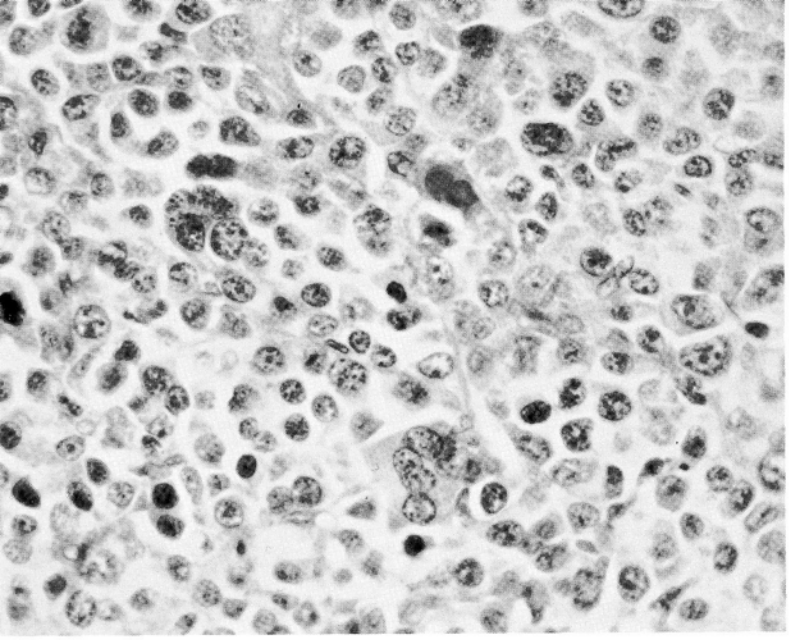


Fig. 5.—High magnification of tumor cells showing round eccentrically placed nuclei characteristic of plasma cells. Note binuclear plasma cell (H & E x 450)

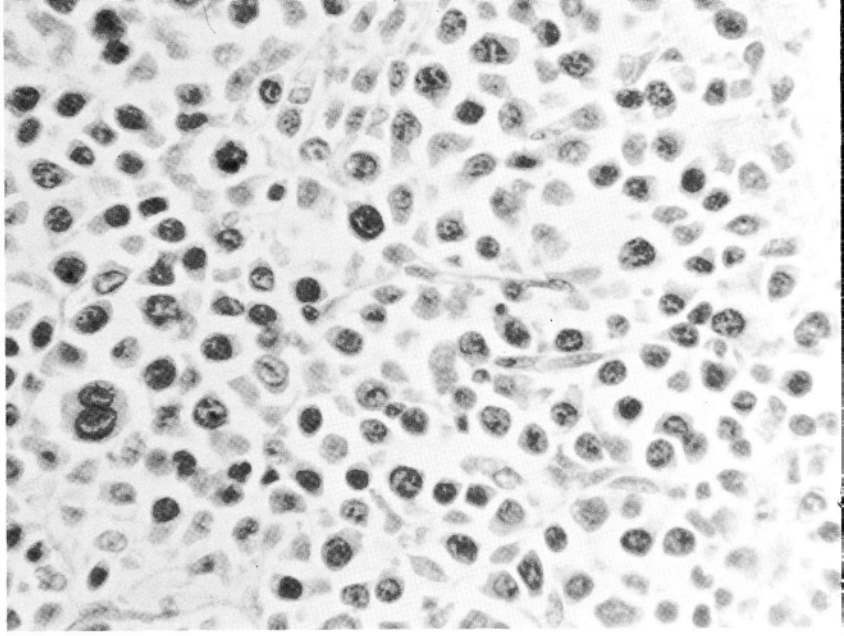


Fig. 6.—Photomicrographs of epidural mass showing typical mononuclear and multinucleated plasma cells. (H & E x 450)

I have seen this in carcinoma of the pancreas too. When the radiologist sees a psoas muscle of this brilliance and a kidney of this brilliant outline, he thinks immediately of paravertebral masses, notably lipoma and mesenchymoma; in our experience these tumors have not involved bone so we didn't follow that lead any further.

R. E. Tolls, M.D., San Francisco, California: In cases of this type, in which the serum electrophoresis is normal and there is considerable evidence that plasmacytoma or multiple myeloma may indeed exist, and the urine is free of Bence-Jones protein, I make a plea for doing electrophoretic studies on urine concentrations. There have been a number of cases of multiple myeloma in which the abnormal protein is passed in the urine and does not always manifest itself in the test for evidence of Bence-Jones; they will appear in the serum terminally only when the kidneys have become severely compromised from the passage of the protein.

E. Salzman, M.D., Denver, Colorado: I certainly agree with Dr. Hodes about the radiolucencies of lipomas and other tumors that contain a high fat content. I am most interested in Dr. Welin's comment that soft tissue myelomas are of greater radiolucency than other tumors like lymphosarcoma. What is the physical basis for this observation?

Dr. Welin: I do not know.

References

Chivey, J. and Gordon, A. J.: Multiple myeloma-lesions of the extra-osseous hematopoietic system. Amer. J. Clin. Path., **20**: 934-945, 1950.

Wright, J. H.: A case of multiple myeloma. Bull John Hopkins Hosp., **9**: 361-366, 1950.

Scott, Wendell: Metastatic myeloma of the tibia, from an apparent primary lesion in the epiglottis. Cancer Seminar, **I**: 54-56, 1951.

Ennuyer, A., Bataini, P., Helary, J. et Chavanne, G.: Les plasmocytomes des voies aéro-digestives supérieures. A propos de 248 cas dont 19 traités à la Fondation Curie. Bulletin du Cancer, **50**: 53-100, 1963.

7. Ileo-Cecal Actinomycosis

Contributed by J. McCort, M.D. and D. L. Alcott, M.D.

San José, California

THE PATIENT was a 47-year old man in February, 1954, when he complained of burning pains in the right lower abdominal quadrant, of recent onset. On examination there was a firm swelling extending from the anterior illiac spine to the pubis, on the right side, with some tenderness to palpation. The hemoglobin was 12 gm%. The roentgenogram of the chest showed a reticular density of the left upper lobe.

Dr. Welin: This patient has several roentgen findings of interest. In the first examination of the partially filled colon we observe a small polypoid defect in the region of the ileo-cecal valve, upward displacement and encroachment upon the cecum, and upward and medial displacement of the terminal ileum by a sausage-like mass arising in the region of the appendix. The ileum itself reveals no intrinsic disease other than a peculiar diverticulum-like abnormality. The rest of the large bowel appears to be normal. The second examination, a double contrast study of the colon exposed in lateral decubitis, demonstrates clearly cecal changes which you are unable to see in the reproduced roentgenogram in your brochure. A polypoid defect can be seen within the cecum which lies below the ileocecal valve. It measures approximately 3 or 4 cm in diameter and within it there is a calcific density which could be due to barium. The tip of the displaced cecum is irregular and conical. The terminal ileum is filled with air and is displaced by the mass. Superimposed upon the air-filled rectum is a defect which I believe lies in the terminal ileum and represents the diverticulum-like defect seen in the first roentgenogram. Unfortunately, we have not been shown the film of the lung; perhaps the reticular left upper lobe density would have furnished us the key to the diagnosis.

Let us consider first that the lung lesion is related to the problem before us. The lung could be tuberculous; it could be involved by fungus disease; the cecum and termi-

Fig. 1.—Barium enema showing upward displacement of cecum and terminal ileum.

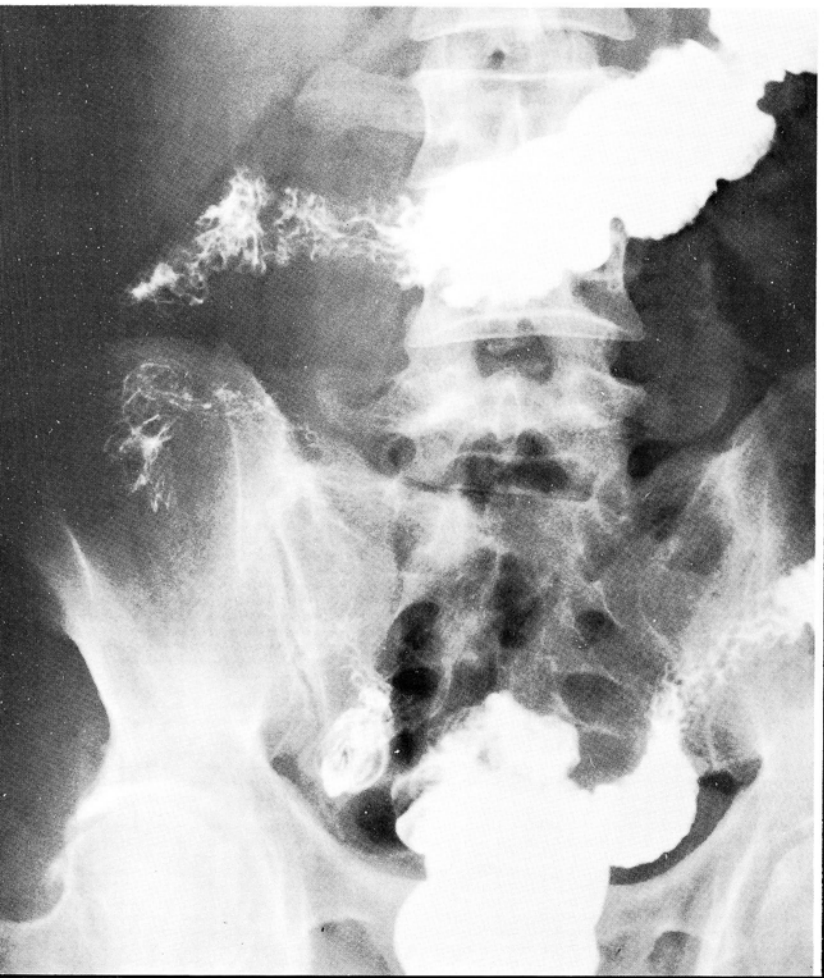
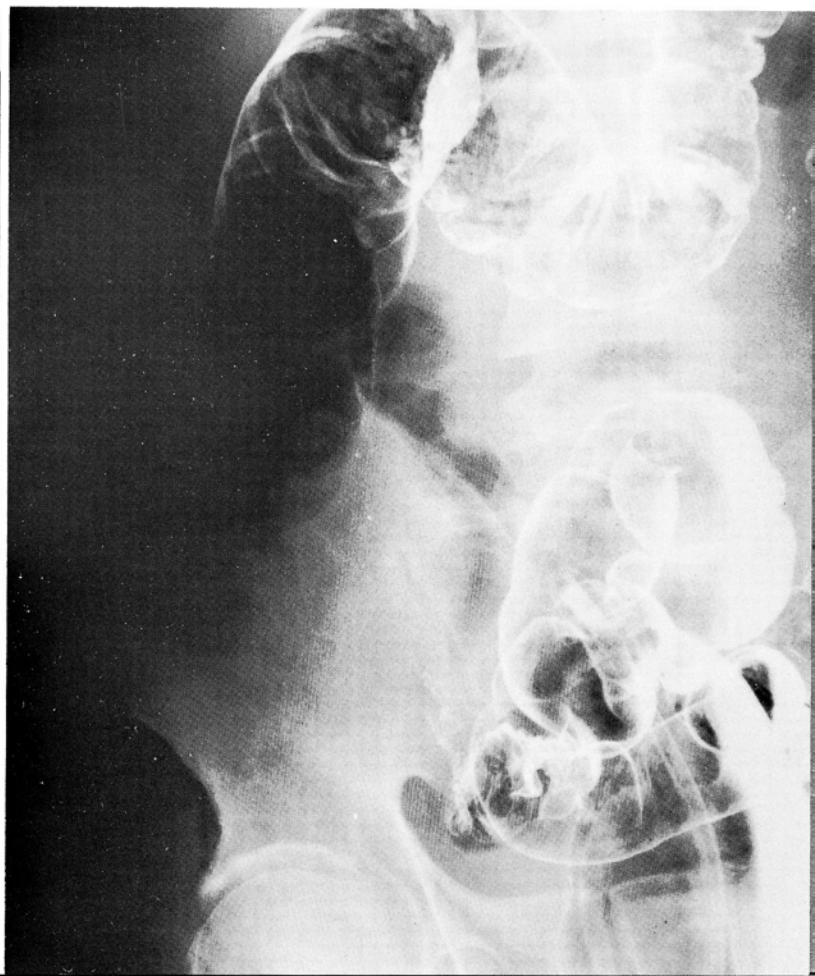


Fig. 2.—Double contrast study of the colon, in lateral decubitus.



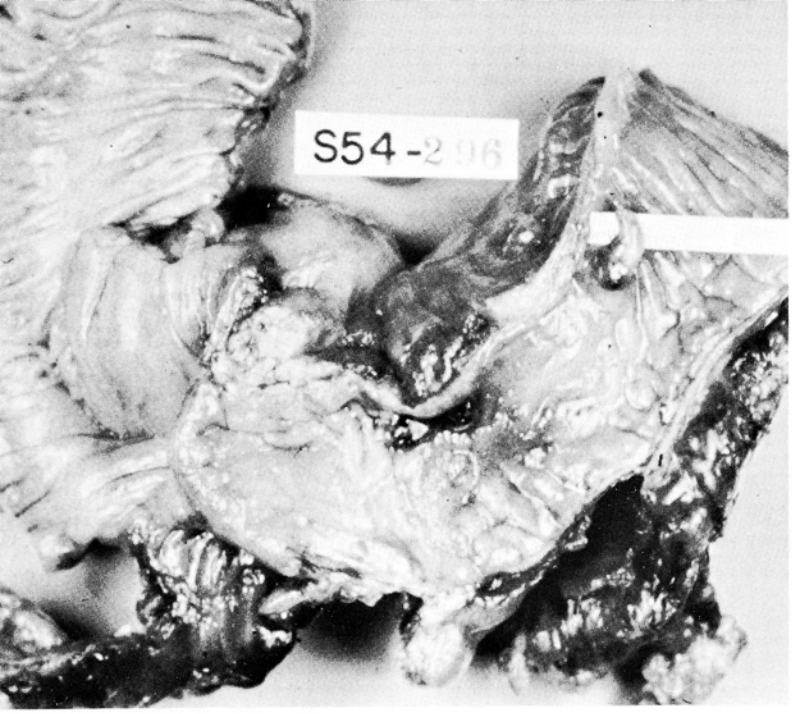


Fig. 3.—Gross appearance of the ileo-cecal region.

Fig. 4.—Cross section of the mass.

nal ileum could be reflecting a granuloma related to the lung lesion. Histoplasmosis, sarcoidosis, eosinophilic granuloma and other less common granulomas, as actinomycosis, might be related. No one can exclude primary pulmonary cancer. To postulate it as the cause for the right lower abdominal disease seems far fetched even though bronchogenic cancers do metastasize to the abdomen. From a radiologic point of view, the appendix must be considered as the potential site of origin of this patient's disease. If the appendix were enlarged for any reason whatsoever, it could displace the ileum upward and medially as we see it in this individual. If the appendix was inflamed or there existed periappendiceal infection, one would not be surprised to see air in the terminal ileum suggesting a sentinel loop. If this were a mucocele of the appendix it would account for the apparent polypoid defect in the cecum which actually was an invagination of a portion of the mucocele. Occasionally, calcifications mark the site of the mucocele, either within the mucocele or in shell-like fashion around the mucocele. This patient does have some opaque material in his appendiceal fossa. Significant, too, may be the fact that we have not demonstrated a barium filled appendix by barium enema.

Despite the above, I know of no way, radiologically, to exclude a tumor of solid origin like a carcinoma, lymphosarcoma, or carcinoid arising in the region of the appendix or in the appendix itself. In this regard I recall the observation of my colleague, Frieman-Dahl, who has observed an increased incidence of appendiceal granulomas associated with cecal tumors. Perhaps this is what is going on in this patient. How much more simple would be the differential diagnosis if the patient revealed clinical evidence of carcinoid.

Dr. Welin's impression: Tumor arising within or adjacent to the appendix: 1. GRANULOMA in the appendiceal fossa. 2. CARCINOID.

Roentgenologic Impressions Submitted by Mail

Granuloma	60
Carcinoid	23
Tuberculosis	11
Appendiceal abscess	9
Actinomycosis	1
Others	14

Dr. Regato: Dr. R. Rapp, of Ann Arbor, suggested either ileocecal tuberculosis or carcinoid. Dr. E. Salzman, of Denver, suggested coccidiodomycosis and Dr. W. Martel, of Ann Arbor, actinomycosis.

Operative findings: On February 27th, 1954, an exploratory laparotomy was done. The palpated mass was found to be very firm; the cecum was perforated during exploration. The terminal ileum, the cecum, and ascending colon, including the hepatic flexure, were resected. On cut section the mass, 6x4 cm in diameter, was yellow-gray in color and in some areas appeared necrotic.

Dr. Castleman: This is obviously an extrinsic lesion of the bowel, invading the serosa and outer muscle layer. Under low magnification the striking features are the large areas of fibrosis and foci of necrosis with abscess formation. The cellular infiltrate in the abscess is pure neutrophilic and in other areas it is composed of plasma cells and lymphocytes. There is extensive vascularization of this inflammatory tissue which involves the pericolic fat as well. Many of the vessel walls are infiltrated with inflammatory cells, which has led to intimal proliferation and thrombosis, a severe endophlebitis, findings characteristic of a chronic-active inflammatory process. I hunted long for some specific organism in the first slide sent to me and the best that I could find was one deeply staining focus fairly suggestive of actinomycosis. Although I believed that the lesion was compatible with actinomycosis, the evidence was not conclusive. In such circumstances, I would certainly cut the paraffin block deeper or section more blocks. Also, the presence of a pulmonary lesion would go along with this diagnosis.

I was sent a few more sections, apparently from the same block and then the diagnosis was easily confirmed. A characteristic actinomycotic granule was found in the center of a zone of liquefactive necrosis composed of neutrophils. At higher magnifications one can make out radiating fibrils and I believe I could make out some clubbing at the periphery of the filaments. In one section I found two colonies.

Actinomycosis is another subject in which James Homer Wright was particularly interested. His monograph on this subject in 1905 won for him the Samuel D. Gross Prize of the Philadelphia Academy of Surgery. In fact he was the first to confirm the Wolff and Israel theory expounded in 1891 that the disease arose from endogenous organisms rather than an exogenous infection.

The pathogenesis of abdominal actinomycosis and particularly that of involvement of the right colon, the most

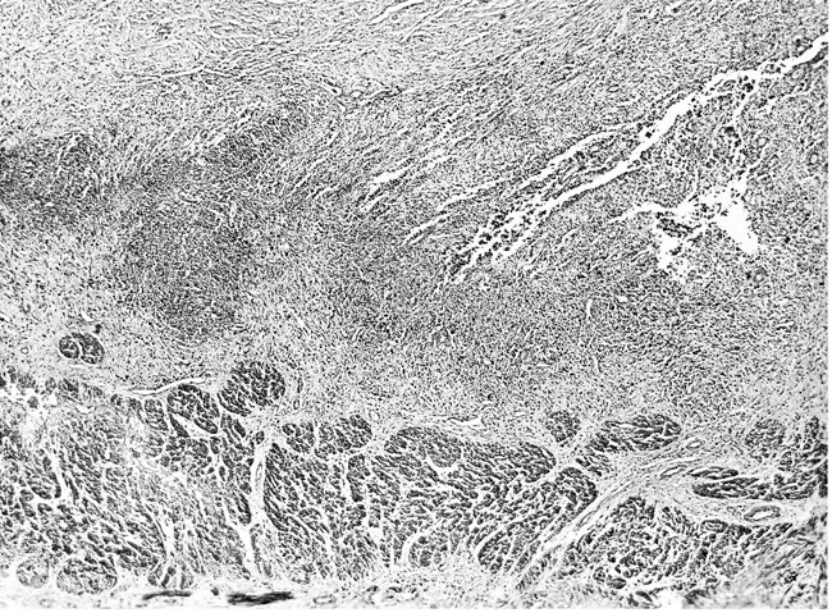


Fig. 5.—Low magnification showing large area of fibrosis with foci of necrosis abutting the outer layer of the muscularis. (H & E x 35)

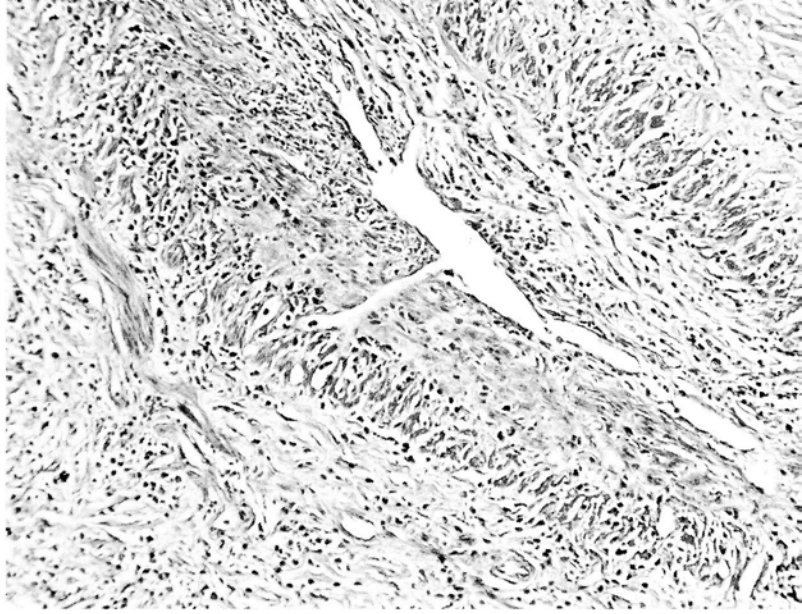


Fig. 6.—Wall of vein is infiltrated with inflammatory cells and endophlebitis is evident. (H & E x 120)

common site in the abdomen, has not been definitely worked out. Most authorities believe that the organisms which normally may inhabit the mouth and intestine do not penetrate mucous membranes and are, therefore, of low virulence, but when a mucous membrane is injured either by trauma or another infection, penetration of the actinomyces into the fascial planes or muscle layers leads to development of the granulomatous infection and the characteristic sinus tracts. Thus, many of the cases of abdominal actinomycosis occur after perforation of an acute appendicitis or other portion of the gastrointestinal tract. In a series from the Mayo Clinic, where everything is large, of 122 patients with abdominal actinomycosis, an attack of acute appendicitis preceded the onset of the actinomycotic infection in 72% of the cases. Others were preceded by perforated peptic ulcers, diverticulitis of colon, et cetera.

Dr. Castleman's diagnosis: ACTINOMYCOSIS.

Histopathologic Diagnoses Submitted by Mail

Actinomycosis	85
Inflammatory lesion	21
Abscess	18
Granuloma	8
Parasitic infection	7
Others	21

Dr. Regato: Dr. J. B. Frerichs, of El Paso, Dr. O. Rambo, of San Francisco, and Dr. W. R. Platt, of Saint Louis, also made a diagnosis of actinomycosis. Dr. M. R. Abell, of Ann Arbor, suggested chronic retroperitoneal granuloma. Dr. R. Lattes, of New York, designated it as a pseudo-neoplastic inflammatory mass.

Subsequent history: In July, 1963, the patient was reported in good health and working daily. The reticular appearance of the lung persists, but repeated examinations of the sputum have been reported negative for tuberculosis and for actinomycosis.

Dr. Spratt: I find, on an active cancer surgical service like our own that I repeatedly have to remind young resident surgeons that there are diseases other than cancer; this is a typical example. Resection of inflammatory foci is good treatment, and it no longer disturbs me to do occasionally a right colectomy for a granulomatous mass that the pathologist subsequently reports to contain no neoplasm. However, with the roentgen findings in the lung, with the peritoneal soilage that occurred in this patient and with the demonstrated presence of actinomyces, the patient should have been on a course of either penicillin or sulfadiazene according to Dr. Altmeyer, for as long as four to six months subsequent to the diagnosis.

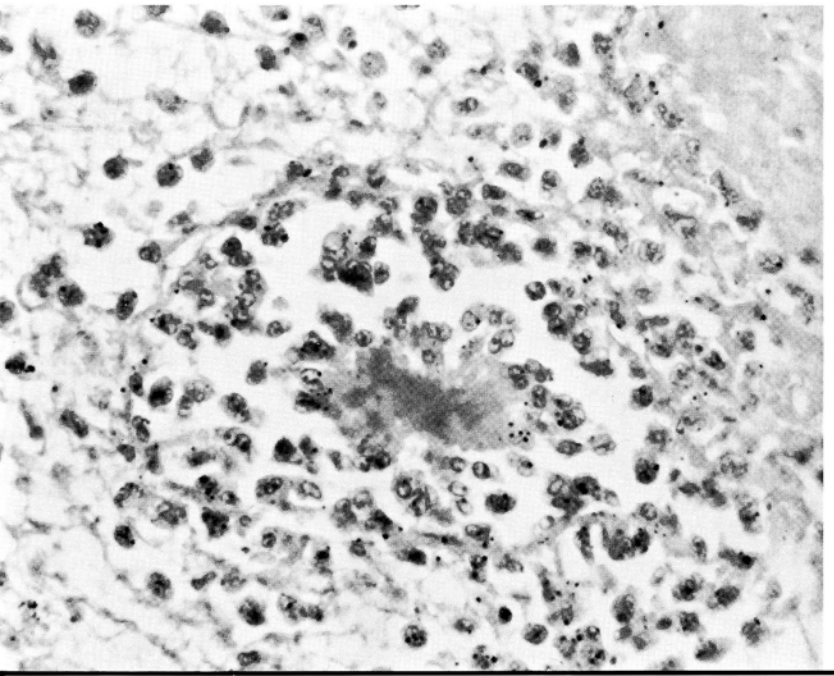


Fig. 7.—Tiny amorphous deeply staining focus among inflammatory cells suggestive of actinomycosis. (H & E x 120)

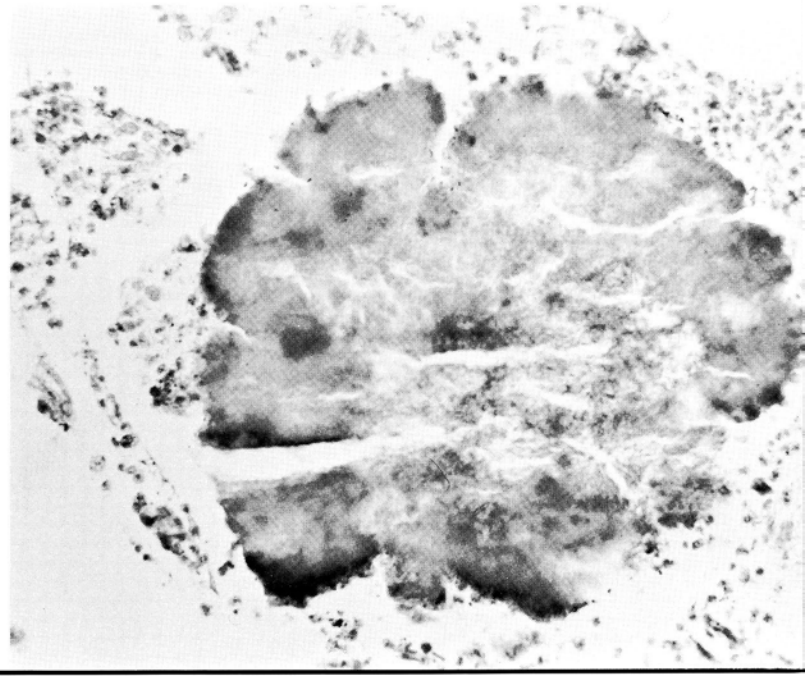


Fig. 8.—A typical actinomycotic granule found in another section. (H & E x 250)

Victor M. Arean, M.D., Gainesville, Florida: I would like to ask Dr. Castleman: 1.) If he found filaments in the granulomatous areas; 2.) If he stained them with silver methenamine for identification of fungi, and 3.) If he had considered the possibility that this is not actinomycosis but botryomycosis. I could not see any filaments. Did the contributors culture the material for fungi?

Dr. Castleman: There are some slides that were done by Dr. Alcott which show some filaments.

Dr. Alcott: We thought that this was actinomycosis. We did culture it; the culture did not turn out to be positive.

Dr. Castleman: Would you describe to us a little bit more the polypoid nature of this mass? According to Professor Welin, he described a real polypoid lesion. Did you find that grossly?

Dr. Alcott: No. I did not think there was a polypoid mass other than that little teat-like thing and that was just an inflammatory projection above the surface. The appendix was present in the mass but in the sections that we made the wall appeared to be intact. The inflammatory lesion seemed to be pericecal and periilial throughout and was invading to the outside.

M. Berthrong, M.D., Colorado Springs, Colorado: I think the comments which were made in the form of questions certainly are important in this condition. A Gram stain is an essential part of our investigation as tissue pathologists and the culture of general pathologists. The peculiar relationship of an occasional patient with a Staphylococcic infection or a Pseudomonas or a Proteus may result in a granule that has clubs. Apparently, the large racket-shaped or baseball-shaped clubs are a product of the antibody-antigen interaction on the side of these chronic abscesses, rather than specific filaments of the fungus. Indeed, the Gram stain is essential to show the branching somewhat beaded Gram-positive actinomyces. I, as a surgical pathologist, frequently forget to save a sterile fragment of tissue from specimens of unknown types; it is extremely valuable to grind up this tissue later in a tissue grinder and make cultures depending upon the frozen section or permanent section observation. It is also important that even if a piece of tissue has not been saved and has been contaminated, one may get remarkably good and pure cultures if one takes a fragment of tissue, ½ cm or so in diameter, pass it through about ten vigorous rinses with sterile saline and then grind it up, culturing the emulsified material; you may get pure cultures of great value.

References

Putnam, H. C., Jr., Doherty, M. B. and Waugh, J. M.: Abdominal actinomycosis. An analysis of 122 cases. Surgery, **28**: 781-800, 1950.

Wright, J. H.: The biology of the micro-organism of actinomycosis. J. Med. Research, **XIII**: 349-404, 1904-5.

8. Submucosal Lipoma of the Ascending Colon

Contributed by A. O. Severance, M.D. and H. Elmendorf, M.D.

San Antonio, Texas

THE PATIENT was a 69-year old man in January, 1962, when he complained of rectal bleeding; there was a history of active duodenal ulcer, in 1960. On examination the patient appeared pallid and acutely ill; the blood pressure was 80/50. The stools were tarry and mixed with bright blood; the hemoglobin was 11.6 gm%.

Dr. Welin: There is a filling defect 5 cm in diameter in the hepatic flexure. Its margins are smooth and it is extremely radiolucent. Perhaps an enema with plain water would have demonstrated the lesion to be less dense than water, thus suggesting the presence of fat. However, with a double contrast study even water would have been unnecessary. It would also be helpful to see other films of this area to determine whether or not the tumor changed in shape during peristalsis, as lipomas frequently do.

I have but one diagnostic suggestion; this is a lipoma. Bleeding from lipomas is rare, however. If this patient's duodenal ulcer were bleeding and bleeding forcefully, the red blood seen with the tarry stool would be explained.

Dr. Welin's impression: Benign tumor of the colon: LIPOMA.

Roentgenologic Impressions Submitted by Mail

Lipoma	87
Benign tumor	12
Carcinoid	8
Others	11

Dr. Regato: All of the experts recognized the unusual transparency of the lesion and agreed in a diagnosis of lipoma.

Operative findings: On January 16th, 1962, the patient was operated upon: a polypoid mass, 8.5x2.8x2.5 cm in diameter was found in the ascending colon; it was removed with a segment of the colon. The tumor was soft, its outer surface was pink-tan in color; on cut section it appeared yellowish.

Dr. Castleman: This case was obviously chosen as a diagnostic exercise for the radiologist; for the pathologist it presents no problem. It is a submucosal lipoma. They may occur anywhere in the gastrointestinal tract, but are most common in the large bowel and in my experience in the right colon. They are important only when they cause obstruction and this is usually due to prolapse and intussusception. In the case under discussion there is a history of an active duodenal ulcer and since the roentgenogram does not show intussusception, perhaps the bleeding is from the ulcer. I believe it is unusual to have such massive bleeding and shock-like state from the oozing that occurs with mucosal erosion over a submucosal lipoma.

In this connection I might merely mention the lipomatous ileocecal valve, which may also prolapse and intussuscept. Here, of course, the obstruction may involve the ileocecal orifice.

Dr. Castleman's diagnosis: Submucosal LIPOMA.

Histopathologic Diagnoses Submitted by Mail

Lipoma	151
Liposarcoma	3
Je ne sais pas!	1
Others	3

Fig. 1.—Barium enema revealing a peculiarly radiolucent lesion of the ascending colon.

Fig. 2.—Photomicrograph of entire histological slide submitted showing normal mucosa and muscularis mucosa. In the submucosa is a lipomatous proliferation sufficiently abundant to form a polypoid mass. (H & E x 3.6)

Dr. Regato: All of the experts were in agreement on a diagnosis of lipoma.

Subsequent history: In March, 1963, the patient had severe intestinal hemorrhages necessitating blood transfusions; a clinical diagnosis of duodenal ulcer could not be verified.

Dr. Spratt: This case seems to present no problem in diagnosis; it also presents no problem from surgical therapy. However, in about one-quarter of those that do become symptomatic the symptom is intussusception with the lipoma serving as the obturator, and in another third the symptoms are those of hemorrhage, and sometimes the hemorrhage may involve several units of blood; angiographically these lipomas do turn out to be surprisingly vascular. I think it is worth noting that these lipomas do tend to be multiple, and for that reason extensive resection for a symptomatic lipoma should not be undertaken.

Reference

Mayo, C. W., Pagtalunan, R. J. G. and Brown, D. J.: Lipoma of the alimentary tract. Surgery, **53**: 598, 1963.

9. Malignant (lymphocytic) Lymphoma of the Splenic Flexure of the Colon

Contributed by Paul W. Gikas, M.D., G. Gerras, M.D. and M. R. Abell, M.D.,

Ann Arbor, Michigan

THE PATIENT was a 33-year old man in May, 1963, when he presented cramping abdominal pain of seven months duration, without constipation, diarrhea or melena. On examination there was deep tenderness of the epigastric region; the hemoglobin was 15.9 gm%.

Dr. Welin: This is a very good double contrast study of the colon. We note polypoid lesions in the descending colon. There are at least four in one cluster low in the descending colon. Here the mucosal pattern is markedly distorted. The adjacent wall is irregular, dimpled, indented. Irregularly distributed through the rest of the colon are small filling defects which, if they appear constantly in other views of the colon, must be considered polyps. In the double contrast study their definite inner margin and their hazy outer border are characteristics of polyps rather than diverticula.

Obviously we are dealing either with a cluster of multiple polyps or villous adenoma. Radiologically four features of the sessile polyps claim my constant attention: (1) their size, (2) the nature of their surface, (3) their configuration, and (4) the characteristics of the base of the polyp.

1. When polyps are about 1 cm or more in diameter we worry about cancer and the larger the polyp the more we worry. 2. Irregular polyp surfaces, the cauliflower surface instead of the egg shell surface, worry us because of the fear of cancer. This is another reason why we use double contrast studies; we can see the polyp surfaces much more clearly. 3. Their configuration: that is if they are flat and wart-like, this may be of importance. 4. Finally, and most important, is the nature of the base of the polyp. If in the tangential view one can see a dimpling or indentation of the surface of the colon at the site of origin of the

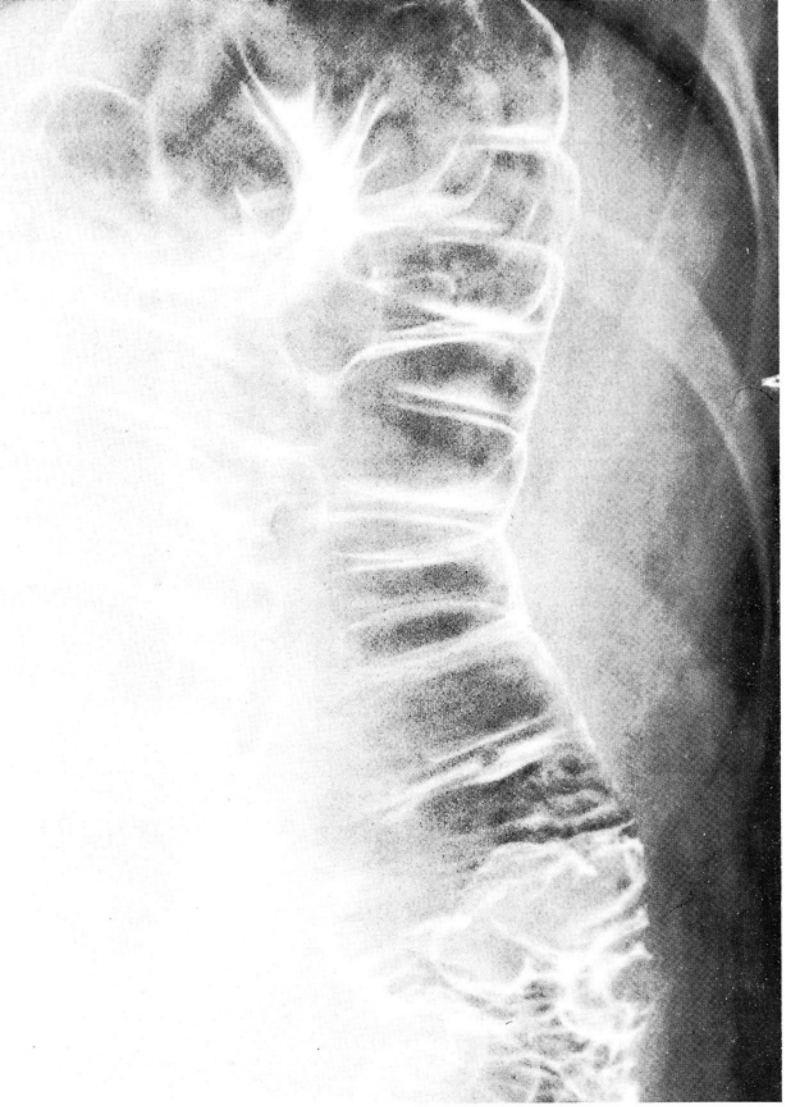


Fig. 1.—Double contrast study of the descending colon showing cluster of filling defects.

polyp, this almost always means the polyp is malignant, if the polyp is sessile, that is to say it has a broad base. This is in contrast to the dimpling or indentation seen in polyps with long thin stalks in which case the dimpling can be due to traction upon the polyp.

The questionable multiple small filling defects seen in the splenic flexure, if consistently present in other studies, are classical small individual polyps and are probably benign. The larger cluster of polyps in the descending colon must be malignant. I say this because of the irregular indentations or dimpling noted along the tangential surface of the descending colon at the site of the polypoid defects.

This patient was 33 years of age. We know that in young patients with multiple polyps, carcinoma of the colon can be discovered at a relatively early age. For this reason at our hospital in Malmö surgeons are inclined to operate such suspicious colonic lesions early. Our second consideration is a villous adenoma. In my own series of 40 villous adenomas, 40% proved to be malignant and each showed the indentation at the base of the lesion characteristic of malignancy, the type noted in this individual. It is noteworthy also that in our experience in over 25% of patients with villous adenoma, polyps were found elsewhere in the colon.

My difficulty in this case stems from the fact that I am not sure that the entire mucosal surface of the affected distal portion of the descending colon has been involved by the papillomatous process. In classical villous tumors the entire mucosal surface is affected. In this individual, I believe I can see fast normal mucous membrane situated between the polypoid masses. The latter suggests that there are multiple polyps, irregularly distributed, with fast normal mucous membrane between the polyps. This makes one think that these are polyps that have undergone malignant change rather than a villous adenoma which has undergone carcinomatous change.

It would be presumptuous on my part to say anything as to whether or not polyps do become malignant. Dr. Castleman's paper "Do Adenomatous Polyps of the Colon Become Malignant?" written with Krickstein last year, is a classic. It, plus the papers published by Ackerman and his associates, are highly regarded by my colleagues in Malmö.

I am sure Dr. Spratt will discuss the indications for surgery in these patients. I should like now to give you mine which are also the indications of my colleagues in Malmö. I consider the indications for the surgical removal of polyps to be the following: 1. A polyp 1 cm or more in diameter. 2. Changes in size of the polyp on repeat follow-up examinations. 3. Dimpling or indentation at the base of a sessile polyp. 4. Flat wart-like polyps with a base greater in length than height. 5. Multiple polyps.

In my department we have performed follow-up examinations in 375 patients in whom small polyps were demonstrated by double contrast enema. Of these, 126 were removed surgically. These surgically removed specimens were then studied histologically by Ackerman and his associates, Linnell, Spjut, and Johnson and were published last month in the American Journal of Roentgenology; Dr. Spratt was also a co-author. These fine gentlemen with me discuss, in this same paper, the rate of growth of polyps, also referred to as their "doubling time".

Dr. Welin's impression: MALIGNANT POLYPOID TUMORS OF THE COLON.

Roentgenologic Impressions Submitted by Mail

Adenocarcinoma	73
Polypoid carcinoma	16
Adenomatous polyp	14
Lymphoma	5
Others	8

Dr. Regato: Dr. J. A. Campbell, of Indianapolis, offered an impression of lymphoma of the colon; Dr. R. N. Cooley, of Galveston, and Dr. J. Barber, of Cheyenne, of adenomatous polypi.

Operative findings: On May 3rd, 1963, a celiotomy was done: a mass was found behind the splenic flexure of the colon; it measured 5x8 cm in diameter and it involved the entire circumference of the bowel. Another mass 2x5 cm in diameter was found in the recto-sigmoid. Both masses were removed with the intervening segment of the colon. Several enlarged lymph nodes were also excised.

Dr. Castleman: Under low magnification the lesion involves primarily the mucosa and submucosa and at one end it appears to be extending into the muscularis. The process seems to be extending not only submucosally but into the normal mucosa. This type of spread submucosally and mucosally will produce the polypoid appearance seen on the roentgenograms and one would think first of a carcinoma, although a malignant lymphoma could not be excluded at this magnification. At a higher magnification there is no doubt that the lesion is a malignant lymphoma of the lymphocytic type or what is often called lymphosarcoma. The cells seem to be a pure culture of mature lymphocytes with only a very rare mitosis. There are scattered hemosiderin laden phagocytes as evidence of previous hemorrhage. Where the bulk of the tumor is located, it has infiltrated into the muscularis and some of the tumor cells are seen on the serosa. Where the tumor involves the mucosa, the finding of viable intestinal glands surrounded by the tumor cells is very characteristic of lymphoma in contrast to carcinoma which almost certainly would have

Fig. 2.—Photomicrograph of one of the histological sections submitted showing primarily submucosal involvement with some extension into mucosa and muscularis. (H & E x 3.6)

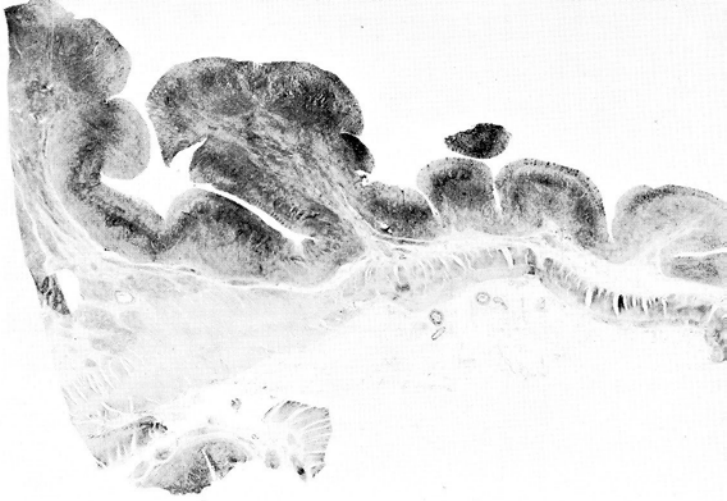


Fig. 3.—Photomicrograph of another entire histological section submitted showing extension of tumor along the submucosa producing cobblestone-like elevations of the mucosa. (H & E x 3.3)

destroyed and replaced the normal glands. This is true of lymphoma in general when it first involves the parenchyma of a viscus; it pushes and surrounds rather than destroys.

In our series of 79 cases of solitary lymphomas of the gastrointestinal tract there were only 6 of this type, 4 in the stomach and 2 in the small bowel. Of course, we are not sure that the patient under discussion does not have widespread disease and this is also the type that may be associated with lymphatic leukemia.

Dr. Castleman's diagnosis: MALIGNANT LYMPHOMA, LYMPHOCYTIC TYPE.

Histopathologic Diagnoses Submitted by Mail

Lymphosarcoma	115
Pseudolymphoma	15
Benign lymphoid polyp	9
Lymphoma	8
Leukemia	6
Others	6

Dr. Regato: Dr. F. Cabanne, of Dijon, France, and Dr. G. D. Toll, of Denver, also made a diagnosis of malignant lymphoma. Dr. W. J. Frable, of Chicago, specifically made the point that this is *not* a pseudolymphoma. Dr. R. M. Delcourt, of Brussels, suggested a possible leukemic infiltration. Dr. P. Gikas, of Ann Arbor, designated it as a benign lymphoid polyp. Dr. F. T. Kraus, of St. Louis, and Dr. C. Masó, of Chicago, preferred pseudolymphoma.

Subsequent history: In June, 1963, the patient was reported in good health.

Dr. Spratt: We encounter this condition from time to time in doing primary resections for carcinoma of the large intestine. In the process of reviewing the experience with cancer of the colon at the Ellis Fischel State Cancer Hospital: in 1141 resections, we encountered primary lymphoma of the large intestine in conjunction with the adenocarcinoma in three instances. With reference to the growth rate studies that Professor Welin made reference to, it was my privilege to spend ten days in his department in Malmö last summer and he permitted Dr. Jim Youker, who is in his department, at present, and myself to measure the changes in size on these remarkable double contrast studies that are done in his department. At that time they had experience with an excess of 20,000 examinations; from the standpoint of the surgeon this is the best examination of the large intestine of which I am aware; it generally gives me the information that I require to make a therapeutic decision regarding the management of tumors beyond the reach of endoscopic biopsy. We make these therapeutic decisions essentially on the same basis that Professor Welin outlined: on the basis of size and change in size.

With reference to the actual rates of growth, it is interesting to note that even the adenocarcinomas of the intestine or rectum are extremely slow growing tumors. Actually, the most rapidly growing cancer that we encountered grew only 17/1000 of a mm per day. This would require over one hundred days of growth to produce a change in diameter of 2 mm; from the standpoint of accuracy of measuring roentgen shadows, it would be very unrewarding to do such follow-up examinations at intervals of less than three months and I think that Professor Welin's interval of six months between subsequent examinations is a very practical one.

We observed that the adenocarcinomas and the villous adenomas have essentially the same growth rates, the same spectrum of rates. The adenomatous polyps on the other hand grew hardly at all. Many of them actually regressed under observation. This study had quite a few implications in the probable epidemiology of colonic neoplasms; the very slow rates of growth these tumors have result in a very long duration before they become symptomatic; if we are to look for the cause of colonic neoplasms we have to look way back (six or eight years or even more) in the life history of the host, to whatever carcinogen it may be.

Paul W. Gikas, M.D., Ann Arbor, Michigan: I have a more recent follow-up. This man was in the hospital four weeks ago for re-evaluation and he had repeat barium enema and upper gastrointestinal studies and a sigmoidoscopy and they were all reported as within normal limits. He was seen by the hematology consultant. The hemoglobin was 17 grams; peripheral blood was normal with 66 neutrophils; 8 large lymphocytes; 15 small lymphocytes; and he appears healthy. Right now he shows no systemic evidence of lymphoma.

We originally interpreted this as multiple lymphoid polyps. I admit there is some question in my mind. In the original sections that we saw we did not see invasion of the muscularis externa as is obviously present in the material that was sent out now. We isolated 13 lymph nodes from the mesocolon. Did Dr. Castleman see those?

Dr. Castleman: No, I did not see them. Did they show anything?

Dr. Gikas: They showed what we thought was lymphoid hyperplasia. We interpreted these lymph nodes as reactive hyperplasia and this I must admit influenced us in interpreting this as benign. I would like to hear your comments on this; if these nodes would meet your criteria for a reactive lymphoid hyperplasia would you think this is still consistent with having a malignant lymphoma right next to it in the bowel?

Dr. Castleman: I would think that would be *more* in favor of a malignant lymphoma. In most of the cases of

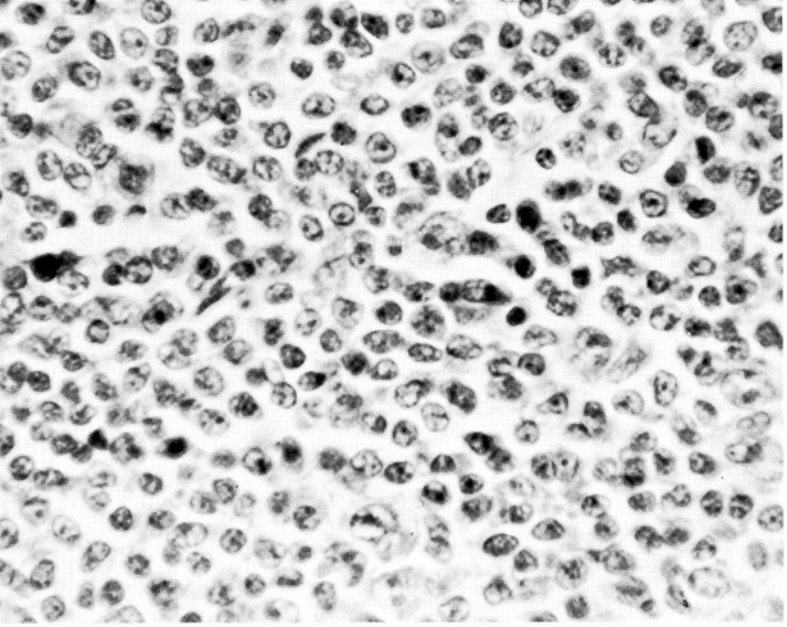


Fig. 4.—Fairly mature lymphocytes typical of the lymphocytic type of malignant lymphoma. (H & E x 760)

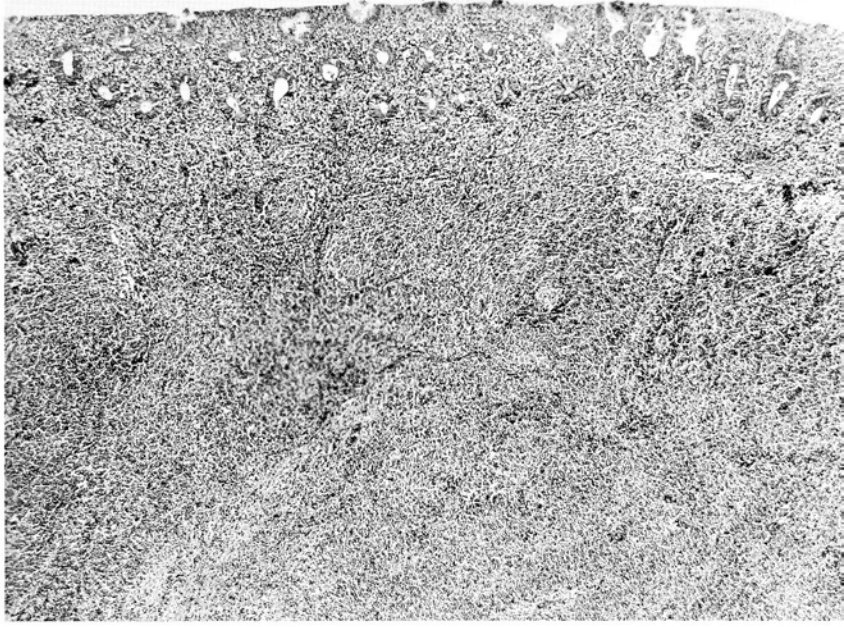


Fig. 5.—Tumor cells infiltrating the mucosa but sparing many of the glands. (H & E x 44)

isolated lymphoma to the gastrointestinal tract the regional lymph nodes are negative, in contrast to a carcinoma. To be sure, a large number of cases of lymphosarcoma will present positive nodes but, in our experience, the nodes are usually negative in lymphoma of the gastrointestinal tract such as those arising in the stomach or those limited to the small or large intestine. When a surgeon is operating on a gastric lesion and he cannot tell whether it is carcinoma or lymphoma from the gross appearance, if the nodes are negative it is more characteristic of lymphoma than of a carcinoma. As far as the pseudolymphoma is concerned, I was always under the impression that these lesions that you see primarily in the rectum, occasionally in other parts of the bowel, are limited to the mucosa and submucosa and do not certainly extend into the muscularis or go down right through the wall into the serosa. I think this would not fit my criteria for any benign lesion.

Dr. Gikas: There is one disturbing thing in the history. When he came back he claimed he had some black stools which he had never had before. This was specifically studied and four stools were negative for occult blood while he was in the hospital and one had a positive guaiac test. It was never confirmed that he had black stools but he may have had. I do not know but what that may indicate some bleeding.

Leo Lowbeer, M.D., Tulsa, Oklahoma: I want to ask Dr. Castleman how relatively frequent are true lymphomas and so-called pseudolymphomas.

Dr. Castleman: I have just seen one or two in the stomach; I have never seen them in any other part of the gastrointestinal tract except those in the rectum, the polypoid one that we have always seen.

Dr. Regato: Admitting that the presence of metastasis is incontrovertible evidence of malignancy, the absence of metastasis does not disprove malignant character and only fails to support a morphologic diagnosis of malignant tumor, which must then stand or fall on its own.

F. P. Bornstein, M.D., El Paso, Texas: I would like to ask Dr. Spratt in his review of the material how often he encountered lymphatic leukemia in proven cases of lymphosarcoma of the intestine.

Dr. Regato: The lymphomas of the small intestine as a general rule are considerably more malignant than other forms of lymphosarcoma and the picture of lymphosarcoma might be clearer, but in the large bowel, as in the stomach, the lymphosarcomas or the lymphomatous lesions might have a more benign allure and this might be of a certain importance clinically. I will suppose that in the small intestine the lymph nodes are more consistently found to be metastatic.

Dr. Bornstein: I think we have had good results with lymphosarcomas in the intestine as compared with what we see in lymph nodes.

S. A. Patterson, M.D., Fort Collins, Colorado: I wonder how we can say that if a polyp grows a certain amount this is evidence of malignancy, because I am sure that if it is a benign polyp it had to grow to be a benign polyp; I am trying to figure out how we can say that if it grows another 2 mm or some similar amount that it is now malignant. Is the question of size a reasonable concept?

Henry King, M.D., Sioux City, Iowa: Dr. del Regato, it surprises me a little bit that you do not challenge this diagnosis a little bit further since this lesion can be cured by surgery without any follow-up radiotherapy. Would you not, therefore, doubt that this is a malignant lymphoma since the case does not present a typical course for lymphoma; and, also, that the past diagnoses of lymphosarcomas of the stomach and small bowel may be in considerable error, since the prognosis in the follow-up in so many of these patients is so good?

Dr. Regato: If I understand well the insinuation, when lesions are benign even surgery can cure them? I am quite sympathetic, but we must admit the fact that there is a gamut: lymphomas of the orbit, for instance, seldom if ever metastasize, but, nevertheless, may produce considerable destruction and deformity, and are easily curable by radiotherapy; lymphomas that occur in the lung do not metastasize and may be cured by surgery or radiotherapy; from this extreme one might go to the other one where a lesion might be quite generalized from the beginning of the clinical manifestations and in between, of course, there are different degrees of curability. I would not want to say that because a lesion is cured by surgery it is necessarily benign, but full fledged malignant lymphomas that have metastasized are seldom controlled by surgery.

Dr. Braunstein: I would like to ask Dr. Castleman how many times he has seen multiple malignant lymphomas in which the patient did not show systemic manifestations subsequently.

Dr. Castleman: I do not know that I can answer that. I think that most of the cases would show systemic disease, but there is no reason why you couldn't have two lesions arising independently and cured by resection.

Dr. Braunstein: With respect to the idea that a pseudolymphoma cannot involve the muscularis or serosa, we have a case in the stomach; the man has had what was considered to be adequate surgery and has gone about five or six years without recurrence; he was re-explored and nothing additional was found: Dr. Rappaport agreed with the interpretation of pseudolymphoma and it looked almost identical with this particular lesion. I think the fact that two lesions are present here and the patient appears not to have any systemic manifestations is a very strong point against the diagnosis of malignant lymphoma.

Dr. Regato: Dr. Braunstein and I had a discussion about this at another Cancer Seminar. The tendency to call pseudolymphomas every lesion that is cured or which has no extension to the lymph nodes has its merits, but it must have its limitations at the other extreme.

Editor's Note: In April, 1964, this patient had a resection of 8 cm of colon for what was thought to be a recurrence of the previous lesion. This recurrence was diagnosed on barium enema. The specimen revealed only inflammation and foreign body reaction to suture material. No tumor was found. The peripheral blood cell count has been within the normal limit. A bone marrow study has not yet been done.

References

Alcott, D. and McCort, J. J.: Lymphosarcoma of the stomach. Cancer Seminar, **III**: 20-24, 1962.

Allen, A. W., Donaldson, G., Sniffen, R. C. and Goodale, F.: Primary malignant lymphoma of the gastrointestinal tract. Ann. Surg., **140**: 428-438, 1954.

Castleman, B. and Krickstein, H. I.: Do adenomatous polyps of the colon become malignant? New Engl. J. Med., **267**: 469-475, 1962.

Welin, S., Youker, J. and Spratt, J. S.: The rates and patterns of growth of 375 tumors of the large intestine and rectum observed serially by double contrast enema study (Malmö Technique). Amer. J. Roentgenol, **90**: 673-687, 1963.

10. *Polypoid Endometrioma of the Colon*

Contributed by D. B. Claudon, M.D. and R. Byrne, M.D.

Milwaukee, Wisconsin

THE PATIENT was a 42-year old woman in May, 1963, when she complained of constipation and mucoid stools of six months duration. Three years previously she had menorrhalgia and metrorrhagia and had had a hysterectomy for leiomyomas. Examination revealed a diffuse fullness of the left lower abdominal quadrant.

Dr. Welin: The barium enema reveals a constricting lesion in the sigmoid. Its lumen is narrow, its mucosa destroyed, and there are overhanging edges which are step-like in configuration. Proximal to this sigmoidal lesion one notes extensive extrinsic compression of the sigmoid plus apparent invasion of the bowel producing submucosal and intraluminal defects. The intraluminal defects in part may be due to retained feces. We have an impression of radiolucency above the tumor.

The roentgenogram of the bladder demonstrates extrinsic pressure plus an irregularity of its wall. Even in this roentgenogram we have the impression of radiolucency in the area of the mass. We must first determine whether we are dealing primarily with an intrinsic or extrinsic process. If this is a primary colonic disorder, we may consider the narrowing to be a carcinoma of the sigmoid. It has the classical "napkin ring" appearance; it has overhanging step-like edges; it is associated with an element of obstruction. Involvement of the adjacent proximal bowel could be explained by perforation of the carcinoma of the sigmoid with a secondary extrinsic inflammatory mass. This would not explain the intraluminal defects in the colon. It is only fair to state, however, that from the single examination one cannot tell the difference between intraluminal tumor masses and intraluminal retained feces. However, because I believe there is evidence of sub-mucosal infiltration in this individual, I am inclined to consider the filling defects as actual tumor masses. Perhaps the sigmoid cancer itself has involved the gut above the structure. If we accept this postulate, it is not difficult to explain the infiltration of the wall of the bladder.

An extrinsic lesion arising in the pelvis, particularly ovarian in origin, merits careful consideration. An ovarian carcinoma might readily produce the extrinsic deformity and invade the sigmoid. A malignant ovarian tumor could also infiltrate the bladder. For an ovarian carcinoma to produce the sharp localized constricting segment of the lesion, however, would be most unusual. Because of the radiolucency and because the mass appears to be extrinsic, we have to take into consideration a pelvic dermoid or teratoma.

Endometriosis must also be considered. Endometriosis in middle life and in the elderly is not unusual; it may be associated with large pelvic masses which actually do infiltrate the colon. However, one would have expected evidence of endometriosis in the pelvis at the time the patient's hysterectomy was performed three years previously, but perhaps we do not yet have the whole story.

No one can deny the possibility that this patient might have two lesions, one arising in the pelvis extrinsically, perhaps in the ovary, and a second lesion arising in the sigmoid. However, making two diagnoses is classically poor "gamesmanship".

Dr. Welin's impression: 1. A malignant pelvic mass: CARCINOMA or a DERMOID of the OVARY. 2. ENDOMETRIOSIS.

Roentgenologic Impressions Submitted by Mail

Endometriosis	47
Carcinoma of ovary	34
Carcinoma of sigmoid	15
Uterine leiomyosarcoma	10
Others	15

Dr. Regato: Dr. M. E. Bischoff, of Denver, Dr. W. Martel, of Ann Arbor, and Dr. R. P. Spurck, of Denver, made a diagnosis of endometriosis.

Operative findings: On May 21st, 1963, the patient was operated upon: a mass 6.5 cm in diameter was found to be densely adherent to the superior surface of the bladder. A 24 cm segment of the sigmoid was removed; it was adherent to the vagina and had to be freed from it; the bladder was perforated and had to be sutured. The midportion of the resected bowel was puckered and presented a papillary lesion 3 x 1 cm in the lumen.

Dr. Castleman: A low magnification here shows a large serosal infiltration, a mucosal polypoid proliferation and in some sections infiltration of the muscularis. This is

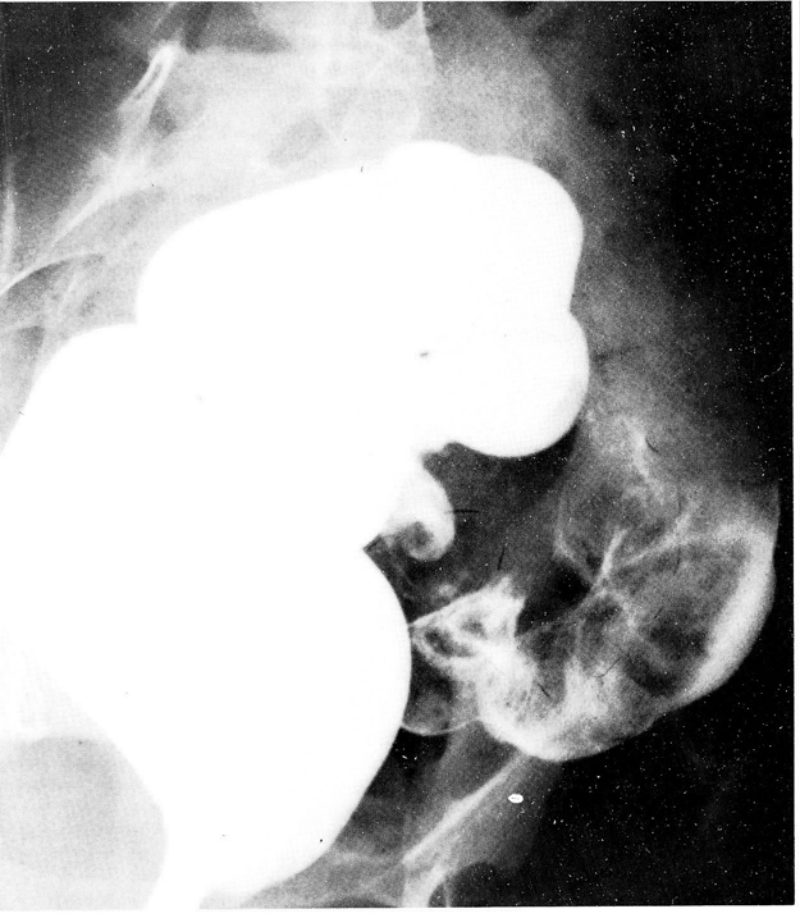


Fig. 1.—Barium enema showing constricting lesion of the sigmoid.

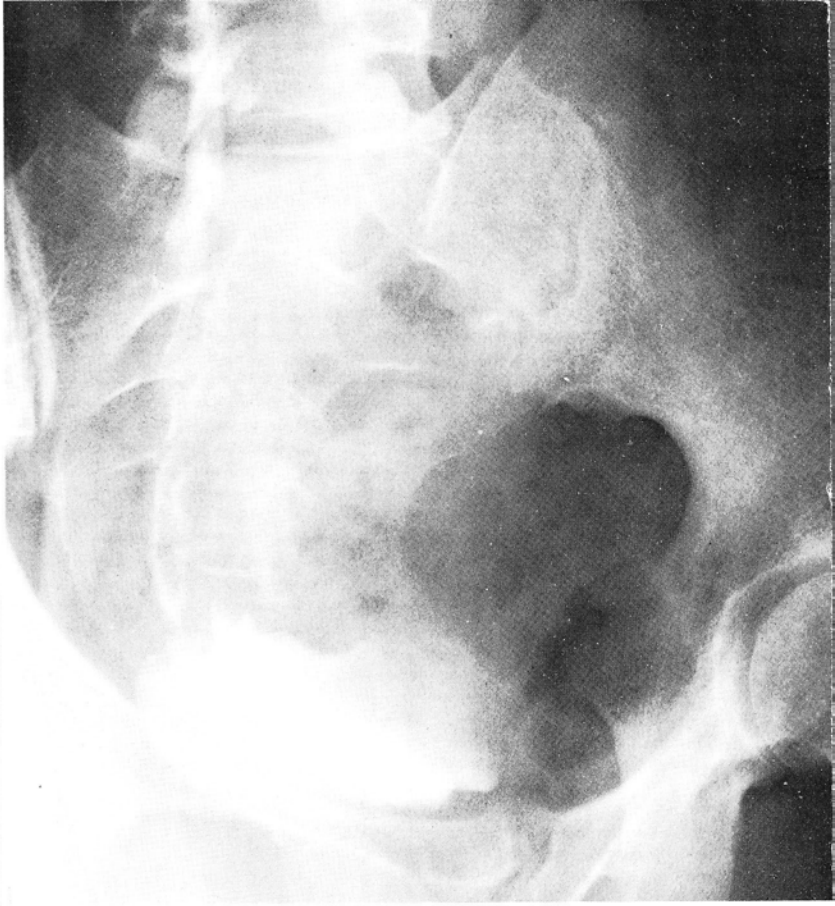


Fig. 2.—Cystogram reveals extrinsic pressure and irregularities of the bladder wall.

better brought out with the Masson connective tissue stain. Morphologically there is no problem in diagnosis; this is obviously endometriosis extending from the serosa through the muscularis into the mucosa and presents within the lumen of the bowel as a polypoid mass. Not only are there unequivocal endometrial glands, but also definite endometrial stroma.

The incidence of intestinal involvement with endometriosis varies, depending upon whom you read, from 3 to 30% of all cases of endometriosis. It occurs most commonly without obstruction on the serosa of the sigmoid. When it penetrates the muscularis one gets, not infrequently, a narrowing or kinking of the bowel. When viewed via the proctoscope or in the pathologist's hand, the stricture does not tend to encircle the entire circumference of the bowel, such as may be seen with carcinoma. One usually sees puckering and edema of the mucosa not unlike what is evident with a healing diverticulitis. What is more unusual, however, as in our case under discussion, is a sub-mucosal infiltration with polypoid formation.

A very unusual complication of such a lesion, and one that we had in our department many years ago, is the development of a sarcomatous change of the endometrial stroma in a previous endometrioma. Clinically this was a polypoid obstructing tumor of the sigmoid in a post-menopausal woman. Here is the histology: typical endometrial glands in a sarcomatous stroma. The fact that this occurred in a postmenopausal patient brings out the fact that aberrant endometrial tissue may become active after the menopause. Such cases have been reported especially in the bowel and have led to obstruction. In a collected series of 142 cases of bowel endometriosis, 7% occurred in the postmenopausal patient.

Dr. Castleman's diagnosis: POLYPOID ENDOMETRIOMA.

Histopathologic Diagnoses Submitted by Mail

Endometriosis	141
Carcinoma in endometriosis	14
Adenomyosis	1

Dr. Regato: All of the experts agreed on a diagnosis of endometriosis.

Subsequent history: In July, 1963, the patient was reported in good health.

Dr. Spratt: Before performing the resection on this patient I would have liked to have had three additional points in history: I would like to know the findings on bimanual pelvic examination; I would like to know what the intravenous pyelogram showed, as to whether or not there was any element of ureteral obstruction. Thirdly, I would have liked to have a "silicone foam diagnostic enema" with which one can get a very detailed imprint of such lesions as this, and from the imprint can be taken cytological studies. At the time of laparotomy, assuming that we were still uncertain of the diagnosis of endometriosis, and in the presence of this diffuse infiltrating process in the pelvic floor, in a young woman I think we would probably have done a biopsy for frozen section before we proceeded with the sigmoid resection.

I would like to ask Dr. Castleman a question regarding an entity that Dr. Corscaden describes which I have never seen: he mentions three cases of "stromatous endometriosis", a very invasive form of endometriosis that behaves almost as cancer and for the treatment of which he utilized roentgen-therapy.

Dr. Castleman: I have seen it twice. I think some call it "endolymphatic leiomyomatosis" where it extends through the wall of the myometrium and gets out onto the serosa, acting like a very slowly growing malignant tumor.

Dr. Spratt: Dr. Corscaden mentions ureteral obstruction in all three of his cases, which is unusual with the routine form of endometriosis. Also, all three of his patients had had a hysterectomy within the previous several years, usually with the diagnosis of leiomyoma.

Dr. Castleman: I think most people believe that it is uterine in origin, and it is possible that those uteri were

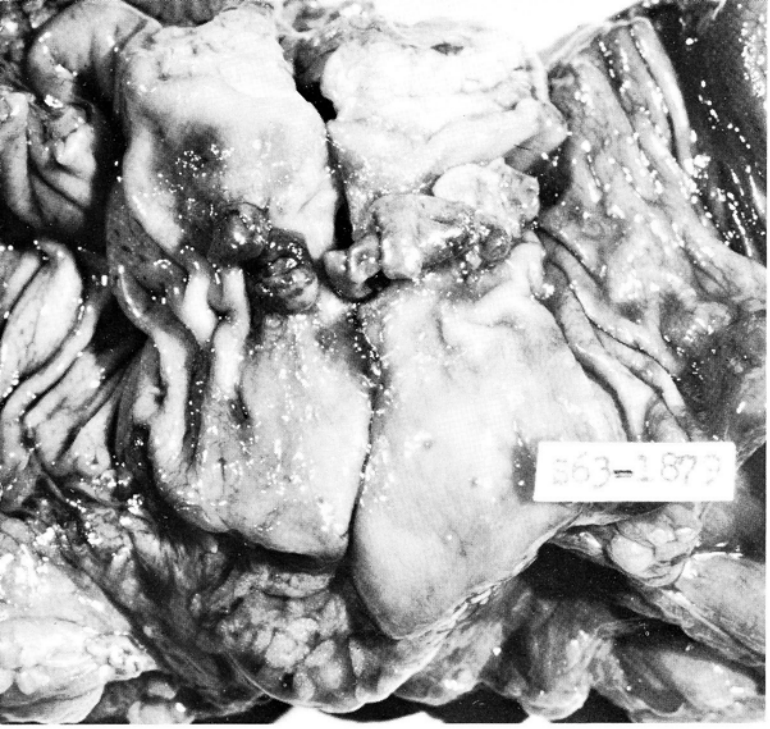


Fig. 3.—Gross appearance of the sigmoidal lesion.

removed for fibroids and they can easily be mistaken for fibroids.

Philip Coverdale, M.D., Milwaukee, Wisconsin: In regard to the questions that have been asked: 1. The ureters were not involved; 2. A proctoscopic examination was not done; 3. The patient had had a bilateral salpingo-oophorectomy at the time of the initial surgery and there had been endometriosis in the ovaries and in the parametrium.

Dr. Castleman: I would like to ask Dr. del Regato if this were not an intraluminal mass but merely the serosal invasion by endometriosis with an excentric narrowing, do you have any experience in radiating the ovaries in these cases to relieve the partial obstruction?

Dr. Regato: Cases of endometriosis have been given radiotherapy for sterilization to stop the ovarian function and sometimes it is reported that this has diminished the symptomatic development. I do not know if it does stop the physical development of the lesion. I think this is one of the most tragic benign conditions that may occur in a woman; it usually leads to tremendous emotional and marital difficulties. I do not know that radiotherapy is good for it; I certainly wish it would be.

Leo Lowbeer, M.D., Tulsa, Oklahoma: Some time ago I saw a case with large masses in the pelvis encroaching upon the intestines, which were biopsied and which were considered inoperable at that time, technically. This looked exactly like sarcoma and endometriosis. In fact, they looked like a cystosarcoma phyllodes of the breast, very similar. Because the surgeons did not feel that they could operate, they irradiated it; and only yesterday the uterus and adnexa were removed: these large masses had virtually disappeared and grossly the specimen looked like one of ordinary endometriosis. This lesion presumably was very radiosensitive.

Mark Wheelock, M.D., Chicago, Illinois: I am surprised about the endometriosis in the older persons. Dr. Meigs used to claim that all pathologists missed innumerable instances of endometriosis; so we prevailed upon our own people to take always one section on the uterus, tubes and ovaries.

I rear back a little when I hear this word "stromal endometriosis"; we wrote a paper on endometriosarcoma in which we begged against the use of that term at all, because all they are doing is avoiding calling it a low grade

Fig. 4.—Photomicrograph of entire histological section submitted showing polypoid glandular masses in between normal mucosa. Note also similar glandular areas on serosa and in muscularis. (H & E x 4)

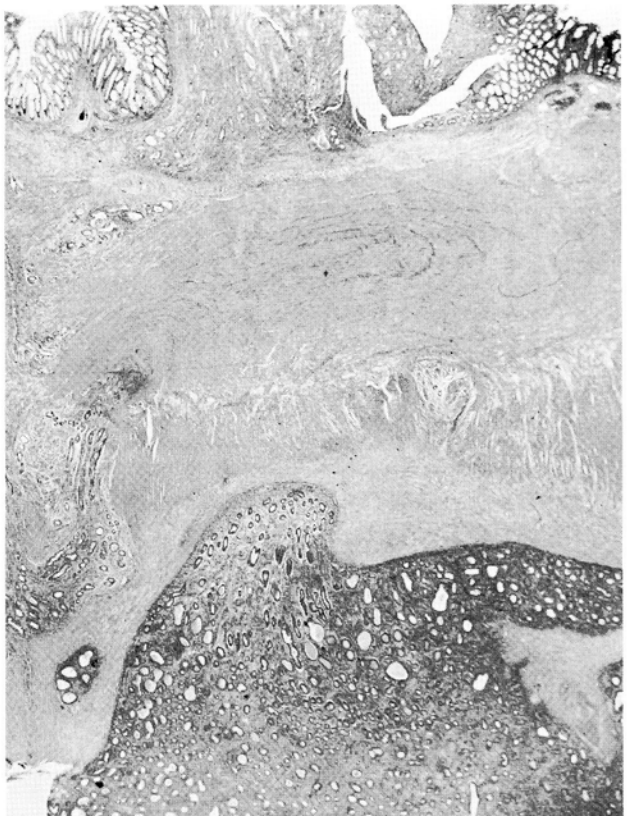
sarcoma of the endometrium. In Dr. Curtis' book he has one of these instances listed as stromal endometriosis; it later metastasized to the bowel and finally spread all through the abdominal cavity; the last time we heard about the patient she was dying of widespread dissemination throughout the peritoneal cavity. We have had two or three of those ourselves.

I would like to call final attention to a rather unique instance that was seen at Ravenswood Hospital and published by Dr. Brewer of a case of endometriosis in the bowel with both an adenocarcinoma and a sarcoma of the endometrial stroma within this particular lesion.

Dr. Castleman: I think we see about one to two, probably two, cases a year of endometriosis involving the sigmoid. Usually one is resected and the other is not. Adenocarcinomas may arise from endometriosis and it has been seen in the ovary; there are a large number of cases reported now. Dr. Scully in our Department has had one or two cases of adenocarcinoma that he feels originated in the endometrial glands of an endometriosis of the ovary.

John E. Johnson, M.D., Kansas City, Kansas: If both ovaries and uterus are removed, I was wondering why these lesions did not regress.

Fig. 5.—Muscularis and serosa involved with foci of endometriosis. (H & E x 8)



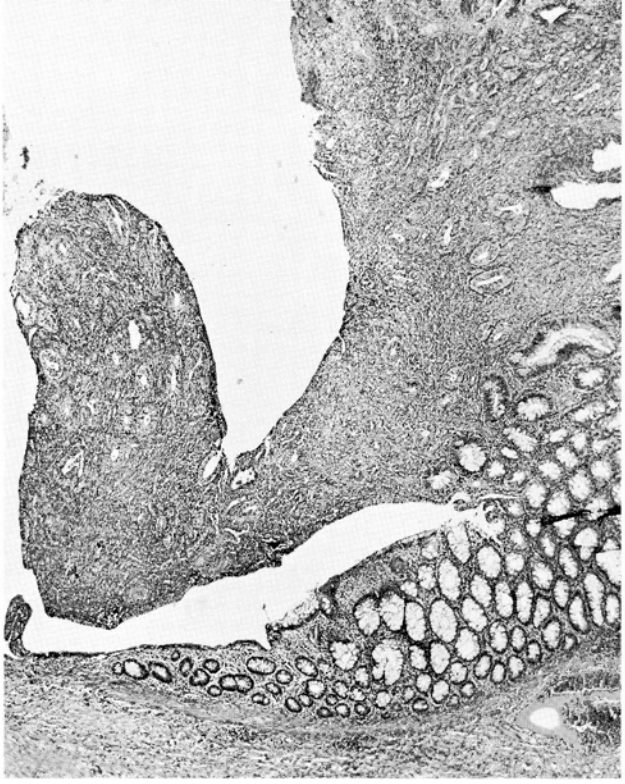


Fig. 6.—Polypoid mass of mucosa composed of endometrial glands and stroma. (H & E x 29)

Dr. Castleman: I do not know that I can answer that. I do not think that if these lesions reach this size as a polypoid lesion they would necessarily regress to normal even though the ovaries have been removed. It is possible that these lesions had been bigger and that they were in a regressive stage. How long was it between the first operation and this one?

Dr. Coverdale: Three years.

Dr. Castleman: I haven't any answer excepting we do see endometriosis in the postmenopausal individual. It is assumed that there is activity perhaps in these postmenopausal ovaries but, in this particular case, there certainly were no ovaries.

Warren E. Paton, M.D., Washington, D.C.: In Walter Reed Army Hospital we have seen several cases of endolymphatic stromal myosis, or, as Dr. Wheelock wants to call it, a low grade sarcoma, perhaps. This condition is typified by forming polyps, usually inside the uterus, and the polyps shown in this case inside the bowel are reminiscent, although you had also many glands here in your specimens which are not so prominent in the specimens of

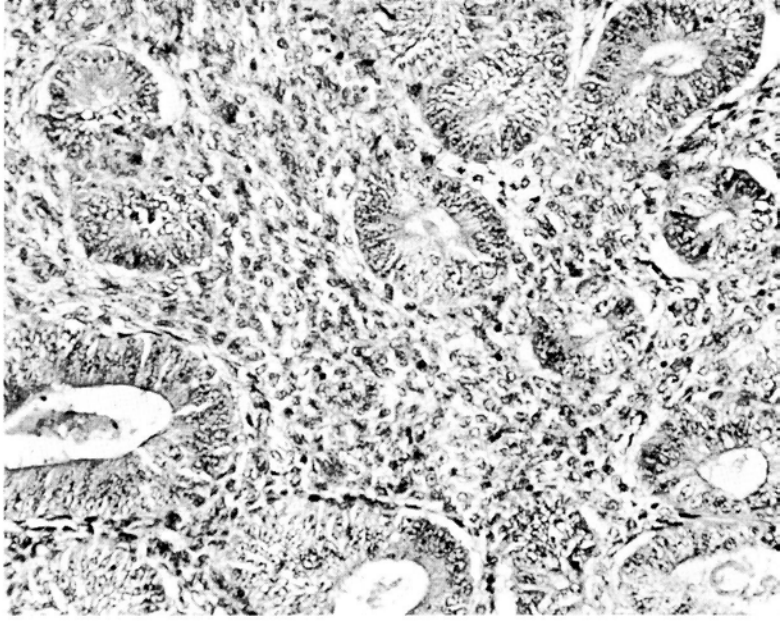


Fig. 7.—Higher magnification of endometriosis on mucosa showing definite endometrial stroma. (x 190)

endolymphatic stromal myosis. We feel at Walter Reed now that the use of Enovid in the treatment of endometriosis should probably be limited to the smaller type of lesions; a lesion as large as this one probably would not react favorably. We have had several patients quite like this one that have been on Enovid for long periods of time and have finally come to resection.

Col. A. J. Bauer, M.C., Washington, D.C.: I would like to say that these patients had large tumors and that they responded very well to irradiation, one of them becoming operable after the irradiation. The second one is regressing quite markedly but has not yet gotten to the point where they feel that they can get a complete removal.

References

Boles, Russell S. and Hodes, Philip J.: The Adnexa. Endometriosis of the small and large intestine. Gastroenterology, **34**: 367-380, 1958.

Case Records of the Massachusetts General Hospital. New Engl. J. Med., **215**: 678-680, 1936.

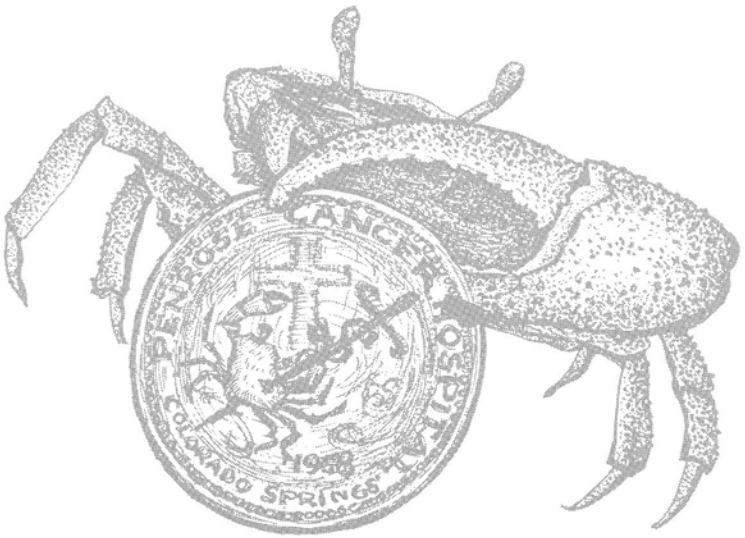
Corscaden, J. A.: Sarcoma of the endometrium. Amer. J. Obstet. Bynec., **61**: 743-754, 1951.

Curtis, A. H. and Huffman, J. W.: A textbook of gynecology, p. 361, W. B. Saunders Co., Philadelphia, 1950.

Ferraro, L. R., Hetz, H. and Carter, H.: Malignant endometriosis. Obstet. Gynec., **7**: 32-39, 1956.

Macafee, C. H. G., Greer, H. L.: Intestinal endometriosis. A report of 29 cases and a survey of the literature. Obstet. Gynaec. Brit. Emp., **67**: 539-555, 1960.

Spjut, H. J. and Perkins, D. E.: Endometriosis of the sigmoid colon and rectum. Amer. J. Roentgenol., **82**: 1070-1075, 1959.



11. Pericolic Foreign Body Reaction

Contributed by R. M. Failing, M.D., E. T. Felsted, M.D. and H. Tivey, M.D.,

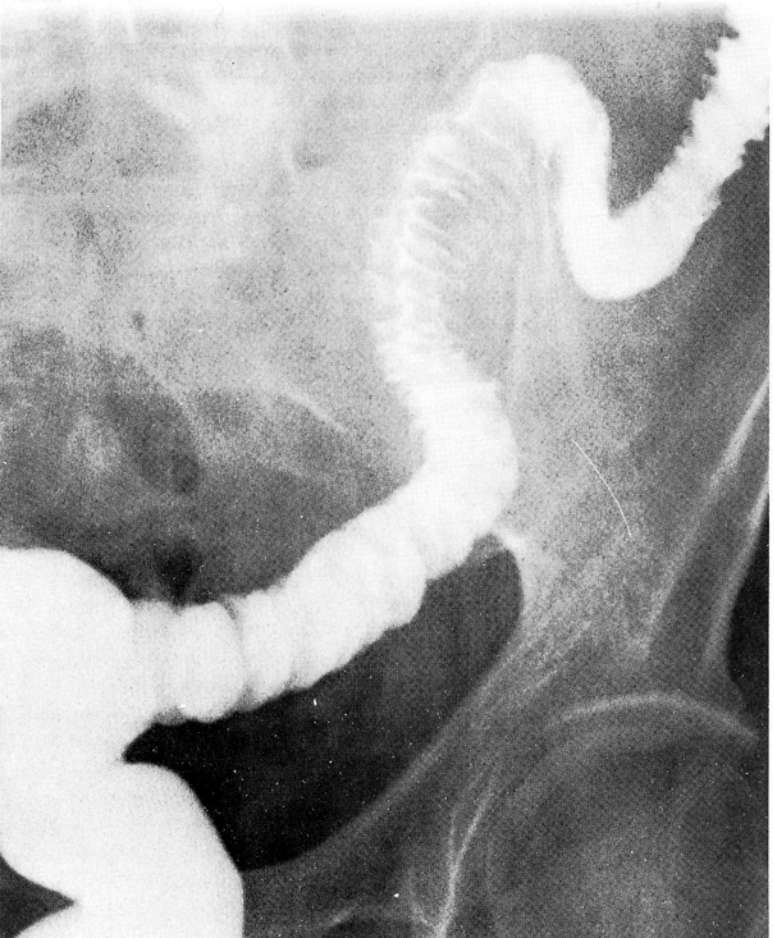
Santa Barbara, California

THE PATIENT was a 71-year old man in July, 1962, when he complained of tenderness and diarrhea of six weeks duration. Examination revealed a tender palpable mass in the left lower abdominal quadrant. On proctoscopy the rectal mucosa appeared edematous and there was a constriction 17 cm above the anus.

Dr. Welin: The mucosal folds in this segment of the sigmoid are edematous. The valleys between the folds are narrow. There is extrinsic pressure along the lateral margin. There are no definite diverticula.

In view of the tenderness of the mass, the roentgen changes, and the edematous mucosa seen on proctoscopy we are probably dealing with an inflammatory process. The absence of definite diverticula does not negate the diagnosis of sigmoiditis with a peridiverticular abscess. Ulcerative colitis and granulomatous colitis would be unusual at the age of 71. Nor would a single local lesion above be expected in either of these entities. Amebiasis does involve this portion of the colon; however, the mucosa does not look like this; in amebiasis one sees ulcerations with intervening normal mucous membrane. Another entity to be discussed is epiplopericolitis, an inflammatory pseudotumor of the colon arising in epiploic appendages: the main finding is the existence of a tumor which may look like a neoplasm or an inflammatory process. There can be a stenotic element, somewhat funnel shaped at each end. The mucosa is intact and edematous with an associated extrinsic component. It is described as looking like an accordion. Occlusive vascular disease of a segment of colon results in edema of the mucosa. Usually it produces nodular masses or "thumbprinting" in the bowel. Usually too, bright red blood is passed per rectum and extrinsic masses are highly unlikely. The possibility that this lesion is neoplastic should be discussed. A linitis plastica type of carcinoma of the colon usually produces a rigid segment with irregular mucosa. The tender palpable mass also would be unusual. Once again a lymphoma, especially a lymphosarcoma, could produce such a lesion.

Fig. 1.—Barium enema showing an edematous segment of the sigmoid and extrinsic pressure.



Dr. Welin's impression: Inflammatory sigmoidal process: 1. EPIPLOPERICOLITIS. 2. DIVERTICULITIS.

Roentgenologic Impressions Submitted by Mail

Diverticulitis	55
Inflammatory lesion	28
Vascular lesion	15
Malignant tumor	8
Abscess	6
Others	12

Dr. Regato: Dr. B. Felson, of Cincinnati, suggested diverticulitis with mesenteric infarction. Dr. E. Salzman, of Denver, suggested a ruptured diverticulum with a pelvic abscess.

Operative findings: On July 16th, 1962, a laparotomy was done: an inflamed and partially obstructed loop of sigmoid was found and only a transverse colostomy was done. The pain and the palpable mass persisted and the patient lost fifteen pounds in weight. On September 15th, 1962, a second laparotomy was done: an extensive ligneous process of the sigmoid colon was found extending below the peritoneal reflection with numerous adhesions of the small bowel; a left colectomy and splenectomy were done. The removed segment of the colon presented a fatty bulbous mesentery, 5 cm thick, encroaching on the bowel which presented an edematous serosa and was stippled with petechiae. The mucosa was not ulcerated but the lumen was narrow. There was no evidence of diverticulae.

Dr. Castleman: At low power we have a large serosal mass that apparently does not invade the muscularis. It appears to be loose and fatty. A closer view shows an obvious inflammatory process and fat necrosis. There are lipid filled monocytes, singly and in islands. There are large empty spaces, almost certainly emptied of its fat during processing; many of these spaces are lined with foam cells. There are scattered lymphocytes and fibrous connective tissue; very few polyps are seen. Of course, the conspicuous findings are the foreign body giant cells, many of which contain a foreign body. The foreign body is a curled, almost chitinous, strand which does polarize. One's first thought is suture material and I should like to know if there were previous surgery. My next thought would be penetration of oily fecal contents such as could be seen in diverticulitis. The roentgenogram does not show diverticula, but it is possible to have a single one that is now obliterated by the pericolic mass.

A remote possibility is that this represents fat necrosis dissecting down from a pancreatitis, but if this were so, I could not explain the foreign bodies. Further, this type of fat necrosis does not have the abundance of lipophages seen in this case.

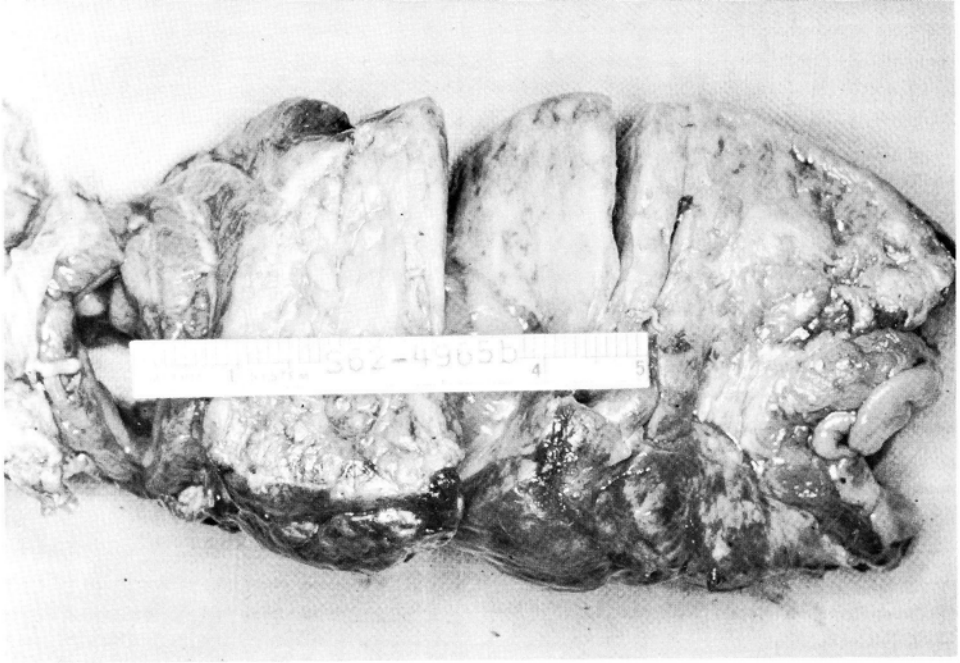


Fig. 2.—Gross appearance of the thick lesion.

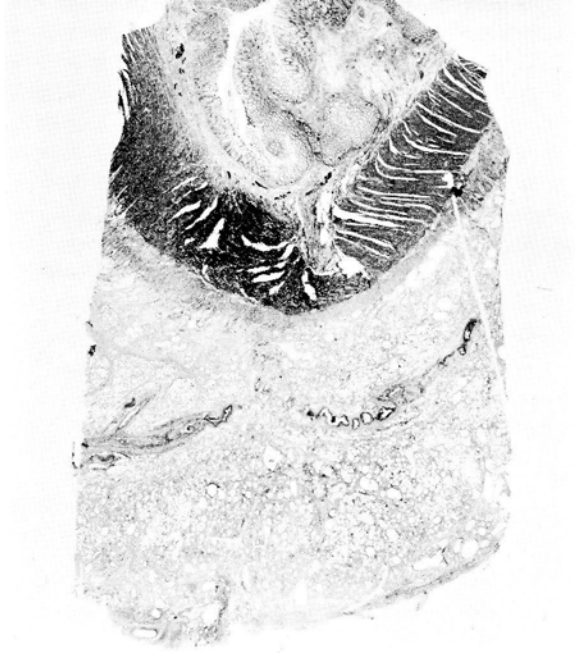


Fig. 3.—Photomicrograph of entire histological section submitted showing large serosal lesion composed of varying-sized fat filled spaces in a loose connective tissue stroma. (H & E x 3.7)

Dr. Castleman's diagnosis: PERICOLIC FOREIGN BODY REACTION.

Histopathologic Diagnoses Submitted by Mail

Eleoma	56
Fat necrosis	29
Xanthogranuloma	20
Lipogranuloma	14
Liposarcoma	9
Chordoma	6
Diverticulitis	6
Others	39

Dr. Regato: Dr. R. Willis, of Glasgow, made a diagnosis of fibrolipoma with widespread formation of oil cysts and histiocytic reaction. Dr. L. Lowbeer, of Tulsa, categorically designated it as a mineral oil granuloma. Dr. W. C. Black, III, of Saint Louis, and Dr. M. R. Abell, of Ann Arbor, preferred retractile or sclerosing mesenteritis.

Subsequent history: Following the operation the patient developed a surgical wound infection, oliguria, and shock; he expired on October 28th, 1962. At autopsy no residual lesion was found; there was widespread bronchopneumonia and extensive acute necrotizing pancreatitis of the tail and body.

Dr. Regato: Eleoma is a very elegant name for a mineral oil granuloma; here the possibility is remote since the constriction was 17 cm above the anus, and there is no history of any injection of mineral oil. The other speculation is that the patient might have had a diverticulum and that he may have had a mineral oil enema but all this is entirely hypothetical.

Dr. Spratt: We see these chronic inflammatory processes of sigmoid mesocolon not infrequently at the Cancer Hospital because they so frequently mimic colonic cancer in their early symptomatology. The failure to demonstrate extensive diverticula on the barium enema would certainly influence our attitude at the time of laparotomy. In the absence of any roentgen evidence of cancer and the absence of any cancer on our physical examination, and believing that we were dealing with one of these inflammatory processes of the pelvic mesocolon, we would have done a descending colostomy. I think a certain element of surgical patience has to come into the management of these problems, because these are long-smoldering inflammatory processes, and they require months to subside; I think there has to be complete roentgen and physical evidence of resolution before the surgical resection becomes necessary, and it is not always necessary. This usually requires a minimum of three months; with many patients we wait for six months to a year before we go back in to do anything definitive, should the section of sigmoid become strictured. If the section of sigmoid does *not* become strictured and there is no diverticular disease, then it is possible to forego any resective procedure.

Dr. Regato: Dr. Lowbeer, do you care to explain to us how that mineral oil got up there?

Leo Lowbeer, M.D., Tulsa, Oklahoma: In the first place I think it is a mineral oil granuloma because it looks like one. Secondly, in order to prove it one would have to stain it with osmic acid and with Sudan; and third, the proof of the pudding is in the history which is missing here. How it got there can only be explained by the clinician. Theoretically this man may have had an oil enema and there was a rupture of the intestine at one time. I do not know what else would look like that; so the proof has to be obtained through the clinician or through the family.

E. L. Benjamin, M.D., Santa Barbara, California: As far as I know, there was no history of oil enemas. The formalin fixed tissues sent to the participants in the Cancer Seminar were from the operation of September 21, 1962, when the sigmoid was resected. It is, therefore, reasonable to assume that the foreign body giant cells with inclusions were formed as a reaction to the first operation when a biopsy was performed on July 16, 1962. Dr. Weldon K. Bullock, Registrar of the Los Angeles Tumor Registry, designated this lesion as mesocolic lipogranulomatosis.

Dr. Castleman: Will you tell us, Dr. Benjamin, whether there was extension of the pancreatitis beyond the confines of the pancreas?

Dr. Benjamin: No, there was not.

B. Pear, M.D., Denver, Colorado: I do recall a similar case in which these granulomas were due to induction of an abortion by the use of oily material. In this case they calcified and presented a bizarre appearance in the plain film of the abdomen.

Capt. Wilmier Talbert, M.C., Washington, D.C.: The radiologic recognition of retractile mesenteritis is discussed in the paper by Tedeschi. I dislike the term because I believe that this is due to a vascular occlusion involving the veins with subsequent fat necrosis. This lesion mimics carcinoma grossly in almost all respects except for involvement of the mucosa.

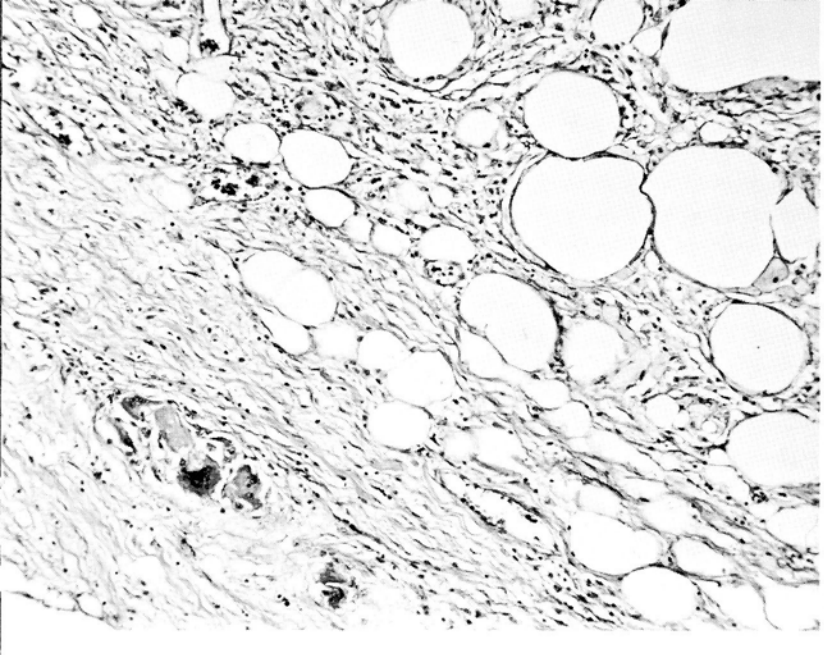


Fig. 4.—In addition to the large spaces there are fat-filled phagocytes, many of which appear to line the spaces and foreign body giant cells. (H & E x 120)

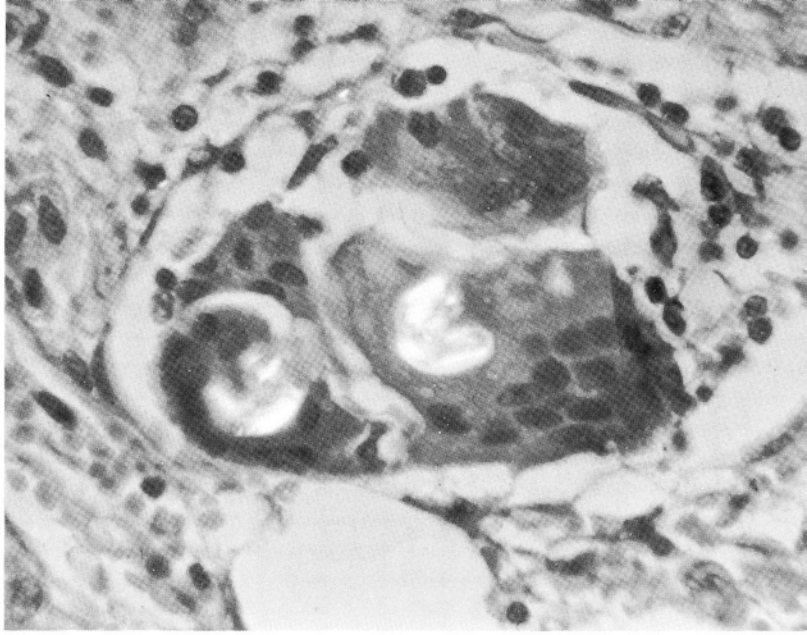


Fig. 5.—High magnification of a giant cell containing polarizable foreign bodies. (H & E x 680)

Victor M. Areán, Gainesville, Florida: I would like to mention that Dr. Charles Oberlin, from France, described this disease many years ago and he called it a sclerosing xanthogranuloma.

References

Berthrong, M.: Eleoma of the rectum. Cancer Seminar, **1**: 170-172, 1955.

Hafferkamp, O.: Das retroperitoneale Granulom. Virchow's Arch., **332**: 264-282, 1959.

Jura, V.: Sulla mesenterite retractile e sclerosante. Policlinico (Sez Prat) **31**: 575-581, 1924.

Linder, A. E., Marshak, R. H., Wolf, B.S., and Janowitz, H. D.: Granulomatous Colitis. New Engl. J. Med., **269**: 379-385, 1963.

Oberling, C.: Retroperitoneal xanthogranuloma. Amer. J. Cancer, **23**: 477-489, 1935.

di Rienzo, S. and Mosca, L. G.: Epiplopericolitis. Amer. J. Roentgenol., **66**: 215-221, 1951.

Smetana, H. F. and Bernhard, W.: Sclerosing lipogranuloma. Arch. Path., **50**: 296-325, 1950.

Tedeschi, C. G. and Botta, G. C.: Retractile mesenteritis. New Engl. J. Med., **266**: 1035-1040, 1962.

12. *Radiation Proctitis with Fistulous Formation*

Contributed by W. C. Black, III, M.D. and L. V. Ackerman, M.D

Saint Louis, Missouri

THE PATIENT was a 77-year old woman in February, 1965, when she complained of melena, cramping abdominal pains and of a 12 pound weight loss. In 1947, she had received external irradiation and intracavitary radium therapy for carcinoma of the endometrium; she was again irradiated in 1952 when a recurrence took place; rectal stricture developed into stenosis by 1962. On examination there was evidence of marked radiation effects of the skin; the rectal mucosa appeared friable.

Dr. Welin: The long sigmoidal and recto-sigmoidal lesion is easily demonstrated. Its distal half has rather smooth margins; its proximal half looks highly irregular and contains numerous filling defects. Close inspection of this proximal segment reveals a peculiar, abnormal barium collection which could be a fistula. This could easily be clarified by more complete examination; indeed, there should be no doubt in this regard.

Distally the tubular tapering is consistent with late radiation damage to the colon; it occupies the classical recto-sigmoidal site for this complication. The problem concerns the proximal half of the lesion where the walls are irregular and the lumen distorted by filling defects. If what we see is, indeed, a fistula, one can explain the proximal abnormality as the result of infection plus invasion of the sigmoidal wall by inflammatory granuloma. Yet there are elements of this lesion consistent with sub-mucosal disease of malignant origin, perhaps a carcinoma arising immediately adjacent to the irradiated recto-sigmoid.

It is noteworthy that in Sweden women with one pelvic cancer developed a second primary cancer, usually in the colon, in 2% of cases. When this occurs, rarely is the colonic cancer located in the irradiated segment of the bowel.

Dr. Welin's impression: POST - IRRADIATION FIBROSIS OF THE RECTO-SIGMOID AND GRANULOMA.

Roentgenologic Impressions Submitted by Mail

Carcinoma of sigmoid	87
Granuloma	15
Effects of irradiation	13
Some shenanigan!	1
Others	12

Dr. Regato: Dr. R. Calderón, of Managua, and Dr. B. Felson, of Cincinnati, made a diagnosis of carcinoma over irradiation effect. Dr. W. Martel, of Ann Arbor, suggested irradiation effects plus recurrent endometrial carcinoma.

Operative findings: On March 7th, 1963, a resection of the rectosigmoid was done. The bowel showed a circumferential ulcer extending into the wall and subserosal connective tissue. There was no gross evidence of metastases.

Dr. Castleman: I believe I was more fortunate than many of you with respect to this case in that I received slides from three blocks. However, I am not at all sure

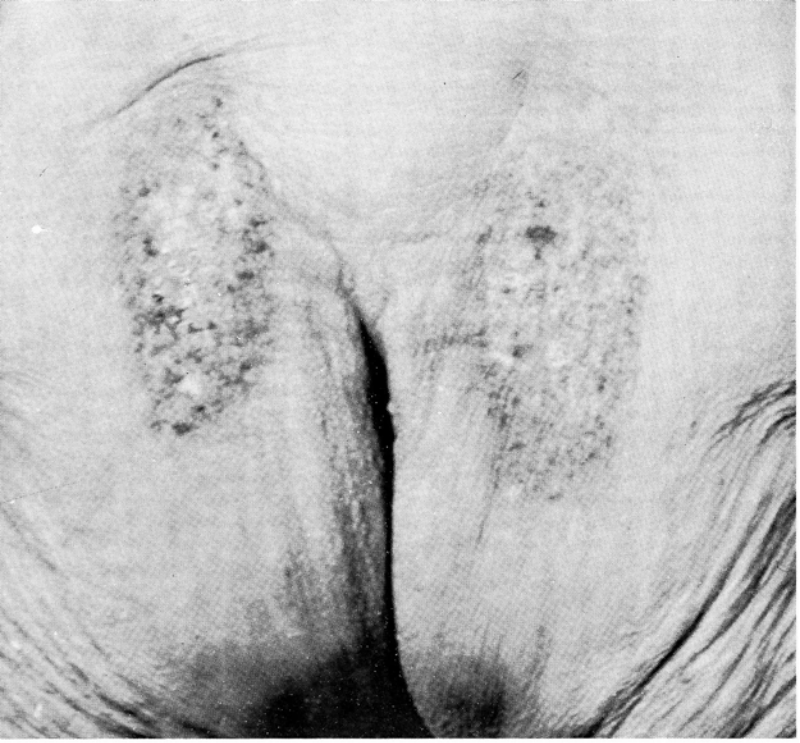


Fig. 1.—Photograph showing the effects of irradiation of the skin with a wide separation of fields at the midline.

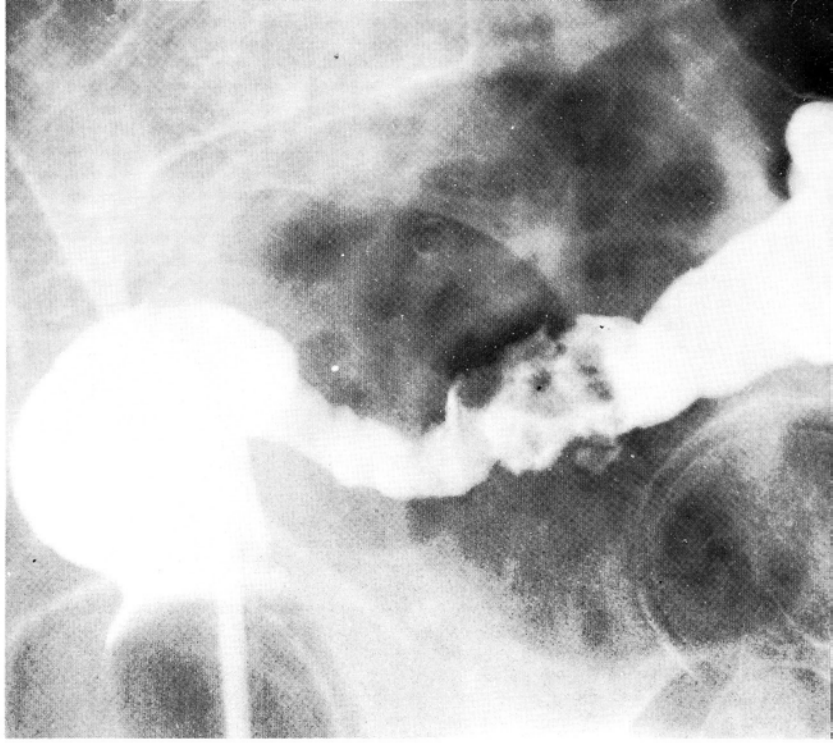


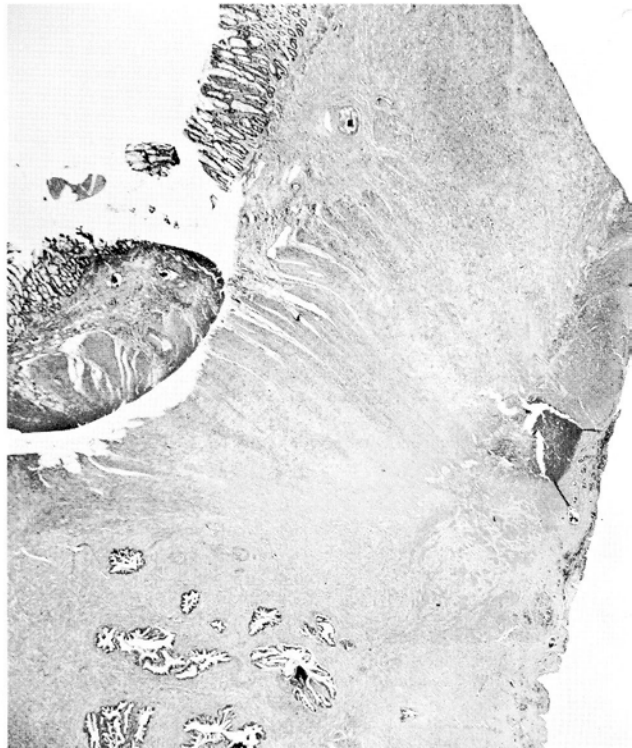
Fig. 2.—Barium enema showing long lesion of recto-sigmoid with irregular narrowing.

that they have helped me because I consider this the most difficult case of the lot. This first slide shows within the wall of the bowel a group of irregular tortuous glandular spaces lined with columnar epithelial cells. Some of these cells have nuclei at the base of the cells and mucous droplets in the cytoplasm, cells characteristic of intestinal epithelium. I believe this immediately excludes their being metastatic from the old uterine carcinoma. Although there is some piling up of nuclei in some places, they are small and regular; the findings do not warrant a diagnosis of carcinoma. There is a definite inflammatory reaction throughout this area and we know that this area had been exposed to a great deal of irradiation. The radiation effects on the bowel are well seen. There are mucosal ulcerations and necrosis and extensive telangiectasis in the submucosa. Many of the vessels show marked intimal proliferation and evidence of organized thrombosis. The muscle coats show degeneration and hyalinization. These glandular spaces in the wall could be tracts of a diverticulum, either a true diverticulum or, more likely, a false one produced by radiation necrosis and superimposed infection.

Another block shows similar epithelial lined spaces, some filled with purulent exudate and others with mucous. The latter can be followed to the surface mucosa where there is tremendous mucous secretion not only in the surface glands but also in the submucosa in the form of large collections simulating a colloid carcinoma. I do not believe it represents colloid carcinoma, but merely a hypersecretion which extends down into the wall as a sinus tract on pseudodiverticulum. Warren and Friedman in 1942 described the pathology of radiation lesions in the gastrointestinal tract and it is interesting to note what they said about the mucosa: "Mucous stasis with overproduction was a very common finding and was far more striking than is commonly seen in other conditions. The goblet cells were large and full and were present in great numbers. The glands showed various forms of distortion to various degrees.

Fig. 3.—Gross appearance of the lesion.

Fig. 4.—Photomicrograph of one of the histological slides submitted showing a group of tortuous glands in the wall of the bowel. (H & E x 9)



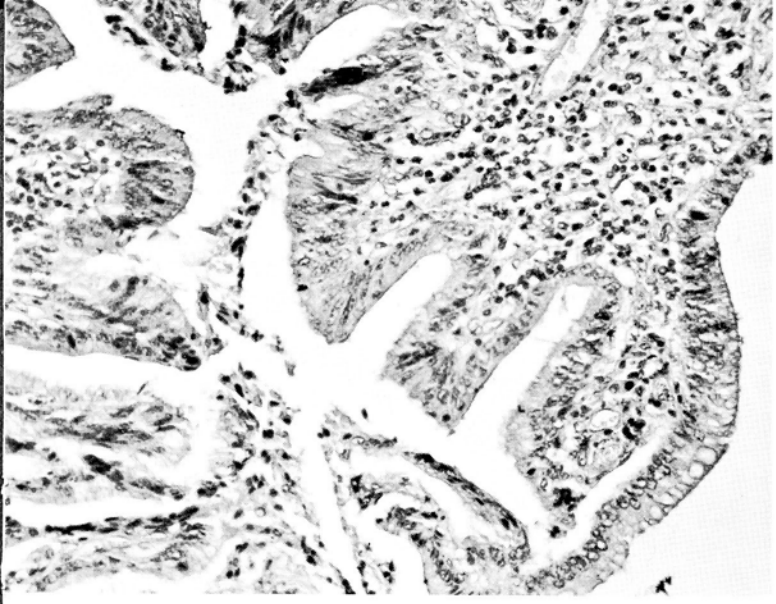


Fig. 5.—Higher magnification of the tortuous intestinal glands shown in the previous figure. Note regular arrangement of cells and the small and uniform nuclei. (H & E x 210)

They became very narrow and elongated, lined by flattened epithelium or were dilated and cystic." They do not attempt to explain those changes, but I wonder whether the radiation fibrosis could have pinched off some of the glands, thus blocking the outlet of the secretion and forcing it down into the submucosa.

To make matters worse, the third block showed an area in the mucosa that is quite consistent with a villous adenoma which probably represents the lesion observed on the roentgenograms. If this is a true villous adenoma, which we know produces abundant mucous secretion, then perhaps this excessive mucous is partly the result of the villous adenoma. If one wanted to carry the Warren-Friedman statement about mucosal changes even further, perhaps the villous adenoma itself is a proliferation resulting from the radiation.

In any event, I do not believe the submucosal and muscularis collection of mucous is a colloid carcinoma arising from a villous adenoma, although without seeing the first block, such a diagnosis might have been considered.

Dr. Castleman's diagnosis: RADIATION PROCTITIS WITH FISTULOUS FORMATION.

Histopathologic Diagnoses Submitted by Mail

Adenocarcinoma	158
Effect of irradiation	21
Radiation induced carcinoma	8
Various benign lesions	15
Endometrial carcinoma	3

Dr. Regato: Dr. V. M. Areán, of Gainesville, Florida, Dr. C. Masó, of Chicago, and Dr. O. Rambo, of San Francisco, also verified the effects of irradiation but not the presence of a malignant tumor. Dr. A. O. Severance, of San Antonio, and Dr. F. T. Kraus, of Saint Louis, found both. Dr. L. V. Ackerman, of Saint Louis, one of the contributors, made a diagnosis of adenocarcinoma and of severe irradiation effect; he hopes "that this does not hurt Dr. del Regato's feelings!"

A. P. Stout, M.D., New York City, (by mail): I presume that this section represents the results of scarring from irradiation, possibly with perforation and healing of the gut. The regenerated mucosa has apparently proliferated extensively and a mucous cyst has formed at one point. I do not believe that any of the mucosal proliferation is cancerous although it looks hyperplastic.

Subsequent history: The patient recovered from operation and did well. We have no further details of follow-up.

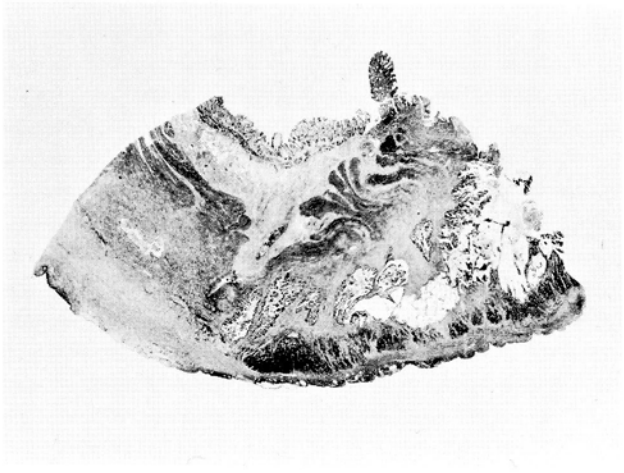


Fig. 6.—Photomicrograph of a second entire histological section submitted showing groups of glands with large amount of mucoid material in the wall of the bowel, but apparently connecting with the mucosal surface. (H & E x 3.7)

Wm. C. Black, III, M.D., St. Louis, Missouri: There is not very much more I can say; I am sorry Dr. Ackerman is not here because we thought it was a carcinoma; but with Dr. Castleman's opinion and Dr. Stout's I am, frankly, a little shaken.

Dr. Regato: You told me that there had been very few or no nodes removed. Is that right?

Dr. Black: There were no nodes removed with the specimen because the surgeon was perfectly convinced that this was radiation stenosis.

Dr. Regato: Which, indeed, it was. Of course, the issues raised by this case are various. There is the question of histopathologic evidence of severe irradiation effect of which there is no question; this does not imply necessarily irradiation carcinogenesis which is the other implication. There is a paper by Fernandez Colmeiro of the Radium Institute of the University of Paris who reported I believe on some fifteen cases of malignant lesions that occurred in patients who had for years been cured of carcinoma of the cervix; it is possible that some of these might have been coincidences, since the paper is based on a tremendous volume of material of thousands of patients who were cured of carcinoma of the cervix. It is possible that some of them represent irradiation carcinogenesis as may be some of the cases reported to us by Professor Welin, there may be some instances in which this is not even likely by virtue of position; it is the matter of general inclination to blame on radiotherapy anything that happens to a patient who has walked through the corridor of the Department of Radiotherapy!

Dr. Spratt: We demonstrated, in dogs, several years ago that these ulcers simply do not heal by epithelization; that contraction plays a fundamental role. There is an interesting phenomenon that occurs at the junction between the ulcer and the mucosa; we saw very regularly several months after the ulcers had been induced, mucosa extending down intramurally within the stroma, very similar to the processes seen intermittently in healing ulcerative colitis. We would wonder if this might be a process similar to that which we see adjacent to chronic skin ulcers, of pseudoepitheliomatous hyperplasia, occurring in glandular mucosa.

In defense of irradiation, I might say that Dr. Ackerman showed me this case a number of months ago and tried to get a little statistical incrimination of the previous irradiation; I pointed out to him that we had had two patients within the previous year, at the Cancer Hospital who developed their cervical cancers several years after they had had an abdominoperineal resection and asked him if he could also draw a cause and effect relationship there.

Fig. 7.—Close-up of mucoid area of preceding figure showing connection with mucosal surface. (H & E x 11)

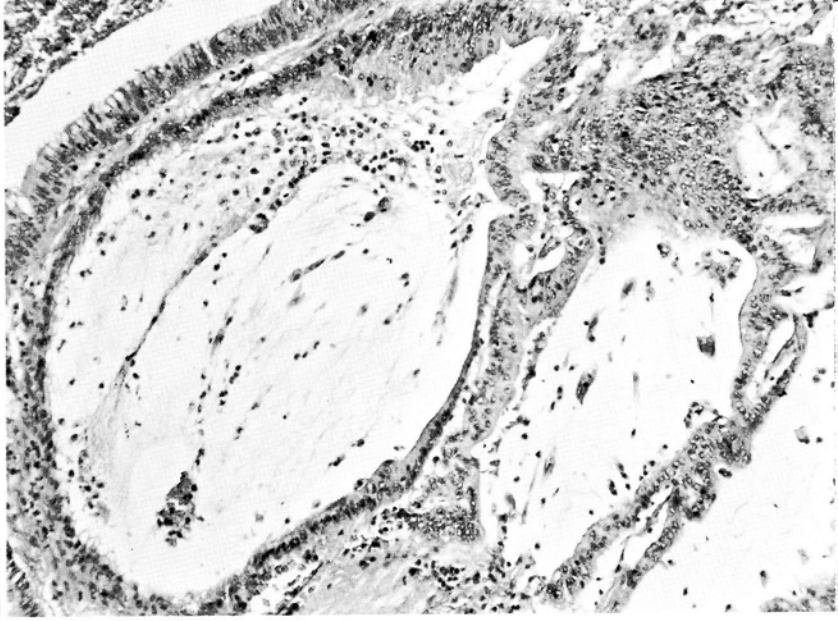


Fig. 8.—High magnification of group of glands seen in preceding figure. Note lack of atypicality of the lining cells. (H & E x 140)

With specific reference to the association of carcinoma of the cervix and endometrium with cancer of the large intestine and rectum: out of 1141 cases of the latter, about 470 of them are women, and among these seven had a carcinoma of the cervix, either in the past, at the time of, or subsequent to, the treatment, several of them presenting coincidentally. Before any cause and effect relationship can be drawn one simply has to quantitate the coincidental occurrence of multiple primary cancers of the pelvis.

Dr. Regato: Insofar as the considerable damage done by radiotherapy in this case, I would like to point out that this patient was treated for carcinoma of the endometrium, probably by the packing technique, and received intensive irradiation by means of radium; also that she was irradiated for a post-irradiation recurrence, so that she was irradiated twice. Very frequently these lesions of the bowel are associated not with external irradiation but with the application of intercavitary radium which may or may not come in close contact with the large bowel. I, in turn, sincerely hope that Dr. Ackerman's feelings are not hurt!

References

Fernandez-Colmeiro, Chardier P.: Radio-épithéliomas et radio-sarcomes pelviens survenus aprés radiothérapie d'un premier cancer; étude de 15 observations. Mém. Acad. Chir. (Paris), **82**: 981-985, 1956.

Perkins, D. E. and Spjut, H. J.: Intestinal stenosis following radiation therapy. Amer. J. Roentgenol, **88**: 953-966, 1962.

Warren, S. and Friedman, N. B.: Pathology and pathologic diagnosis of radiation lesions in the gastro-intestinal tract. Amer. J. Path., **28**: 499-513, 1942.

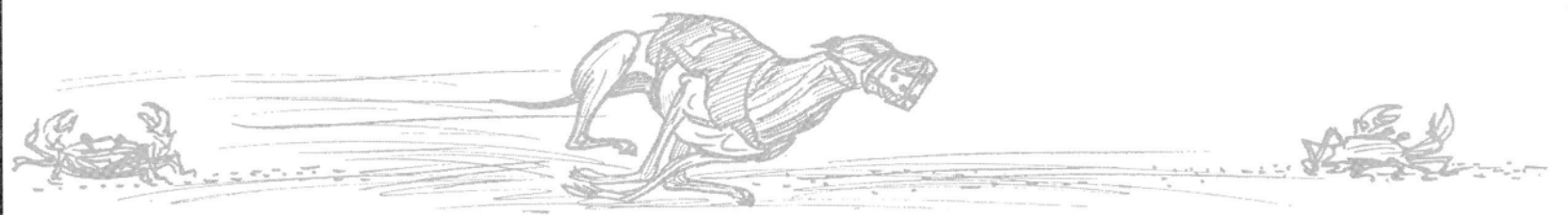
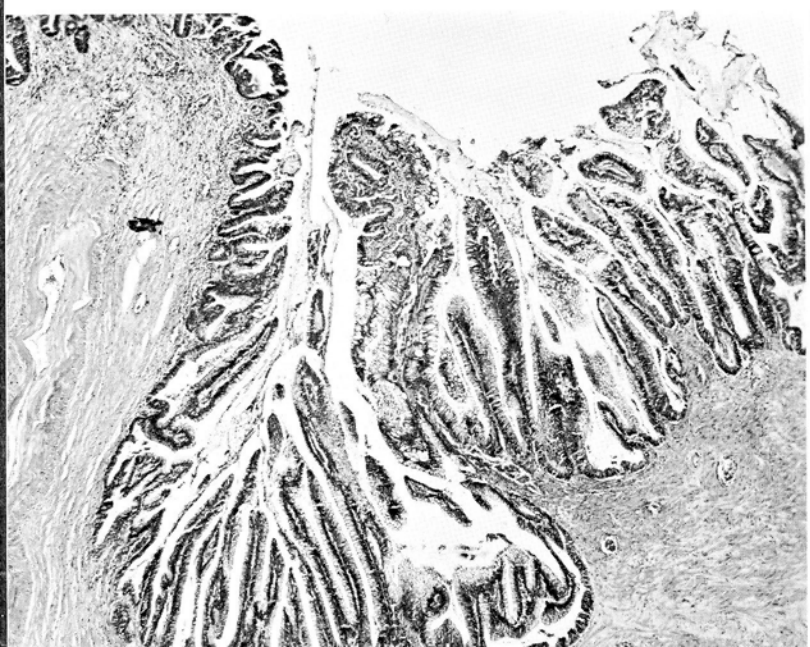
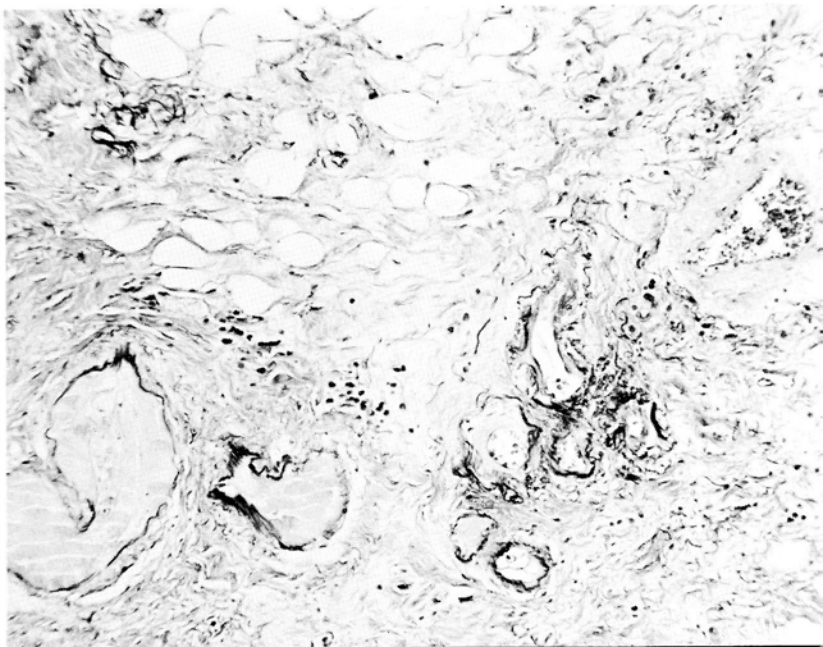


Fig. 9.—Section from a third block showing villous papillary change of the mucosa. (H & E x 31)

Fig. 10.—Submucosal vessels organized and recanalized channels indicative of radiation effect. (Verhoeff's elastic tissue x 120)





13. *Mucocele of the Sigmoid?*

Contributed by B. CASTLEMAN, M.D., Boston, Massachusetts

THE PATIENT was a 37-year old man in November, 1962, when he gave a history of painless bloody diarrhea of six months duration; there had been recent tenesmus and lower abdominal pain. On examination the patient appeared dehydrated and there was a constricting mass around the rectum, 5 cm above the anus. The stool was positive to guaiac; the serum albumin ranged from 1.4 to 1.8 gm% and the serum potassium from 3 to 5 mEq/L.

Dr. Welin: Examination of the rectum and sigmoid reveals a markedly irregular contour with a loss of the normal haustral and mucosal pattern. There are multiple polypoid lesions extending into the lumen throughout this segment. These polypoid lesions do not have distinct margins. The intervening mucosa reveals scattered ulcerations.

A likely possibility is an ulcerative colitis because of the pseudopolyposis with ulcerations of the intervening mucosa. Another strong possibility is diffuse lymphosarcoma of the colon which can look, roentgenographically, like ulcerative colitis. The infiltrations appear as pseudopolyps with irregularities of the mucosa, ulcerations and loss of the haustral pattern. These patients also can have a considerable albumin loss as does this patient.

A vascular occlusion will produce pseudopolyps or "thumbprinting" on the roentgenogram with a clinical story of bloody diarrhea. However, these are usually of short duration.

In view of the albumin loss, which may be primarily due to the blood loss, we should mention Menetrière's disease, protein losing enteropathy. This usually involves only the upper gastrointestinal tract.

Dr. Welin's impression: Extensive malignant colonic disease associated with ulceration and polypoid formation: 1. LYMPHOSARCOMA. 2. An uncommon type of ULCERATIVE COLITIS.

Roentgenologic Impressions Submitted by Mail

Ulcerative colitis	42
Lymphoma	35
Granulomatous colitis	27
Vascular lesion	5
You tell me!	1
Others	15

Dr. Regato: Dr. B. Felson, of Cincinnati, suggested Gordon's enteropathy. Dr. R. Spurck, of Denver, preferred diffuse lymphomatous disease of the colon, and Dr. W. Martel, of Ann Arbor, lymphopathia venereum.

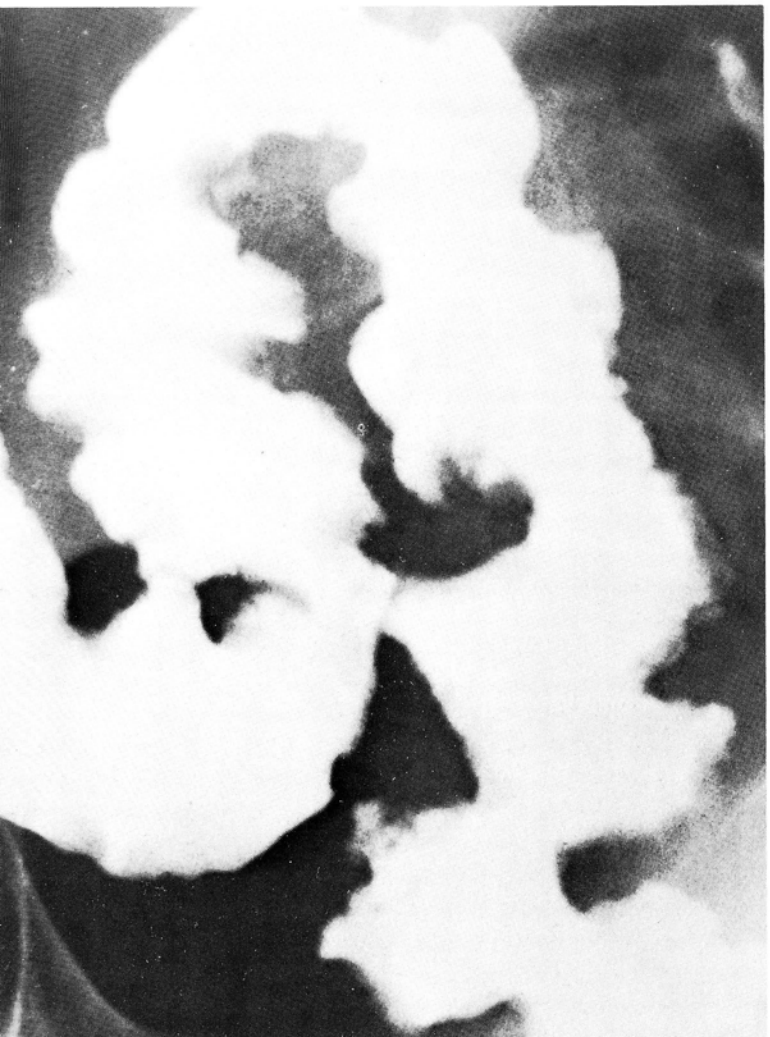
Operative findings: On December 6th, 1962, a combined anterior and posterior resection of the rectosigmoid was done. The mucosa presented numerous raised dark-red areas 1 to 5 cm in diameter which, on cut section, revealed mucus containing cavities about 3 mm in diameter; these raised areas covered over 75% of the sigmoid and rectal mucosa. There were numerous enlarged lymph nodes, 3 to 10 mm in diameter in the mesentery which, on cut section, appeared grayish-pink, homogeneous, and unremarkable.

Dr. Castleman: This case is one with which we had a great deal of difficulty; I really would like some help in interpreting it. In a preliminary review of the literature we have not been able to find a similar case. I believe we must have had four or five proctoscopic biopsies from this lesion and each time we described islands of mucus, but could not find sufficient changes in the epithelium to warrant a diagnosis of colloid carcinoma. The surgeons finally decided to resect the lesion because of the tremendous amount of protein that the patient was losing, similar clinically to some of the patients with a villous adenoma or Menetrière's disease of stomach. Ten days following removal of the rectum, the serum albumin which had repeatedly been around 1.5 gm% reached 3 gms.

Grossly, beginning about 8 cm above the anus, most of the segment showed mucosal elevations, not unlike what is seen in mucosal hypertrophy of the stomach. These elevated mucosal folds were smooth as was the intervening mucosa. There was no ulceration. When the wall was sectioned, it was apparent that the mucosal elevations were caused by submucosal mucus often in small cavities measuring up to 3 mm in diameter.

Many sections were made and they all showed a similar process; mucus filled cystic spaces usually just beneath the muscularis mucosa although some appear to be above or within it. It is a bit reminiscent of pneumatosis cystoides, except that there are no foreign body giant cells or air. In several fields, probably not present on all slides, the lining of these spaces close to the mucosa is epithelial and one can trace a connection to a mucosal gland. In fact I could find early changes of dilatation of glands by mucus within the mucosa itself. In most of these situations, there is a

Fig. 1.—Barium enema showing markedly irregular contour and loss of haustral pattern of the rectum and sigmoid.



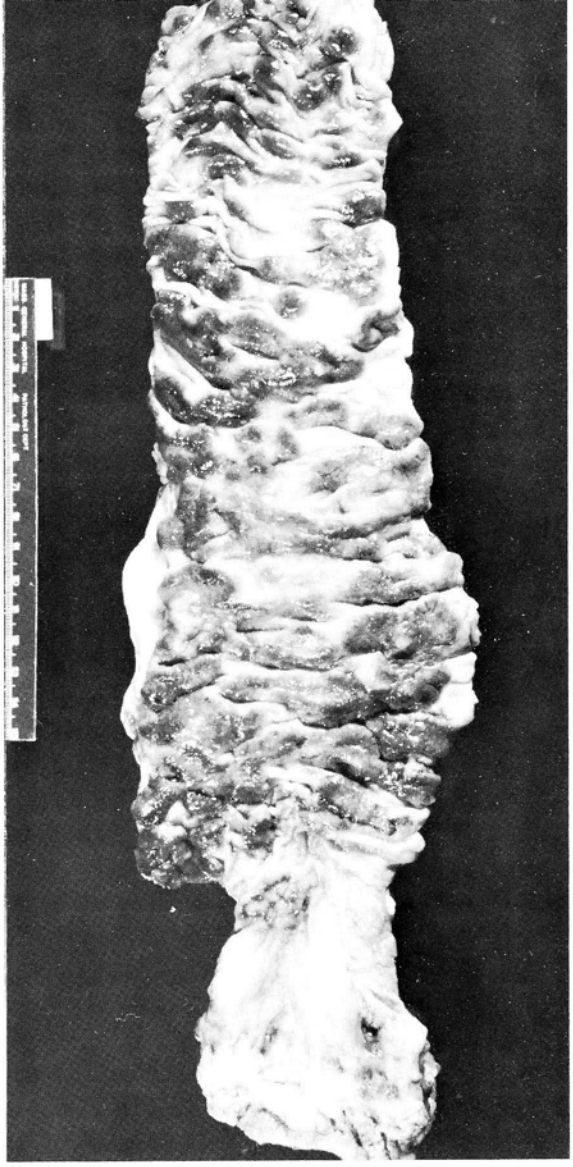


Fig. 2.—Resected rectum and anus. Note marked mucosal elevations throughout entire specimen and absence of ulceration.

purulent exudate in the gland which suggests that the etiology may have been an infection which pinched off the lumen of the gland allowing for stasis of mucus. This seems farfetched because such lesions are not seen with known bowel infections or ulcerative colitis. I believe, therefore, that this inflammatory change in glands is secondary. I am still at a loss as to the pathogenesis of this lesion. Could there have been some congenital defect in the wall of the glands at the base of the crypt that led to an outpouching and stasis of secretion? Could it be similar to juvenile polyps, with the lesions occurring intramurally? Is there something wrong with the secretion itself? My best diagnosis is mucocele of the sigmoid.

Dr. Castleman's diagnosis: MUCOCELE OF THE SIGMOID.

Histopathologic Diagnoses Submitted by Mail

Adenocarcinoma	56
Mucocele	35
Mucoid retention	19
Cystic lesion	8
Colitis cystica	5
Something fishy!	1
Others	41

Dr. Regato: Dr. A. O. Severance, of San Antonio, also made a diagnosis of mucocele. Dr. M. Berthrong, of Colorado Springs, preferred submucosal colonic cysts "of Castleman". Dr. J. B. Frerichs, of El Paso, offered mucoviscidosis

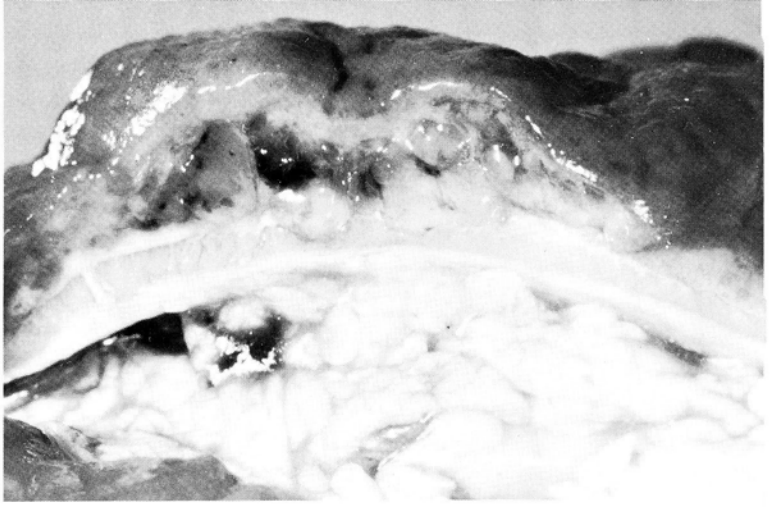


Fig. 3.—Cross section of bowel wall showing submucosa replaced by islands of mucoid material. Note intact muscularis.

or "Boston debility", also "of Castleman". Dr. V. M. Areán, of Gainesville, Florida, called this lesion a colitis cystica superficialis, and Dr. R. Lattes, of New York, colitis cystica profunda.

Subsequent findings: We have no details of follow-up to date; the patient has been lost to view.

Dr. Castleman: This patient is an itinerant worker who usually works in Florida. Whenever he gets sick he runs up to Boston; since he has not reappeared, that probably means he is well.

Dr. Spratt: I have had no experience at all with this type of lesion. F. P. Johnson, an embryologist, did some very interesting studies on human fetuses, reported in the Anatomical Records some thirty (sic) years ago. He showed that the lumen formation of the small intestine and the transverse colon was a fairly complete process, but that in the vicinity of the esophogastric junction, the second portion of the duodenum, the vermiform process, the cecum and the rectum, a process which he described as vacuolation was very frequent; these vacuoles persisted in the wall of the intestine, in these areas, up to the time of birth. I would just like to inquire whether you have ever seen any such cell rests, submucosally in these areas, on autopsies of children or at any other time?

Dr. Castleman: No, I do not know anything about that. I would think that they would not be lined with the intestinal epithelium, and produce mucus. Did any of those that he reported have any secretion in them?

Dr. Spratt: He had no mucin stain so if there was any of it in the cysts he would not have known its nature.

C. Masó M.D., Chicago, Illinois: We have seen two cases this last year, in our hospital, that show a very similar picture to the one shown here. Both cases have a previous history of surgical intervention. The first one was a polyp, possibly malignant; on re-excision, and under the polyp, we saw this cyst of the submucosa with a uniform lining and mucoid content. The second case had, originally, a colostomy for carcinoma of the colon and we also saw this lesion. The cysts were not as widespread as the ones you have shown here; we do not have any definite diagnosis; we wonder if there is a mechanical etiology for this phenomenon.

Dr. Castleman: I think that, on occasion, in some localized polyps, we do see sort of a down growth of the epithelial cells and a lot of mucous secretion such as you see in the juvenile polyps; here we have the entire area involved; I do not suppose this is exactly like your case except from an histologic point of view.

M. R. Abell, M.D., Ann Arbor, Michigan: We have seen one case like this; almost exactly the same, in a child;

Fig. 4. — Photomicrograph of histologic section submitted showing submucosal spaces filled with mucoid material. (H & E x 3.5)

we felt that it was developmental rather than acquired. Some of the cysts were ciliated in addition, and because we felt it was development in this age we used the fancy name of "cystic hamartoma of the rectum". I think there have been a couple of lesions of this nature in children reported in the literature.

Dr. Castleman: Over how long an area was this?

Dr. Abell: I cannot answer specifically but I know it was at least four or five cm in size.

M. Gravanis, M.D., San Antonio, Texas: There is a report by Goodall of a few cases of what they called "colitis cystica profunda". The name probably sounds a little bit funny; the explanation they give is that there was probably a small abscess, an inflammation, and that parts of the mucosa were pinched off with a tendency of the muscularis mucosa to cross behind the small abscess to produce this sort of cyst.

Victor M. Areán, M.D., Gainesville, Florida: This condition has been described many years ago. Winkel described it first and then Briquet, Cruveilhier and a number of others. I recently read a paper by Ceelen, written in 1883; he had a case similar to this in a patient who had a deficiency disease; apparently the condition is not uncommon in patients who had pellagra. Manson-Bahr has also described it in patients with bacillar dysentery and extreme malnutrition. The patient described by Goodall was found in a German prisoner of war camp, in Egypt, probably also undernourished; the patient in the present case is a migrant worker from Florida and we know how poor their nutrition is! My reason for calling it "superficialis" rather than "profunda" is that the cysts are located in the mucosa, above the muscularis mucosa, not in the submucosa; Ceelen makes this differentiation; I am not certain that this is a valid subdivision.

Leo Lowbeer, M.D., Tulsa, Oklahoma: We have had a case which belongs to this same group. This was a 50-year old man who developed pruritus of the rectum. The

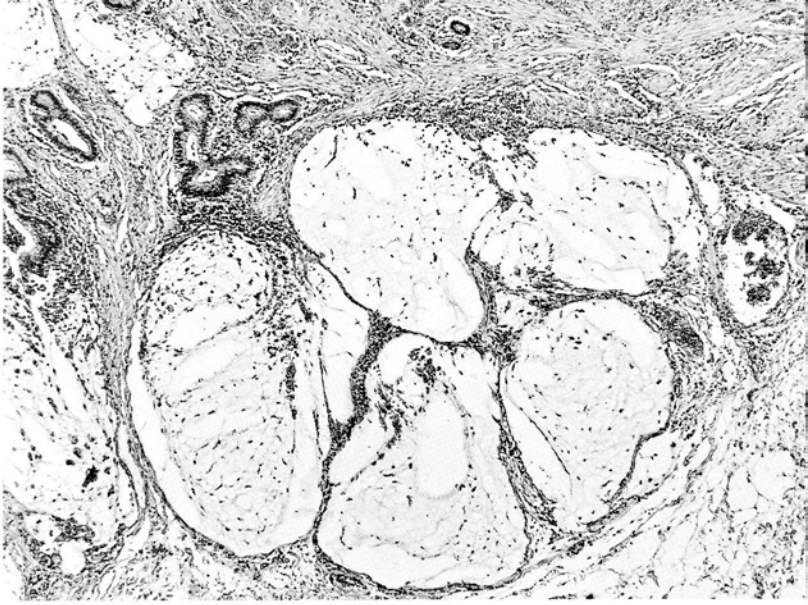


Fig. 5.—Higher magnification of spaces filled with mucoid material. Note absence of any epithelial cell lining. (H & E x 45)

mucosa was perfectly smooth but underneath the mucosa three very small nodules were palpable. When the proctoscopist made a biopsy he went through the normal mucosa and into three small cavities which were then submitted to us. The wall of these cavities consisted of granulation tissue but in the cavities there was mucus and in the mucus were a few rather innocent looking cells which produced mucin. This seemed very disturbing to us and we considered the possibility of a neoplasm originating from cell rests. Two years later there was a recurrence. The patient went to the Mayo Clinic and they did an extensive resection of the rectum and of the sacrum: at that time there was a signet-ring cell carcinoma which invaded the rectal vault; a year later he died.

References

Ceelen, W.: Uber die enterocolitis cystica. Med. Klin., **2**: 1126-1127, 1926.

Ceelen, W.: Uber darmveränderungen bei "Pellagra". Ziegler's Beitr. Path. Anat., **87**: 488-502, 1931.

Edwards, Monte: Multilocular retrorectal cystic disease—cyst-Hamartoma: Report of twelve cases. Dis. Colon Rectum, **4**: 103-110, 1961.

Goodall, H. B., and Sinclair, I. S. R.: Colitis cystica profunda. J. Path. Bact., **73**: 33-42, 1957.

Johnson, F. P.: The development of the mucous membrane of the oesophagus, stomach and small intestine in the human embryo. Amer. J. Anat., **10**: 521-561, 1910.

Johnson, F. P.: The development of the mucous membrane of the large intestine and vermiform process in the human embryo. Amer. J. Anat., **14**: 187-233, 1913.

Johnson, F. P.: The development of the rectum in the human embryo. Amer. J. Anat., **16**: 1-57, 1914.

Manson-Bahr, P. and Gregg, A. L.: The surgical treatment of chronic bacillary dysentery. Brit. J. Surg., **13**: 701-714, 1926.

Roy, A. D., and Ellis, H.: Potassium-secreting tumours of the large intestine. Lancet, **1**: 759-761, 1959.

Wolf, B. S. and Marshal, R. H.: Granulomatous colitis (Chron's disease of the colon). Amer. J. Roentgenol., **88**: 662-670, 1962.

14. Adenomatous Polyp of the Sigmoid

Contributed by

R. E. MEATHERINGHAM, M.D., J. W. MCMULLEN, M.D. and M. BERTHRONG, M.D.,

Colorado Springs, Colorado

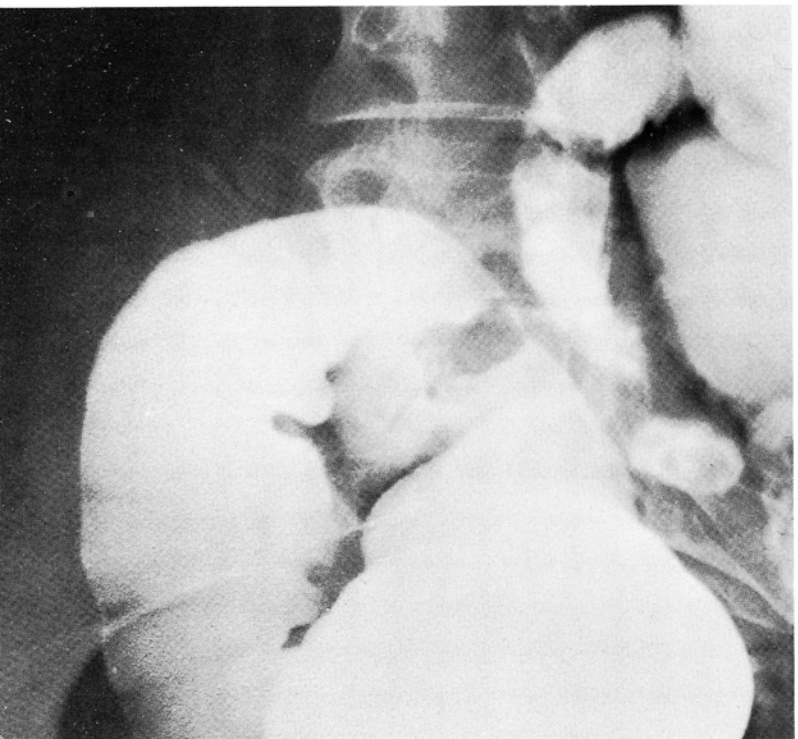
THE PATIENT was a 58-year old woman in January, 1961, when she complained of a recent episode of rectal bleeding. Proctoscopy revealed a sessile lesion 1.5 cm in diameter, 27 cm above the anus.

Dr. Welin: This roentgenogram reveals only the sigmoid and rectosigmoid. It is a usual barium enema study with the colon filled with the opaque material. I should have loved to have seen a double contrast study of the involved area; it would have given me much information concerning the morphologic characteristics of the lesion. However, I have but the one exposure; I am sure this will suffice. The lesion is a filling defect, an obvious polypoid process, and I consider it rather large. Its surface seems irregular; more like the irregular surface of a cauliflower than the smooth surface of an egg; this is important. I wish it were possible to see tangentially the base of this polyp, its point of attachment to the wall of the sigmoid. This would have been most helpful. All I can say is that there is a polypoid lesion in the rectosigmoid. This lesion measures 1.5 cm in diameter. Statistically, in polyps about 1 cm in diameter the occurrence of malignant changes in our series is 36%. As polyps increase in size, the proportion of malignant changes found is greater.

I have seen extrinsic lesions infiltrate the wall of the colon producing polypoid defects similar to this one. Indeed, any pelvic cancer can do this. Endometriosis can also produce polypoid intramural changes. I doubt whether these need be considered here. Particular mention must be made of villous adenomas. I classify villous adenomas radiologically as follows, according to their roentgen characteristics:

1. The small polypoid type; 2. The larger nodular polypoid type; 3. The classical flat papillary or wart-like type.

Fig. 1.—Barium enema revealing large filling defect of the recto-sigmoid.



Dr. Welin's impression: VILLOUS ADENOMA.

Roentgenologic Impressions Submitted by Mail

Adenomatous polyp	63
Polypoid carcinoma	18
Others	8

Dr. Regato: Dr. B. L. Pear, of Denver, Dr. R. Calderón, of Managua, and Dr. E. Salzman, of Denver, made a diagnosis of benign adenomatous polyp.

Operative findings: On January 18th, 1961, the patient was operated upon; a 15 cm segment of the sigmoid, containing the lesion, was removed. A sessile lesion 2.5 x 1.5 x 1 cm and a smaller one 7 x 5 x 3 mm were described.

Dr. Castleman: I suppose this slide was included in this conference merely to get a discussion on the adenomatous polyp versus the polypoid villous adenoma and the malignant potential of the adenomatous polyp. This is a perfectly innocuous polypoid lesion composed of glands that are lined with mucous secreting cells in places suggestive of villous adenoma, but I must admit that the evidence on my slide was insufficient to warrant that diagnosis; I leaned towards an adenomatous polyp. Most of these cells have elongated nuclei located at the base of the cell in an orderly arrangement with the cytoplasm filled with secretion. To be sure there are some glands in which the cells have piled up nuclei, a few of which are plump, hyperchromatic, and even in mitosis. These criteria do not warrant a diagnosis of malignancy or even a note by the pathologist that the cells are atypical. Please do not call such epithelial changes carcinoma in situ. Perhaps I do not need to say this to such a distinguished audience, but such diagnoses are still being made throughout the country. A very interesting and important sign of benignancy, I believe, is to find at the edge of the lesion, a normal gland that is partly being changed into the polyp. One does not usually see this in carcinoma; a gland is all normal or all cancer. Of course, a cancer can invade a normal gland but it usually is abrupt and not a gradual change such as is seen here.

Dr. Castleman's diagnosis: ADENOMATOUS POLYP.

Histopathologic Diagnoses Submitted by Mail

Adenomatous polyp and carcinoma	101
Adenomatous polyp	38
Adenocarcinoma	12
Villous adenoma	12
Papilloma	3
Worse by the minute!	1

Dr. Regato: Dr. J. Valdés, of Danville, Virginia, offered a diagnosis of polypoid adenocarcinoma. Dr. L. V. Ackerman, of St. Louis, designated it as a villo-glandular polyp and Dr. A. P. Stout, of New York, as an adenomatous polyp.

Subsequent history: The patient has had no further difficulties to date. She was recently examined by Dr. Meatheringham.

Dr. Spratt: From the surgical standpoint the indecision that affects us in the operating room is the indecision related to those tumors that are beyond the reach of endoscopic biopsy. From the growth rate studies that we just reported we showed that most of these benign adenomatous tumors just simply do not grow fast enough to exceed a

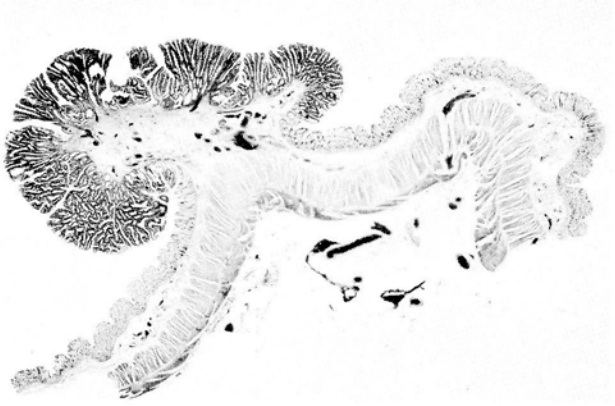


Fig. 2.—Photomicrograph of entire histological section submitted showing polypoid lesion with broad short stalk. Note both villous and adenomatous pattern of mucosa. (x 3.8)

centimeter in diameter even if the patient lives to be one hundred fifty years of age; a diameter of 1 cm is a significant clinical criterium and if they are larger than this they have a fairly active proliferative growth. They may be malignant or they may be a villous adenoma; in very few instances they may be fairly actively proliferating adenomatous polyps.

If the polyp is not sessile, does not have prevailing signs of indentation, then we have a presumptive diagnosis of benignancy; but to verify that we palpate the tumor on the table and palpate the base of it; if there is no element of infiltration and no adjacent pericolic lymph nodes, the tumor is almost certainly benign. On the long haul we might run a margin of error of one to two percent. I do know that most of the frozen section series that have been reported run a false-negative diagnostic error of about seven percent and the false-positive is of the same magnitude; I do not think that frozen section diagnoses should influence the treatment of these tumors. If, on the other hand, the tumor is larger than 1 cm, if there are palpable lymph nodes that feel metastatic, then we perform an operation for cancer without prior biopsy.

Large benign tumors in which the pathologist does not see invasion, large villous adenomas, or large polypoid carcinomas are all implantable. We have several well documented cases of completely benign villous adenomas which have been implanted in abdominal wounds and in posterior proctotomy incisions. Hence, these tumors have to be treated with respect at the time of surgical removal. If they have a small base and it is resolved to do a colotomy and polypectomy, the segment needs to be exteriorized and irrigated before the bowel is opened and the tumor needs to be removed very carefully with instruments that are not used subsequently during the course of the dissection. If, on the other hand, it is a polypoid tumor with a broad base, then probably a simple segmental resection would be the most simple method of management.

Philip J. Hodes, M.D., Philadelphia, Pennsylvania: In my own Department we do not get anywhere near the quality of Dr. Welin's double contrast enemas and there are few places in the world that do; but I think it is extremely important to know that unless we are given a clean bowel to work with we do not have a chance. When Dr. Welin visited us I asked him to do for us the kind of enema he does; he tried it on our patients and they did not take the distress. The incidence of polyps that he discovers is close to 12 per cent, but this is not an easy thing to do. If you give us a clean bowel to work with we will not do what Dr. Welin does, few people can do it but we will try to approach half of what he does.

Dr. Spratt: One reason for Dr. Welin's success is that the intestinal preparations are all done in the Department of Radiology as the radiologists want them done, by some very accomplished and well trained technicians.

H. Braunstein, M.D., Cincinnati, Ohio: Dr. Castleman demonstrated virtually every type of polypoid lesion except

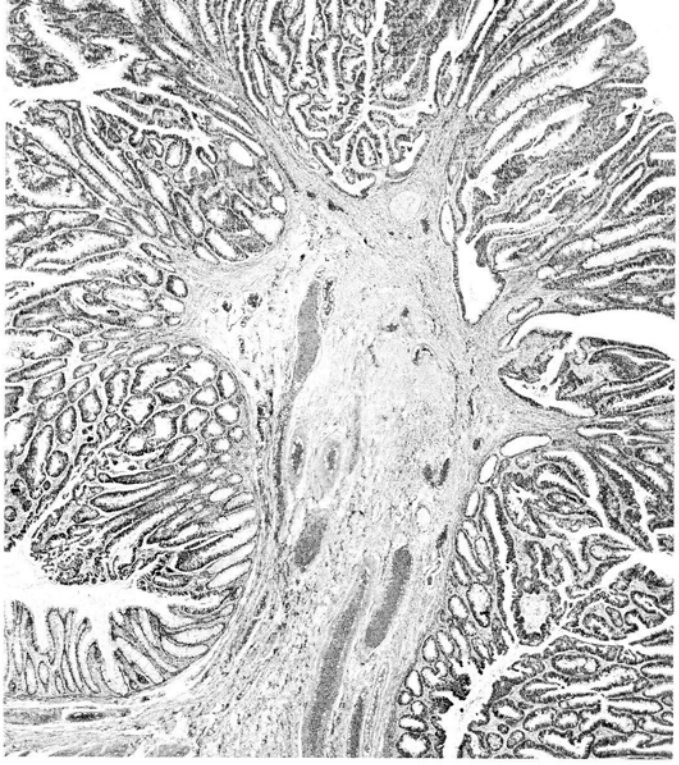


Fig. 3.—A field showing more of the adenomatous pattern. Note the secretory activity of many of the glands. (x 16)

the polyp with a small cancer in the tip of it. Does he deny the existence of this lesion?

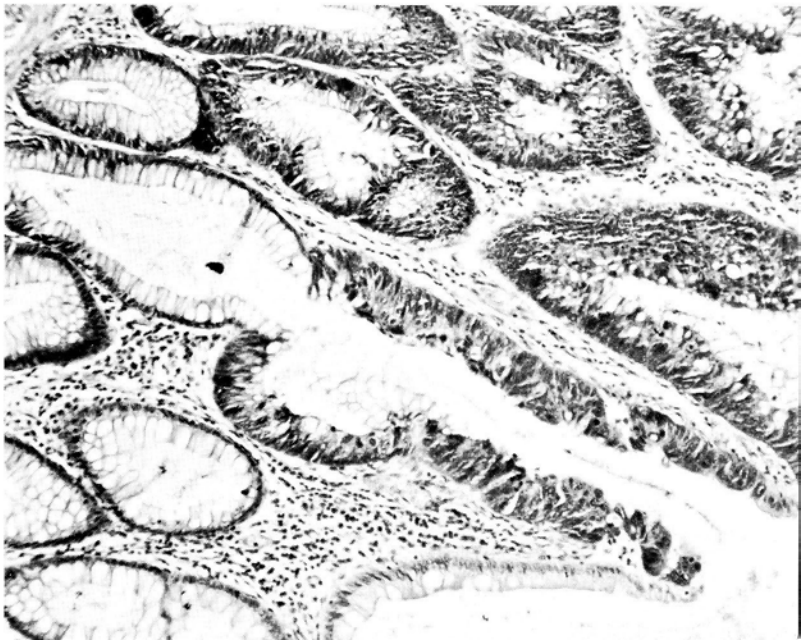
Dr. Castleman: That is right, I do. I have seen perhaps three or four polypoid lesions with very short stalks or almost no stalks, with areas in it that look like benign adenomatous polyp and a frank cancer. I saw one the other day that had a stalk 2 or 3 mm in length that had a metastasis to a regional lymph node but this was a frank carcinoma together with a certain amount of polyp; it certainly occurs but is very, very rare and when it occurs it usually does not occur in the tip; it is in another area pretty deep in the polyp.

Emanuel Salzman, M.D., Denver, Colorado: I should like to ask Dr. Welin for a more detailed description of what he means by the base of a polyp; it seems to me that the base itself, being solid, would not be visible on the examination.

Dr. Welin: On films taken in the appropriate direction the dimpling indentation is at the base.

Merle Haber, M.D., Chicago, Illinois: Dr. Castleman and others here today have used the following terms inter-

Fig. 4.—Junction of normal epithelium with polypoid area. Note gradual change in one gland of normally secretory cells to cells without secretion and hyperchromatic nuclei.



changably and I would like to know the difference between the three: adenomatous polyp, villous papilloma and villous adenoma.

Dr. Castleman: Well, the villous adenoma and the papillary adenoma are identical; this is just one lesion. The adenomatous polyp is a separate lesion. About 25 per cent of the villous adenomas may become malignant or show foci of malignancy, usually with a lot of residual villous adenoma. The adenomatous polyp very rarely shows foci of carcinoma. There is no reason why it should not do it, but from a practical point of view we just do not see carcinoma in an adenomatous polyp. In our experience, we have not encountered carcinoma developing in the polypoid lesion of congential polyposis. We have now studied eighteen or nineteen cases and, to be sure, there is in these cases a frank carcinoma but it develops in the epithelium away from the polyp; it is a frank ulcerating carcinoma and not a polypoid carcinoma in every one of the cases that we have had. It may be that the same stimulus, or the same congenital inherent factor, that produces the polyposis is also capable of producing carcinoma but we have not seen carcinoma in every polypoid lesion.

Merle Haber, M.D., Chicago, Illinois: Dr. Morson in London believes that there is a combination of the adenomatous polyp and the villous papilloma. Do you believe in that and, if so, do these become malignant?

Dr. Castleman: I do not think I can answer that. I know that Dr. Ackerman, in fact, called this a villous polyp; in other words he says that there are combinations of the two. I think that if we have enough material we can probably decide whether it is one or the other.

References

Castleman, Benjamin and Krickstein, H. I.: Do adenomatous polyps of the colon become malignant? New Engl. J. Med., **267**: 469-475, 1962.

Castleman, B. and Krickstein, H. I.: Polyps of the colon. Surg. Gynec. & Obstet., **116**: 752-753, 1963.

Cole, J. W. and McKalen, A.: Studies on the morphogenesis of adenomatous polyps in the human colon. Cancer, **16**: 998-1002, 1963.

Morson, Basil C.: Some peculiarities in the histology of intestinal polyps. Dis. Colon Rectum, **5**: 337-344, 1962.

Morson, Basil C.: Precancerous lesions of the colon and rectum. Classification and controversial issues. JAMA, **179**: 316-321, 1962.

15. *Extensive Cavernous Hemangioma of the Colon*

Contributed by M. R. ABELL, M.D., Ann Arbor, Michigan

THE PATIENT was a 26-year old man in September, 1962, when he complained of intermittent rectal bleeding and discharge; there were similar episodes before the age of seven and at age sixteen with concurrent anemia. On examination a questionable boggy mass could be felt behind the rectum.

Dr. Welin: The rectum is narrow and tapered; there is no evidence of an "overhanging" tumor shelf. The questionable boggy mass felt behind the rectum must be related to this rectal lesion. A second abnormality lies in the sigmoid high above the rectal lesion. The defects are typically polypoid: round, localized, radiolucent shadows; I can see no pedicles. The terminal ileum seems also to be involved and is slightly narrowed at the ileo-cecal junction with some nodularity and irregularity of its mucosa. The cecum is contracted. The ascending colon is abnormal in contour with irregular margins and loss of haustrations. There may be some polypoid or pseudopolypoid lesions distributed throughout the ascending colon.

I can think of only a few diseases that produce such polypoid and pseudopolypoid defects distributed intermittently throughout the colon. These would be primarily inflammatory. I must re-emphasize the segmental involvement in this patient. Areas of mucosal change with polyps or pseudopolyps are intermingled with areas of normal mucous membrane. We have identified changes in the right side of the colon, the rectosigmoid and rectum with no abnormalities seen between these involved segments. Your attention has also been called to some minor changes of similar nature in the terminal ileum.

You will also note I have used the term "polypoid" and "pseudopolypoid" changes for "polyps" and "pseudopolyps" without defining their roentgen manifestations. This has been deliberate for roentgenologically I cannot differentiate the two without reference to the complete clinical picture. If I know the patient has ulcerative colitis, diffuse or segmental, then "pseudopolyp" is the term I use. If, however, polyps appear on an otherwise normal soil I use the term "polyp". I believe this patient has pseudopolyps because I am sure he has associated inflammatory colonic disease invading several separate segments of his large bowel, so-called chronic granulomatous colitis. If the rectal lesion occurred alone I should have worried about carcinoma or lymphopathia venerea. Either one could have been easily diagnosed clinically. However, the rectal lesion is but one manifestation of this patient's colonic difficulty; therefore, I am excluding the former. In contrast, ulcerative colitis shows irritability, spasm and obliteration of the normal haustral pattern throughout the entire colon, with its maximum intensity in the distal colon. Tiny serrations may be seen along the contour of the colon which represent ulcerations. In addition, eccentric localized intramural thickening and flattening of haustra are noted. Skip areas, with intervening normal bowel, is rare in classical ulcerative colitis. The inflammatory polyps that appear in ulcerative colitis usually are smaller than in the chronic granulomatous colitis. Tuberculosis must always be considered in any granulomatous process as must also lymphosarcoma.

Dr. Welin's impression: Benign colonic disease involving multiple segments: CHRONIC GRANULOMATOUS COLITIS.

Roentgenologic Impressions Submitted by Mail

Familial polyposis	44
Hemangiomata	16
Malignant tumors	8
Others	15

Dr. Regato: Dr. B. Felson, of Cincinnati, made a diagnosis of hemangioma; Dr. N. Glazer, of Akron, and Dr. J. Barber, of Cheyenne, preferred polyposis.

Operative findings: On October 3rd, 1962, the patient was operated upon: the terminal ileum, the cecum, ascending colon, part of the transverse colon, and nine inches of

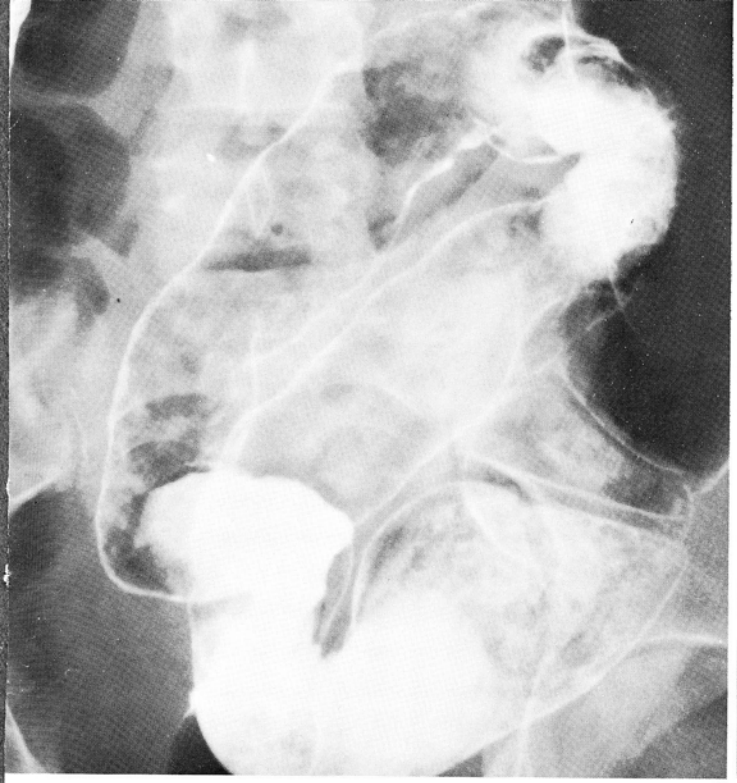


Fig. 1.—Double contrast study showing extensive irregularities of the wall of the recto-sigmoid.

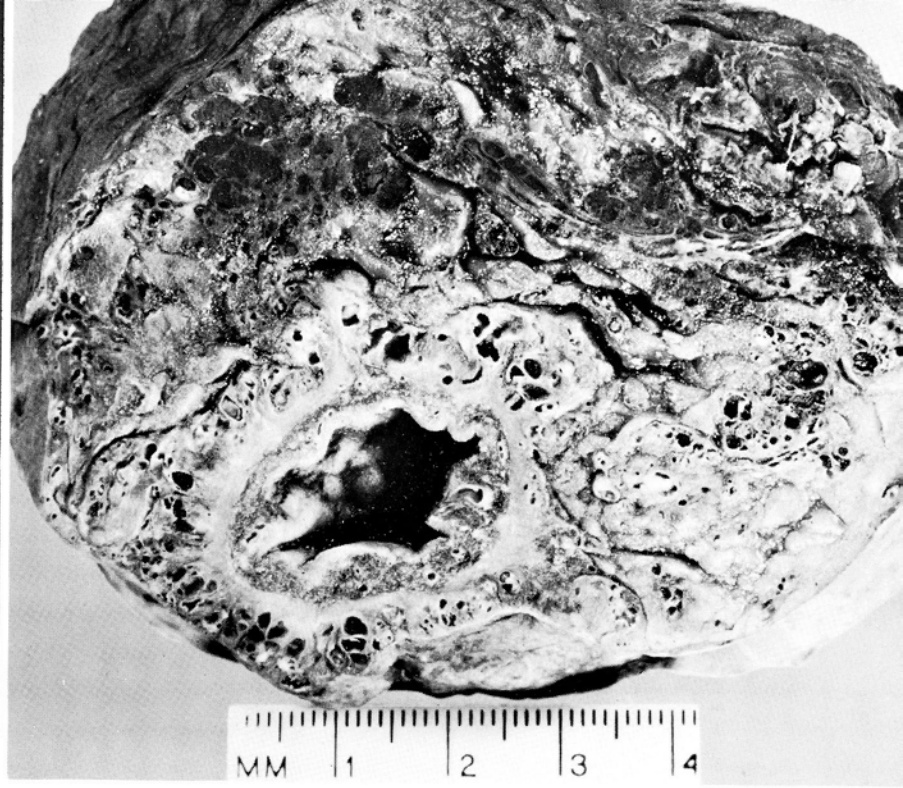


Fig. 2.—Gross appearance of the surgical specimen.

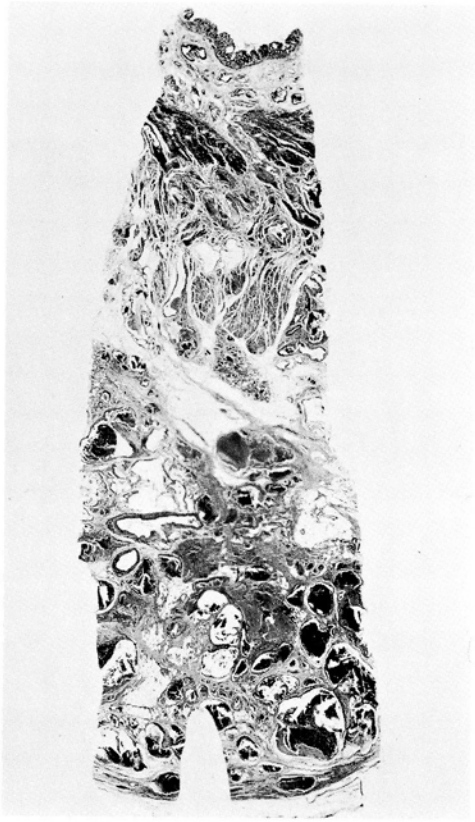
rectosigmoid were resected with construction of an ileo-transverse colostomy and closure of the distal rectum. The remaining rectum was later removed on October 8th, 1962.

Dr. Castleman: At low magnification one sees an obvious subserosal extremely vascular mass and when looked at more closely one can see that the lesion has not extended to the serosa but is within the confines of the muscularis, there being muscle fibers and serosa on its outer surface. Inwardly, it permeates the entire muscle layers into the submucosa, even through the muscularis mucosa, and possibly there are a few extra vessels in the mucosa.

The presence of blood in the vascular spaces and the finding of occasional thrombi make this an hemangioma rather than a lymphangioma. Many of the vessels are thin walled with merely a thin connection tissue wall while others are thick walled containing muscle in addition to connective tissue. The presence of large amounts of fat brings up the question as to whether the fat cells are part of the tumor or whether they are merely incorporated into the lesion from serosal fat. Since the serosa appears to be intact, I believe this fat is part of the tumor which might be called a lipoangioma or perhaps more correctly a hamartoma. In any event this lesion is congenital in origin, as are probably most angiomas.

If one wishes to go further with respect to classification and incidence in the colon, there is an excellent review of this subject by Gentry, Dockerty and Clagett from the Mayo Clinic in 1949. Table I, from their paper shows an acceptable classification and the case in question would fit in with cavernous hemangioma, diffuse expansive, single contiguous and, if there are lesions higher in the bowel, multiple, non-contiguous. In their review they found great variation in size and shape, many involving as much as 30 cm of the gastro-intestinal tract as one contiguous segment. There were twenty cases involving the colon, 75% of them with bleeding and 25% with obstruction.

Fig. 3.—Photomicrograph of entire histological section submitted showing blood-filled spaces predominantly in outer layer of muscularis. (H & E x 3.7)



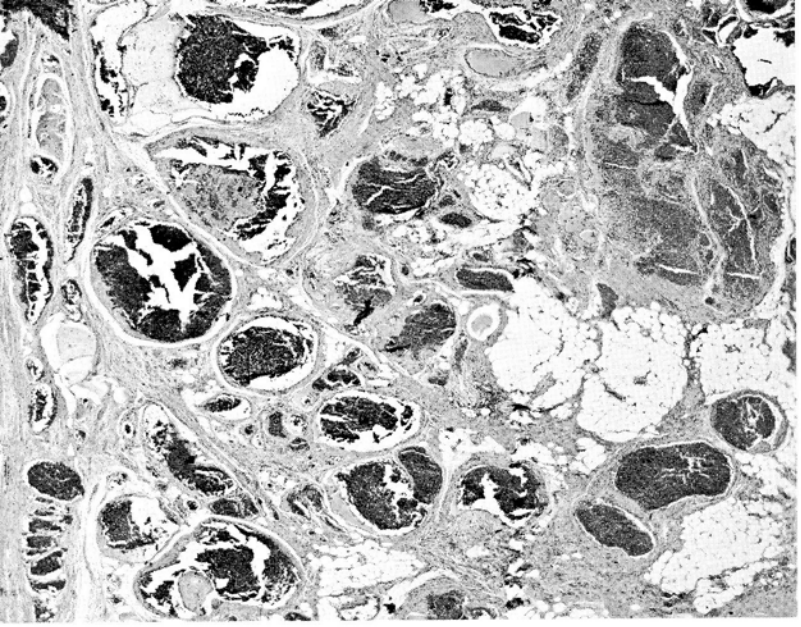


Fig. 4.—Outer portion of lesion showing vessels filled with blood and an occasional thrombus. Note islands of fat cells and a thin band of muscularis just inside the serosa. (H & E x 16)

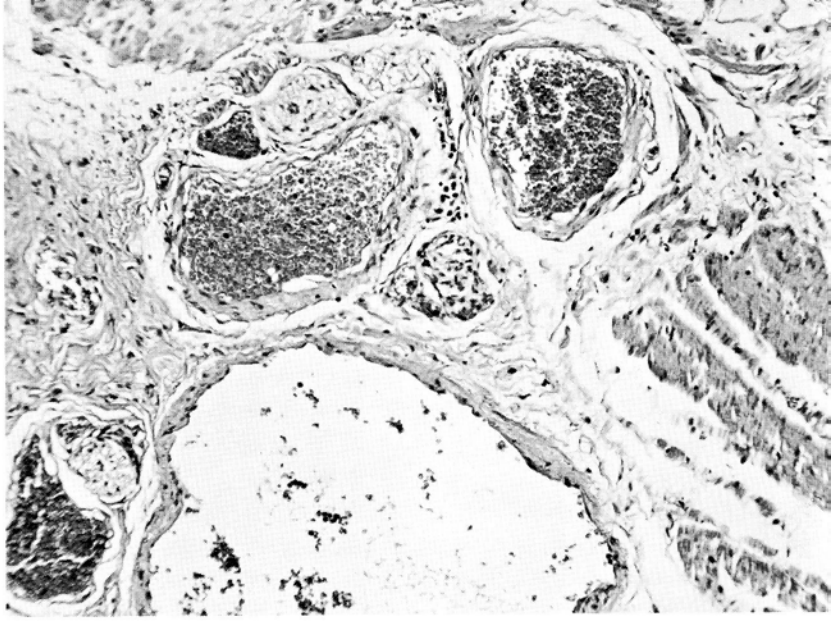


Fig. 5.—Higher magnification of vessels within muscularis. (H & E x 120)

Dr. Castleman's diagnosis: CAVERNOUS HEMANGIOMA.

Histopathologic Diagnoses Submitted by Mail

Hemangioma	138
Vascular malformation	15
Benign mesenchymoma	1

Dr. Regato: There were no differences of opinion among the experts in reference to this case.

Subsequent history: On April 25th, 1963, the patient had returned to work and was doing well.

Dr. Spratt: Fortunately, hemangiomas of the rectum are sometimes resectable but sometimes they are not.

References

Gentry, R. W., Dockerty, M. B., and Clagett, O. T.: Vascular malformations and vascular tumors of gastro-intestinal tract. Int. Abstr. Surg., **88**: 281-323, 1949.