

# THE IMPORTANCE OF THE ROENTGEN EXAMINATION IN THE DIAGNOSIS OF REGIONAL ILEITIS

## *Report of a Case*

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Regional ileitis is a condition of unknown etiology which has been recognized for many years, although it did not receive the attention it deserved until the report of Crohn et al in 1932<sup>1</sup>. At that time they reported a series of cases to which they applied the term regional ileitis, since the condition was thought to be a disease entity involving only the terminal segment of the ileum. Since that time, however, cases have been seen in which not only the terminal ileum but other parts of the small bowel, as well as the cecum were involved. Indeed, it is not uncommon for several segments of the small intestine to show the changes typical of this disease with areas of normal bowel intervening. The term used to describe this condition is, therefore, not entirely satisfactory, a better and more descriptive term such as non-specific granulomata of the intestine being preferable. It is doubtful, however, whether this will supersede the original appellation, since it has come to have a definite meaning.

Regional ileitis, while not common, occurs frequently enough that one should think of it when a patient complains of symptoms in the lower right abdominal quadrant. This is especially true in a young adult male because the greatest incidence occurs in this sex at this age period. The following case presents a rather typical picture of the disease and emphasizes the value of the roentgen examination in establishing the diagnosis.

The patient, a young man 26 years of age, presented himself with the complaint of "tenderness of the intestines" and attacks of diarrhea. He stated that he was perfectly well until one and one-half years previous to our examination when he had mild attacks of diarrhea consisting of three or four loose stools a day. Since that time he had had no distress nor had there been any blood or mucus in the stools. The diarrhea persisted for several months, then he had a spontaneous recovery and felt quite well. About five months previously, he experienced rather sharp pains across the abdomen and in the region of the umbilicus. There was no relationship between the pains and the taking of food. No relief was obtained by taking soda, but milk gave relief for a few seconds. At this time the patient first consulted a physician and he ordered a roentgen examination of the colon. No organic lesion could be demonstrated at that time but the administration of the enema reproduced at least a part of the abdominal distress, and relief was obtained upon expulsion of the enema. A bland diet was prescribed and this gave partial relief from the symptoms. A few

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weeks before admission there had been a recurrence of the pain and at this time it was more severe in character and was accompanied by three or four loose, watery stools each day.

At the time of examination at the Clinic, the patient said he felt exhausted and tired, and constantly had a feeling of distress in the epigastrium. Recently, enemas had been the only means of relief and these were effective for only a very short time. During this period of illness there had been a gradual loss of 18 pounds in weight.

The family history and past history were essentially negative. Both father and mother were living and well except that the father had "stomach trouble." There had been no operations except a tonsillectomy in 1926, and he had had no serious injuries or disease. The general health had been quite good until the onset of the present illness, one and one-half years before, and the patient had been able to follow his vocation as salesman.

*Physical examination*, except for the abdomen, revealed normal findings for a young, white male. The abdomen was soft with no localized or general rigidity or spasm. There was, however, definite tenderness which could be elicited by moderate pressure over the right quadrant; this was more marked over the outer aspect. No definite mass could be palpated at this time. A digital examination of the rectum disclosed a tender mass in the right lower quadrant of the abdomen. The clinical impression was an appendiceal abscess.

*Proctoscopic examination* showed an edematous area five inches from the anus. At this point, pus appeared from the wall of the bowel and an abscess cavity was palpated bimanually.

*Laboratory findings:* The urine was normal except for a trace of albumin on one occasion. Examination of the feces on admission showed a greenish liquid stool containing ++ pus and +++ mucus. No occult or gross blood could be demonstrated and the examination was negative for ameba and ova.

The level of the urea was 33 mg. and of blood sugar, 79 mg. per 100 cc. at the time of the original examination. The blood Wassermann and Kahn tests gave negative reactions. Examination of the blood at the time of admission showed 5,100,000 red blood cells, 14,600 white blood cells, and 82 per cent hemoglobin. The differential blood count showed 83 per cent polymorphonuclear neutrophils, 6 per cent lymphocytes, 9 per cent monocytes, and 2 per cent polymorphonuclear eosinophils. The red blood cells showed moderate central pallor, moderate anisocytosis, and slight poikilocytosis.

*Roentgen examination:* At the time of admission, only the colon was examined. The report of this examination was: "terminal ileitis

with fistula and abscess.” The colon was seen to be normal except for evidence of compression on the right side of the sigmoid just proximal to the rectosigmoid junction (Fig. 1). The terminal ileum was narrowed and showed abnormal mucosal markings. A fistulous tract led toward the midline from a point about four inches proximal to the ileocecal valve (Fig. 2). Tenderness was elicited in this region by moderate pressure during the fluoroscopic examination.



FIGURE 1: Roentgenogram made in an oblique position immediately after filling the colon with barium. Small, rounded defect on the right side of the sigmoid produced by pressure of the abscess. Small segment of the narrow terminal ileum is visualized.



FIGURE 2: Roentgenogram made after expulsion of the barium enema. The terminal ileum is seen to be definitely narrowed. The mucosal pattern is altered and there appear to be present small filling defects resembling polypoid projections. A small fistulous tract is visualized, evidently leading into the abscess cavity.

*Operation:* An exploratory laparotomy and ileocolostomy were performed under spinal anesthesia. A small amount of slightly blood-tinged, free peritoneal fluid was seen to be present upon opening the peritoneal cavity. Inspection of the terminal ileum revealed the typical changes of a regional ileitis. The terminal ileum was considerably thickened and indurated with rather marked injection of the serosal

surface and some grayish exudate. The exact extent of the involvement could not be determined because of adhesions. The inflammatory mass extended toward the left side of the pelvis in the region of the sigmoid which had previously been demonstrated by the roentgen examination. The cecum in proximity to the terminal ileum showed a small amount of involvement with slight induration and injection of the serosal vessels. The appendix was also present in the inflammatory mass and was definitely enlarged. The ascending colon distal to the cecum was entirely free from any involvement. An anastomosis was made between the small bowel, at a point about eighteen inches proximal to the involved area, and the transverse colon, just proximal to the hepatic flexure. A catheter was inserted into the ileum about six inches proximal to the ileocolostomy.

The convalescence was uneventful, the ileostomy tube was removed on the eighth postoperative day, and the wound was well healed at the time of discharge from the hospital. Resection will be done later.

This case reveals several features which have been present in other cases of the same disease and which merit consideration. In reviewing the symptom complex of regional ileitis, it must be admitted that there are no pathognomonic signs or symptoms. The symptom, however, which is most commonly present is diarrhea, such as was mentioned in the case reported here. This may be moderate in character and either constant or remittent in type. In most of our cases pus and mucus have been found in the stools although this is not always the rule. Pain, if present, is generally of a rather indefinite type, generally being described as dull or cramp-like in character; it will usually be on the right side or around the umbilicus. The pain may not be very marked until late in the disease; it is remarkable to see the amount of involvement which may be present in the intestine while the patient has so few subjective symptoms. Later in the course of the disease there will be loss of weight, anemia, and exhaustion. In many cases the disease goes on to formation of an abscess or fistula. The course of the disease is not limited and may vary from a few months to a couple of years. Patients may be operated upon for appendicitis without the lesion being recognized as due to regional ileitis. The usual course in such a case will be the development of a fecal fistula which tends to become chronic and refuses to close.

The pathological picture is characterized by varying degrees of fibrosis involving all the layers of the bowel. There is, of course, quite a difference in the appearance of the intestine, depending upon the stage of the disease and the severity of the involvement.

Usually, a rather marked mesenteric lymphadenitis is present. The diameter of the involved segment is diminished and there is a general

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stiffness of the walls due to the infiltration. In the more advanced and less acute cases there will be formation of cicatricial tissue which, in turn, causes obstruction at that point. In the more acute cases the exterior of the bowel shows a marked redness and injection of the serosal blood vessels, as well as a roughened granular appearance of the serosa. On the mucosal surface are serpiginous ulcerations extending along the mesenteric border, and these are covered with a grayish membrane. Between the ulcers are islands of swollen mucosa which may give the appearance of polypoid lesions.

The condition, from the clinical standpoint, must be differentiated from appendicitis, tuberculosis of the intestine, chronic nonspecific ulcerative colitis, and the deficiency states. A positive diagnosis is made by the roentgen examination. Preferably, this should include the administration of the barium meal and the making of progress films of the passage of the opaque meal through the intestinal tract. The signs of this disease as revealed by the roentgen examination are narrowing of the lumen or the so-called "string sign," which gives rise to obstruction of varying degrees and generally some dilatation of the bowel proximal thereto. The mucosal pattern of the involved segment is usually altered and may even appear to have filling defects or polypoid formations. The motility films, as mentioned previously, are very important and often the film made six hours after the ingestion of the barium meal will give the most information. The roentgen examination of the colon may or may not give much information, depending upon how much of the opaque solution flows through the ileocecal valve. In some cases no barium will get through and the examiner will have no clue as to the real nature of the disease process. Fortunately, some barium generally passes into the small bowel and visualization of a portion, at least, of the terminal ileum is possible. In some instances the involved part of the bowel may be very irritable and it will not be possible to fill it completely, due to the rapid emptying. From the viewpoint of the roentgenologist the chief differentiation must be made from tuberculous enteritis but this is not always possible, even the surgeon and pathologist having difficulty in doing this at times. Of course if the patient has pulmonary tuberculosis, the probability will be that the intestinal lesion will be of the same etiology. From the roentgen appearance alone, the chief reliance must be placed upon the pathological process as it appears during the course of the examination. Regional ileitis, as a rule, will be confined to the small bowel alone, whereas the tuberculous infection will show an affinity for the region of the ileocecal valve, involving the cecum as well as the ileum. In those cases of regional ileitis which do involve the cecum and those of tuberculous enteritis

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with negative chest findings, the correct diagnosis may not be made until the specimen is examined and reported upon by the pathologist.

### SUMMARY

Regional ileitis is a not uncommon disease which occurs in young adults with a much higher incidence in males.

Symptoms indicating the presence of this condition are: unexplained diarrhea, indefinite pain and tenderness in the right lower quadrant of the abdomen, and a mass in the appendiceal region.

The diagnosis is best made by means of the roentgen examination. The most important part of this examination is observation of the passage of the opaque meal through the small intestines. The film made six to nine hours after the ingestion of the barium will be most apt to reveal the true nature of the lesion.

### REFERENCE

1. Crohn, B. B., Ginzburg, L., and Oppenheimer, G. D.: Regional ileitis; pathologic and clinical entity, J. A. M. A., 99:1323-1329, October 15, 1932.