

Richard B. Freeman



Ileitis

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COURTESY OF CITIZENS AID SOCIETY

I. ABSTRACTREGIONAL ILEITIS

E. J. Semansky

Regional ileitis or terminal ileitis is a disease of the terminal ileum affecting mainly young adults, characterized by subacute or chronic necrotizing and cicatrizing inflammation. The ulceration of the mucosa is accompanied by a proportionate connective tissue reaction of the remaining walls of the involved intestine. This frequently leads to stenosis of the lumen of the intestine associated with the formation of multiple fistulae.

The disease, clinically, is featured by symptoms that resemble those of ulcerative colitis; namely - fever, diarrhea and emaciation, leading eventually to an obstruction of the small intestine and the constant occurrence of a mass in the right iliac fossa. According to some authors, the terminal ileum is involved first in this chronic disease. The process extends into the cecum and colon during the acute phase of the disease, but this, according to some authors, resolves itself so that subsequently the terminal ileum alone is involved. The process begins abruptly and involves the ileocecal valve in its maximal intensity, tapering off gradually as it ascends the ileum orally for from 8 to 12 inches (18 to 30 cm.).

The ileal fistulae lead usually to segments of the colon forming small tracts communicating with the lumen of the large intestine, occasionally with the abdominal wall with the formation of one or more fistulous communications. The etiology is unknown and follows none of the categories of recognized granulomatous or suppurative inflammatory group of diseases affecting the small intestine. The course is relatively benign. The patients that survived operation are now alive and well. Such in essence is the definition of the disease, originally described by Crohn in 1932.

The relationship of regional ileitis to other benign intestinal processes:

In the medical literature, a heterogeneous group of benign intestinal lesions have now and then been described under the caption of "benign granulomata." This latter term covers a multiplicity of conditions in which both the large and small intestine may be involved. It also includes all chronic inflammatory lesions of the intestine whose etiology is either unknown or attributable to an unusual physical agent. It represents a melting pot in which are thrown all those benign inflammatory intestinal tumors which are neither neoplastic nor due to a specific bacterial agent. Within this group, one finds descriptions of foreign body tumors, chronic perforating lesions with gross inflammatory reactions, traumas of the mesentery with intestinal reaction, Hodgkin's granuloma, late productive reactions to released strangulated herniae of the intestinal wall and numerous other conditions. The very confusion of these multiple lesions defies any classification. The entire literature was reviewed in 1920 by Tretze ("Benign Granulomata") and nowhere in his cyclopedic article was there a description which resembles regional ileitis.

Incidence

Attention was first called to this disease by Crohn in 1932 when he presented 13 such cases. Since that time, other authors have presented instances of this condition: Mayo Clinic, 18 cases; pathological department of the University of Minnesota, 2 cases; from the entire literature, some 50 other cases. In our own hospital records, there was 1 case (?).

Pathology

The most marked findings in the chronic stage of this disease are situated at the ileocecal valve which becomes transformed into a rigid diaphragm with a small irregular opening.

Normal intestinal folds are distorted and broken-up by the destructive ulcerative process and invaded and blunted by the edema present, giving a bulbous structure to the mucosal aspect of the intestine or frequently a cobblestone appearance of the surface of the mucosa may result. Linear ulcerations of the mucosa are always present. The submucosa and muscular layers are the seat of marked inflammatory, hyperplastic and exudative changes. The wall of the bowel as the result of this becomes markedly thickened reading frequently 2 or 3 times the normal density. The lumen of the bowel is greatly encroached upon, becomes irregularly distorted and at times is only large enough to admit a medium sized probe. The intestine proximal to this is invariably greatly dilated and may show superficial irregularly placed tension ulcers. The exudative reaction is replaced by a fibrostenotic process, mucosa appears atrophic, and there are occasional superficial erosions and islands or papillary or polypoid hyperplasia. The serosa loses its glossy appearance and frequently exhibits tubercle-like structures on its surface. The mesentery of the affected segment is greatly thickened and fibrotic as is the subserosal intestinal fat.

The marked feature is tendency toward perforation. Free perforation into the peritoneal cavity has never been reported because perforations occur slowly and permit walling-off by adhesions to a neighboring viscus, to the parietal peritoneum or omentum. There is a marked tendency to formation of internal fistulae. Perforations occur in all portions of the colon except the rectum. Walled-off abscesses resulting from slow perforation are as a rule considered appendiceal in origin. When these are drained, they give rise to a chronic intractable fistula which deny attempts at simple closure because of the persistence of the underlying inflammatory disease of the bowel. Indirect perforation of the cecum may result from perforation of the ileum into the terminal mesentery with secondary cecal termination of the fistulous tract. Fibrotic and inflammatory changes which result from the proximity of the ileal focus

to the cecum are responsible for the roentgenological changes in the contour of the ascending colon and cecum. This may easily be confounded with the defect of hyperplastic tuberculosis.

Microscopic sections show various degrees of subacute and chronic inflammation, variations in predominance of polymorphonuclear leucocytes, plasma cells and fibroblastic elements. In the first stage, the lesion is a diffuse one involving mainly the mucosa and submucosa with an inflammatory serosal reaction. Mucous membrane shows areas of marked destruction and, at times, the glandular structure is almost completely absent leaving an atrophic layer of epithelium, the result of regenerative processes. The later stages show the inflammatory reaction to be more focal in character and areas of inflammation in the serosa give the appearance of tubercles on gross examination. Giant cells are sometimes found. It is believed by most writers that this is an accidental finding. For this reason, some authors have classified these lesions as representative of tuberculosis. Guinea pig, rabbit and chicken inoculations of material from mesenteric glands and from intestinal wall were negative in all of 13 cases.

Relationship of appendicitis to ileitis

The relationship of appendicitis in previous operations and the development of this disease is of interest. Half of the 13 original cases, described by Crohn, were subjected to appendectomy. In the Mayo Clinic series, there were 18 cases, 10 had had a previous appendectomy. In one-half the cases, abnormalities of the terminal ileum were noted at the time of operation. In cases where no previous appendectomy was done, the mucosa of the appendix was entirely normal and was not involved. The change in the outer coats of the appendix due to the presence of adjacent inflammatory disease was a common finding.

Clinical features

Etiologically, this disease is found mostly in young adults. In the group

presented by Crohn, 2 of the 13 cases were over 40 years of age. In the Mayo Clinic series, the age ranged from 9 to 62 years. In Crohn's series, the youngest was 17 and the oldest 52 years of age. Males predominate over females in a proportion of nearly 2 : 1. There are no known predisposing factors. The patients with regional ileitis present in general a fairly constant clinical course. They give a history of having been ill for several months to two years and even longer. The Mayo Clinic group presented complaints up to 10 years. During this time, the outstanding complaints were usually fever, diarrhea, continuous weight loss and progressive anemia. The fever was rarely high, periods of apyrexia being interspaced with shorter and irregular cycles of moderate temperature; occasionally, though rarely, the temperature rises to 103°F. In some cases, the complete course is without any fever.

Diarrhea is the outstanding symptom though the number of defecations and the intensity of the actions never approach those of true colitis. The average patient had from 2 to 4 loose stools, while some had solid daily defecations sometimes with blood and always with mucus. The stools were rarely mushy or liquid and contained free pus, lumps of mucus and streaks of blood but tenesmus was always lacking. There are no perianal fistulae, condylomata or perirectal abscesses that characterize complications of true colitis. With this disease, the rectum is never involved. At times when the stenotic features predominate as in the later course of the disease, constipation rather than diarrhea predominates. Vomiting and distention characterize the stenotic type of cases. These are never marked or persistent but usually are accompanied by abdominal pain and visible peristalsis.

Pain is distributed over the lower abdomen, being a common feature of the disease. It is dull, cramp-like and relieved by defecation. It is usually localized to the right lower quadrant and occasionally spreads across the abdomen to the whole lower abdominal region. Occasionally and not infrequently, when the sigmoid becomes adherent to the

necrotizing, hyperplastic ileum (not uncommon), fistulous formation occurs between these two viscera. In these cases, pain is localized over the left lower abdomen. The general symptoms are those of weakness, rapid and progressive weight loss, and anemia which ordinarily is moderate but which may progress to a severe degree. In milder cases, there may be little or no emaciation and no anemia. The stools contain occult blood constantly. Appetite is poor, particularly during the febrile period. Moderate leucocytosis characterizes the cases. The white blood count is usually normal. Even in the stenotic cases, the changes in blood chemistry that accompany obstruction of the alimentary canal are rarely seen.

Physical findings

Certain physical findings characterize this disease, the constant ones being:

(1) Mass in right iliac fossa

A moderate sized mass is usually found in the right lower quadrant and lower mid-abdomen. The mass is usually the size of a small orange, tender, fairly regular and only slightly movable. When the mass is adherent to the sigmoid, it may lie more to the left. When the cecum, ascending colon or hepatic flexure constitute the distal end of the fistulous tract, the mass may lie more to the right but higher in the abdomen. When the fistulous tract burrows into and through the mesentery, the necrotic process may cause a diffuse mesenteric suppuration which participates in the formation of the mass. The tumor is usually palpable by rectum but only felt very high with the examining finger.

(2) Evidence of fistulous formation

The fistulous formation is a constant feature of the disease process. The common site is the anterior abdominal wall. Next is adherence to the sigmoid, followed by cecum and ascending colon, and occasionally the hepatic flexure of the colon. The fistulae are regarded

as cecal in point of origin. They are always, however, communications between the necrotic ileum and anterior abdominal wall.

(3) Emaciation and anemia

There are evidences of emaciation and anemia.

(4) Scar of previous appendectomy

Fifty per cent of the cases present a history of previously having been subjected to an appendectomy. At the time of appendectomy, tumor-like massive inflammatory changes are noted although nothing but appendectomy is performed. The appendix in these cases is usually reported as chronically inflamed.

(5) Evidences of intestinal obstruction

In those cases in which the process has progressed to the stenotic stage, the physical findings are those of intestinal obstruction. Distention of the intestine is visible through the emaciated abdominal wall and is observed in flat films of the abdomen. Visible peristalsis is not uncommon, accompanied by borborygmus. Passage of gas gives relief. Visible loops of distended intestine are usually localized to the lower mid-abdomen. General distention and ballooning of the entire abdomen is extremely unusual.

Clinical course of the disease

There are 4 types under which most of the cases can be grouped:

- (1) Acute intra-abdominal disease with peritoneal irritation.
- (2) Symptoms of ulcerative enteritis.
- (3) Symptoms of chronic obstruction of the small intestine.
- (4) Persistent and intractable fistulae in the right lower quadrant following previous drainage for ulcer or abdominal wall abscess.

1. Acute intra-abdominal peritoneal irritation: It is impossible to distinguish these cases

preoperatively from those of acute appendicitis. There is generalized colic, pain and tenderness in the right lower quadrant, and elevation of temperature to 101 or 102°F. The white blood count is elevated. The development in symptoms is somewhat slower than in appendicitis. The presence of a mass without actual abscess formation is a fairly constant feature. The picture encountered at operation is that of a greatly thickened, red or blotchy terminal ileum with marked edema of the surrounding tissue and of the ileal wall. There is usually clear fluid in the abdomen. The mesentery is thickened, edematous and contains numerous large glands. The appendix may show evidence of peri-appendicitis without mucosal involvement. In some cases, an abscess is encountered and the pus is usually thick but not as foul-smelling as an abscess of appendiceal origin. The future course cannot be predicted. Some seem to undergo resolution, others pass into one of the more chronic phases of the disease. The cases which are drained develop an intractable fistula.

2. Symptoms of ulcerative enteritis: These patients complain of colicky, peri-umbilical and lower abdominal pain. There is a tendency toward looseness of the bowel (3 to 5 times a day). The stool is usually liquid, containing pus, mucus, occult and visible blood. There is no gross melena. Constant fever is present but the temperature is rarely above 100°F. Marked secondary anemia may develop, reaching as low as 35% hemoglobin. Considerable loss of weight and strength occur. Disturbances of general nutrition are slight. The course may continue for as long as a year until exhaustion sets in. The cases pass gradually into the stenotic phase of the disease.

3. Stenotic phase: This is the type most commonly encountered. The symptoms of this stage are those of a subacute or small bowel obstruction of varying severity. The obstruction as in most obturating lesions of the small bowel is not complete. Cramps, borboryg-

mi, occasional attacks of nausea and constipation are present. Visible peristalsis is common. Palpable mass is practically always present in the right lower quadrant. In this phase of the disease, the fistulous communication of the colon and sigmoid may lead to signs and symptoms of colitis and mask the true nature of the disease. Occasionally, the stenotic phase occurred as a primary manifestation of the disease and the symptoms may have been present for many years.

4. Persistent fistulae: These frequently follow drainage for supposedly an appendiceal abscess. At subsequent operation, the appendix is found normal. Removal of tissue from the fistulous tract fails to reveal any evidence of tuberculosis or other specific disease. The tendency of fecal fistulae of simple appendiceal origin is to close spontaneously or to be susceptible of closure by excision of the tract and inversion of the stump. Fistulae which are supposedly appendiceal in origin but which have ileal openings and which have resisted simple surgical closure are, in the absence of tuberculosis or actinomycosis, to be considered as cases of regional ileitis. The fistulae may develop several months after the original drainage operation, meanwhile having remained healed. An abscess may then develop in the wound. When this abscess is investigated or explored, the communication with the intestine is established.

Roentgenographic observations

Since the disease simulates the clinical characteristics of ulcerative colitis, barium enema is first attempted. The results are negative since the colon is uniformly free from changes. The barium meal shows definite positive findings. This consists of distended loops of terminal ileum in which a fluid level is discernible and there is definite delay in the motility of the meal through the distal end of the small intestine.

In 4, 6 and 9 hour observations, this delayed motility is usually present. In

the late or stenotic stages, the delay is striking. The milder degrees of stenosis may easily be overlooked. The most constant findings are mural thickening with consequent narrowing of the lumen, stiffening and shortening of the involved portion and mucosal destruction associated with a hypermotility. When the ascending colon is the seat of a fistulous communication with the lumen, one may find some stricture deformity of the ascending colon or hepatic flexure with delayed motility at this point. When the sigmoid is involved in the fistulous tract, a true narrowing and delay at this flexure may simulate carcinoma.

Differential diagnosis of regional ileitis

Nonspecific ulcerative colitis.

Sigmoidoscopic and barium enema suffice for recognition of colitis in the largest percentage of cases but there are types of colitis which involve only localized segments of the colon and in which the sigmoid and rectum are free from pathologic changes. While these instances are few and uncommon, they lead to confusion. They may be recognized by the deformity and spasm of the cecum and ascending colon when the latter areas are the seat of segmental colitis. Only in severe cases of colitis is the terminal ileum involved and then only for a few inches. The diagnosis is purely roentgenographic, the clinical differentiation is impossible. Colitis does not cause fistulae except about the anus and rectum, and a mass is rarely palpable. Ileocecal tuberculosis as a primary focus should be easy to differentiate from regional ileitis. This is a rare disease. Lymphosarcoma, intestinal mesenteric tuberculosis or Hodgkin's disease simulate regional ileitis in many of its features. The exact differentiation is possible only at the operating table or by examination of pathologic specimens. Sarcoma of the intestine is usually multiple causing dilatation at various levels and involves the jejunum as well as the ileum. Actinomycosis of the ileocecal region with fistulous formation to the anterior abdominal wall must always be differ-

entiated by finding the granules in pus or tissue. From carcinoma of the terminal ileum or ileocecal valve, the differentiation cannot be made with certainty. Biopsy at time of operation is of great value.

Treatment

Surgical treatment consists essentially of relief of obstruction by either enterostomy or excision. Since some cases are relieved by simple surgical procedures supported by medical measures, the entire emphasis should not be put on pure surgical management. Medical treatment consists of measures to combat anemia, infection, weakness and weight loss. Procrastination with treatments by irrigation is of no value since such fluids cannot reach the involved area. The generally accepted approach to a complete cure is surgical resection of the diseased segment of bowel and ileocecal valve with its contiguous cecum. The restitution to a complete health in all cases in which resection or a short-circuiting operation was carried out has resulted in cure in all patients who have survived the operation. Instances have been reported of recurrences following short-circuiting operations because the process subsequently extended to and involved the site of the anastomosis so that the procedure was not carried out sufficiently oral to the lesion. The procedure advocated by some surgeons consists of dividing the ileum 3 feet (91 cms.) from the ileocecal junction, closing both ends and implanting the proximal terminus of the ileum by a side to side anastomosis to the transverse colon. The actual division of the bowel is said to prevent the further spread of the disease so that the anastomosis will not become involved. Cicatrizing enteritis does not resolve itself to simple involvement of the ileum alone. Some writers advocate the use of the term "chronic cicatrizing enteritis."

Diffuse ileocolic types

There are reported cases in the literature in which the condition has been known to involve not only the terminal ileum but also the cecum and colon and instances have been reported in which the

jejunum and duodenum have also been involved. Of the 18 cases at the Mayo Clinic one involved the jejunum. Donchess and Shields, reporting in the Archives of Pathology, 1934, presented a case in which the terminal ileum, cecum and ascending colon were involved. At the same time, they were able to present 24 other instances reported in the literature in which the cecum and colon was involved with identically the same type of process as that originally described by Crohn. Because these cases show involvement in other parts of the gastro-intestinal tract, the term "ileitis" is insufficient. "Chronic cicatrizing enteritis" is the term which is coming into vogue, especially in the most recent reports. In a large proportion of these cases, however, the enteritis in the cecum and colon appeared to have been secondary to appendicitis since an acute suppurative process of the appendix was found in a number of these cases. They believe that the appendix was probably the focus in these instances. It is probable that this disease is not entirely limited to the terminal ileum. This was also illustrated in the case which we are presenting today.

The clinical features and pathologic changes which have transpired during the acute phase of ileitis were described for the first time by Erb and Farmer of Toronto in July 1935. They believe that the picture which they present in the report of 6 cases is that of the acute phase of this disease. The 6 cases reported by these authors presented a typical history and findings on physical examination suggesting acute appendicitis and with such a diagnosis operation was carried out. In each instance, the appendix was found to be absolutely normal, being proven so on histologic section. In each case, the operative findings revealed the presence of a markedly swollen cecum and ileum and a considerable amount of edema. The lumen of the ileum was practically obliterated due to the marked amount of edema. There was marked congestion of the serous surface of the ileum. Peyer's patches as felt through the bowel were enlarged for several feet proximal to the ileocecal

valve. There was free fluid in the peritoneal cavity. Cultures from 5 of these cases were sterile. One of these cases presented a history and findings typical of appendicitis of 4 days duration. On the 4th day following admission, the patient developed bronchopneumonia. Operation was not undertaken in this case because the patient was extremely ill. The postmortem examination revealed the following findings: The terminal ileum and cecum were almost solid due to edema. The superficial vessels of the bowel and mesentery were injected. The distal ileum on palpation presented itself as a tubular mass with the lumen practically obliterated. The mesenteric glands were large and firm. Peyer's patches were markedly enlarged. The serosa over the ileum was pale and grayish-white. The mucosa was pale and smooth. The mucous membrane over Peyer's patches was ulcerated and covered with thick, shaggy, grayish-white pseudomembrane. Patches of hyperemia about Peyer's patches. Studded between them were numerous swollen lymph follicles in the mucous membrane. Removal of the pseudomembrane presented a reddish, granular surface. Microscopically, the mucosa was ulcerated, covered with a thick layer of exudate, composed of necrotic cells, fibrin, and a few erythrocytes, and numerous bacteria. The bacteria were usually gram negative bacilli. The lymphoid tissue was markedly necrotic. The interesting feature in the pathological findings was the absence of polymorphonuclears and the presence of marked necrosis. A few leucocytes were seen which showed pyknotic nuclei. The infiltrating cells in the wall were usually made up of sparsely scattered mononuclear cells with oval, pale staining vesicular nuclei. Edema was marked in the submucosa. The solitary lymph follicles showed necrotic centers with ulceration overlying the epithelium. The muscular wall was less affected than other portions of the intestine. The muscle fibers were only slightly altered. The blood vessels suffered but little in this acute phase of the disease. Some veins showed extensive necrotic areas filled with thrombi and in these regions there were small areas of perivascular hemorrhage. The lymphatics were dilated and contained granular material. The

lymph nodes showed congestion and edema. To such an extent was this present that the topography of the gland was altered. The germinal centers were no longer recognizable as such. The lymph channels were markedly dilated. Direct smears from the lymph glands, liver and gallbladder showed a gram negative bacilli. These organisms were present in large numbers, particularly in the gallbladder. Organisms were also recovered in the spleen, heart, blood and ulcers which were present in the ileum. Organisms were also recovered in the spleen, heart, blood and ulcers which were present in the ileum. Organisms which were present were gram negative, non-motile, fermented, maltose, lactose, xylose with the formation of acid and gas. Except for its non-motility, it possessed the cultural characteristics of bacillus coli which may at times be non-motile. These authors believed that the disease is an acute, infectious process. They likewise believed that this condition which they described is definitely related to regional ileitis and represents the acute phase of this disease. The cases which Crohn presented in his original description were patients who had had symptoms varying from months to several years duration, and no where in his original description is the acute phase described. These authors (Erb and Farmer) likewise believed that perhaps the lesion entirely resolved itself in the colon so that the pathological findings which Crohn described were present only in the chronic cases. They also believed that the disease is not entirely limited to the ileum. The chronic form of this disease may also involve the cecum and colon (jejunum and duodenum). No detailed description of the early symptoms of the case which Crohn presented were submitted in his original writings on "regional ileitis." It is fair to assume the cases which Crohn presented might have easily presented the same picture as those described by Erb and Farmer. In the 6 cases reported by these authors, too short a time has elapsed before one can say with certainty whether or not these cases will eventually pass into the chronic phase of this disease. They believe that a certain proportion of

these cases might go on to spontaneous resolution. For instance, following the acute phase of the disease, resolution takes place in the colon and cecum. They assume that the lesion in the ileum either goes on to spontaneous resolution or leaves a residual lesion in the ileum as have the findings in Crohn's series. One case similar to those described by Erb and Farmer was encountered at this hospital in March 1935.

A male, 24 years of age, presented himself at this hospital with a history of having right lower quadrant pain associated with nausea and vomiting. These symptoms were present for about a 20-hour period. From the clinical findings and from the laboratory data, a diagnosis of acute appendicitis was made and at the time of the operation the appendix was found to be normal. The ileum situated immediately adjacent to the ileocecal valve and extending upward for a distance of approximately 3 inches was markedly edematous, thickened and swollen. There was a small amount of free fluid in the peritoneal cavity. The lumen was somewhat encroached upon. Appendectomy was performed in this instance. Convalescence following this procedure was normal. Following the patient's dismissal from the hospital, he was seen in the Out-Patient Department on several occasions. Up to the present time, the patient experienced no further difficulty. The process might well have gone on to spontaneous resolution although one cannot say with certainty until further studies are carried out since so short a time has elapsed since his illness.

Impressions

1. Apparently a previously undefined clinical entity, regional ileitis was first described by Crohn and associates in 1932.

2. Other granulomatous lesions in this region of the abdomen, notably those involving the cecum, are apparently not the same condition.

3. Terminal or regional ileitis affects chiefly young adults and is characterized by subacute or chronic necrotizing and

cicatrizing inflammation.

4. Clinically the disease resembles ulcerative colitis with complaints of fever, diarrhea and emaciation.

5. An unusual feature is strict localization to the ileum in the subacute and chronic stages. It is possible that the other portions of the bowel are involved in the acute process, but characteristically to be noted is abrupt termination of the lesion at the ileocecal valve and gradual tapering off as it ascends the ileum for 8 to 12 inches (18 to 30 cm.).

6. Apparently the disease is not so uncommon.

7. Gross pathological study in the chronic stage reveals a rigid diaphragm with a small, irregular opening in place of the ileocecal valve. Mucosal ulceration and edema give a cobblestone effect. The walls are thickened because of inflammatory, hyperplastic and exudative changes. The lumen is small and irregular. Proximal dilation of the ileum above the lesion may result in tension ulcers. The mesentery is involved. As in other granulomata, the lesion may resemble tuberculosis.

8. The disease may be related to appendicitis although when the appendix is removed in cases of terminal ileitis it is frequently not diseased.

9. Most of the patients, when first seen in hospitals and clinics where the disease has been recognized, give a history of having been ill for several months to several years, the usual assumption being that the patient has a colitis.

10. Certain physical findings are characteristic, namely, mass in right iliac fossa, fistulous formation, emaciation and anemia, scar of previous appendectomy, or evidence of intestinal obstruction.

11. The cases may be grouped under four types: (1) Acute intra-abdominal disease with peritoneal irritation;

(2) Symptoms of ulcerative enteritis;
 (3) Symptoms of chronic obstruction of the small intestine; and (4) Persistent and intractable fistulae in the right lower quadrant following previous drainage for ulcer or abdominal wall abscess.

12. Terminal ileitis is to be considered in all fistulous formations following appendectomy. In the past we looked for tuberculosis, malignancy and actinomycosis and an ordinary fecal fistula, but when none of these were present we were stumped. Some of them undoubtedly were cases of terminal ileitis.

13. The multiple abscesses with internal and external fistulae to other portions of the intestinal tract may make the roentgenographic study confusing.

14. Differential diagnosis should include nonspecific ulcerative colitis, ileocecal tuberculosis, lymphosarcoma, intestinal mesenteric tuberculosis, Hodgkin's disease, intestinal sarcoma, actinomycosis, and carcinoma of the ileocecal region.

15. Surgical treatment consists of relief of obstruction by enterostomy or excision. Complete surgical cure is obtained by resection of the disease, segment of bowel, ileocecal valve and contiguous cecum. The entire lesion must be removed, or recurrence may take place. Less radical procedures are also recommended, and medical aid is necessary.

16. The diffuse ileocolic types may be a variation of the more regional variety which is described today.

17. The cause is apparently unknown, as only the bacteria normally present in the bowel have been identified. It may be the result of an extension from appendicitis.

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II. CASE REPORT

PARTIAL INTESTINAL OBSTRUCTION OF TERMINAL ILEUM.

_____, white male, 24 years of age, admitted to University of Minnesota Hospitals 10-11-33 and discharged 10-26-33 (15 days); readmitted 12-8-33 and discharged 12-8-33 (1 day); readmitted 12-15-33 and discharged 2-3-34 (19 days); readmitted 3-31-35 and discharged 9-27-35 (23 days). Total stay - 63 days.

Present complaints

1. Attacks of pain in right lower quadrant.
2. Nausea and vomiting.
3. Attacks of diarrhea.
4. Abdominal distention.
5. Loss of 15 lbs. in weight.

Past History

11- -31 - Attack of pain and discomfort in right lower quadrant of abdomen. Fairly severe pain over McBurney's point. Pain lasted about 1 hour. Nausea and vomiting. Attacks present several times a week, coming on 1½ hours after meals. Diarrhea and occasional slight elevation in temperature (height not definitely determined). No chills. Pain relieved by defecation.

Admitted

10-11-33 - White male, 24 years of age, under-nourished, pale, showing gross evidence of weight loss. Head and neck - negative except for slight

post-cervical adenopathy. Heart and lungs - normal; blood pressure 105/60. Abdomen - negative. Extremities and rectal - negative. Temperature on admission 99.2, pulse 100.

Laboratory:

Blood - white blood cells 11,500, polymorphonuclears 85%, lymphocytes 14%. Urine - occasional white blood cells. Agglutination for bacillus abortus - negative. Sedimentation - normal. X-ray of chest - negative. Barium enema - very extensive obstructive process in ascending colon which is irregular; complete obstruction shown between the ascending colon and cecum. This, however, was largely the result of spasm shown by the fact that the barium meal passed through this area without encountering any great difficulty. It was possible to visualize the area after barium meal due no doubt to the spasm present. This area suggested very strongly carcinoma with considerable ulceration but it may be due to a tuberculosis of the cecum and ascending colon of the markedly ulcerative type. There was some suggestion of hypermotility which would favor tuberculosis.

Conclusions: Carcinoma of ascending colon with ulceration or probably ulcerating tuberculosis of the cecum and ascending colon. Clinical conclusions: Carcinoma of cecum or tuberculosis, or possibly inflammatory disease.

Progress

Following the patient's admission to the hospital, the attacks of pain were associated with nausea and vomiting. Examination at this time was essentially negative except for the abdominal examination which revealed a mass in the right lower quadrant over McBurney's area, measuring 6 x 4 cm. in diameter. Firm and tender on palpation. Temperature 99.4, white blood cells 10,500. Two days following this, the mass could not be palpated on abdominal examination. Conservative measures were carried out.

Discharged

Patient was discharged from the hospital with the idea of observing him

by barium enema to determine whether or not there were any other changes in the colon and ileum.

Readmitted one month later

12-15-33 - During the interval, the patient again presented the history of having had recurrent attacks of pain, nausea, vomiting and diarrhea. Following admission at this time, the physical examination was identically the same as on the previous and recent admission. The mass was again palpable in the right lower quadrant. X-ray examinations in the form of barium enema - same as those reported during the recent admission.

Operation

12-23-33 - Right rectus incision made and exploration carried out. Findings - mass involving cecum; ileum likewise involved; terminal ileum above this point markedly dilated; mass freely movable with no evidence of any metastasis to the liver. Mass suggests either inflammatory or malignant nature. Appendix not involved in mass but markedly adherent and bound down. Appendectomy performed. Microscopic sections - inactive appendix.

Progress

Convalescence following this procedure was complicated by a wound infection.

Discharged - 3 weeks following appendectomy.

Subsequent history

Note: Patient was well until about 5 months later when a mass appeared in the substance of the scar of the previous appendectomy which required incision and drainage. Large amount of purulent material obtained. Drainage continued for approximately 2 weeks. Patient confined to bed for approximately one month. Again somewhat improved until about August 1935 when he had a very severe excruciating attack of right lower quadrant pain requiring morphine for

relief.

Readmitted

8-31-35 - Physical examination showed moderate distention. Palpable mass present in right lower quadrant. Diagnosis of chronic intestinal obstruction made. Patient treated conservatively by suction and not packs. White blood cell count - 17,000, polymorphonuclears - 88%. Symptoms subsided under conservative measures. X-ray examination again carried out - marked constriction about terminal ileum and ileocecal valve. Ileum dilated above this point. Some irregularity of ascending colon with ulceration. X-ray conclusions: nonspecific granuloma of terminal ileum and proximal colon.

Exploration

Spinal anesthesia used. Right rectus incision made. Numerous adhesions in right lower quadrant. Similar mass again noted in cecum, definitely palpable. Terminal ileum for distance of about 8 inches thickened and dilated. Beyond this point, ileum was normal. Iliocolostomy performed. Following this procedure, patient's convalescence was satisfactory.

Discharged -- 9-27-35.

Follow-up

Since discharge, patient was seen in Out-Patient Department on several occasions. He gained about 15 lbs. in weight and had no further difficulty.

III. MOVIE.

Title: Fighting Fish

Released by: M-G-M

IV. LAST WEEK

Date: December 5, 1935

Place: Recreation Room,
Nurses' Hall.

Time: 12:30 - 1:10

Program: Movie - Minnesota Football
Pictures - 1935

Present: 175

Gertrude Gunn,
Record Librarian.