

RADIOLOGY IN THE DIAGNOSIS OF CHRONIC APPENDICITIS.

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IN examining the appendix area with the aid of the *x*-rays, the following questionnaire should be gone through.

- (1) Is there a spasmodic hour-glass contraction of the stomach?
- (2) Is the duodenal cap normal?
- (3) Is the cæcum filled in normal time?
- (4) Does the appendix fill in 24 hours, (a) partially, (b) completely, (c) completely, but with a backward kink, (d) in a segmented fashion?
- (5) Does the appendix appear (a) with vacuoles, (b) with bulbous tip, (c) with concretions?
- (6) Is the filled appendix (a) freely movable or adherent, (b) unduly long or unduly short, (c) unduly tender?
- (7) Does the appendix empty with the cæcum?
- (8) Is the filled cæcum tender on palpation or irritable on palpation (T. B.)?
- (9) Does the cæcum empty with the rest of the large intestine, or is there an "island" residue at 24 or 48 hours?
- (10) Can the coils of the cæcum and ascending and transverse colon be easily moved and separated, especially can the cæcum be displaced inwards?
- (11) Has the appendix failed to fill in 24 hours and in addition is the cæcum tender?
- (12) Is the large intestine, and especially the region of the hepatic flexure and proximal half of the transverse colon, (a) abnormally low, (b) kinked or adherent, (c) tender at any portion?

Deductions made from the X-ray findings.

The evaluation of each sign indicative of a possible appendicitis is not within the scope of this article. It will suffice to say that the deductions must be made on signs found and not on signs imagined. Neither should the radiologist lay too much stress on the history or on the clinical diagnosis. Where pain or tenderness is present over the filled cæcum he should get the patient (during screen examination) to put his index finger on the spot that hurts most. In simple low colon, it is usually over the hepatic flexure. In appendicitis it is usually over the root of the appendix. In intestinal colic it may be anywhere, though often over the splenic flexure.

Whilst it is not actually claimed that the *x*-ray will diagnose all cases of chronic appendicitis when present, I have formed the opinion that it will always help either directly or by a process of elimination, in clearing up a diagnosis if the condition really does affect the large bowel or the appendix.

The reasons why the method is not employed more than it is, are as follows:—(a) Certain cases are so blatant clinically that *x*-ray examination is unnecessary as the diagnosis is self-evident.

(b) In obscure cases with vague symptoms, the patient and his doctor prefer to wait and see.

(c) In cases examined by the *x*-rays the important signs may have been missed, and the unimportant ones given an important place when deductions are made. The result is a faulty opinion.

(d) The *x*-ray technique may be faulty. One bad film may render the *x*-ray evidence futile; repetitions are costly, and patients are not desirous of going through the whole procedure again.

It will thus be seen that the actual *x*-ray films must be almost perfect, the screen examinations conducted with extreme care and observation, and I might add that of course the proper time intervals must be observed, and as each examination, screen or film, is made the result must be entered up almost at once, so that errors due to tricks of memory may be excluded.

The most valuable signs of chronic appendicitis when present are:—

- (1) Tenderness over a definite 48 hours barium "island" residue in the cæcum. (This points to a pathological condition in that area.)
- (2) Appendix tender and kinked backwards.
- (3) Tenderness over a definite appendix residue,—when the rest of the barium has left the cæcum.
- (4) Imperfectly filled and vacuolated or segmented appendix, or an appendix with bulbous tip.
- (5) Marked tenderness over the cæcal region and appendix, when there is still barium present and when it is not found possible to displace the coils of intestine towards the mid-line (in the lying position).
- (6) An appendix partially filled which cannot be moved about on palpation in the lying position.

Other radiographic signs may be present and have a certain value and all should be carefully noted when forming an opinion.

Illustrative Cases.

Case No. 1.—Mrs. M. complained of chronic indigestion for 4 years. The tongue was nearly always coated and she was losing weight. She had occasionally vague pain over the right iliac fossa. She complained also of chronic constipation and lassitude.

Radiological findings.—An irregularly filled appendix showed. The appendix kinked and painful on pressure at 24 hours. Forty-eight hours delay in the cæcum. Cæcum adherent.

Operation.—A long, very thick, chronically inflamed appendix with a bulbous tip and bound down by adhesions.

Case No. 2.—M. W. Three years history of discomfort over the stomach and right side, foul tongue, headache, malaise, and constipation. Lack of energy. Clinically there was no tenderness over the appendix.

Radiological findings.—Spasmodic hour-glass contraction of the stomach relieved by belladonna. Stomach normal otherwise. The filled cæcum was tender and there was a residue in the appendix at 48 hours and after all the barium had left the cæcum. Appendix only partly filled and not segmented.

Operation.—Short appendix, adherent, thick, and chronically inflamed.

Case No. 3.—P. S. T. History of periodic violently acute attacks of pain in the stomach followed by vomiting, faintness, and diarrhoea. The attacks came on quite suddenly and never within an hour after taking food. Had six violent attacks in the past 4 months. He was absolutely doubled up with pain. Clinically there was practically nothing to be noted. Between the attacks he was quite normal in every way.

Radiological findings.—Stomach high and hypertonic, duodenal cap not seen. Stomach otherwise normal. Food at the splenic flexure in 3 hours (rapid). Appendix partially filled at 24 hours. The appendix shadow was very markedly segmented, transverse, adherent and tender. Forty-eight hours delay in the appendix and cæcum. Cæcum adherent. The region of the hepatic flexure of the colon and the proximal 3 inches of the transverse colon was bound down to the cæcum and appendix area and could not be mobilized in the lying position. This was specially remarked in the x-ray report and adhesions were suggested.

Operation.—Long kinked and very adherent and chronically inflamed appendix. Three definite adhesion bands extending downwards from the hepatic flexure and transverse colon to the ilio-cæcal region (Lane's kink type).

Summary and Remarks.

The x-rays will often give the following information:—

- (a) Whether the appendix is diseased or not.
- (b) Its position.
- (c) Abnormally long or abnormally short.
- (d) Whether adhesions are present or not.
- (e) That the appendix is normal, and some other condition is present.

X-rays will often indicate to the surgeon—

- (a) Whether an operation is indicated or not indicated.

(b) Whether his incision is going to be a local button-hole one over the appendix area or whether the larger and more central incision is necessary, i.e., in the case of complications or other conditions being present either associated with appendicitis, or due to some separate condition.

(c) The presence of bowel kinks and adhesions, or of an abnormally low colon.

STUDIES IN THE TREATMENT OF FILARIASIS.

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FILARIAL infection is very prevalent in India, the endemic area is not only along the sea-coast, but extends for some hundreds of miles inland. Although a complete survey has not yet been carried out for the whole of India, the work done by one of the authors (S. S. R.) shows

that in 27 districts in Bengal the population is affected to the extent of 0.7 to 11.4 per cent.; in Behar, Orissa and Chota Nagpur the figures are much higher, going up to 27 per cent. Most of the sea-coast districts of Madras and Malabar are heavily infected and every year a large portion of the population of these areas is incapacitated as a result of this infection. The indigenous methods of treating filarial diseases, especially lymphangitis—which is the type which causes considerable suffering in endemic areas in India—are frequently very drastic. The application of severe counter-irritants, for example scalding by a hot iron, or the application of caustic substances to the enlarged glands or along the inflamed lymphatic trunk, is a fairly common method of treatment. Fasting is frequently enforced on the patient in addition to the above measures. For elephantoid growths, the application of leeches is the chief treatment. Applications of pastes made from the leaves, roots and resinous gums are among the standard methods of treatment in the indigenous medicine for elephantiasis. The formulæ of these are described in detail in many of the books on Ayurvedic medicine.

The modern treatment of filarial diseases is very largely surgical. The medicinal treatment of filarial infection and its manifestations has not been very successful. A perusal of the literature shows that little work has been systematically undertaken in this country to find out an effective treatment for this disease. The only treatment resorted to is symptomatic during the acute inflammatory attack and directed chiefly against the secondary infection. In chronic filarial lymphangitis, the abdominal glands are usually affected; the microfilariae do not get into the blood-stream and remain confined to the lymphatics. Many of the parasites subsequently introduced by the mosquito do not mature; those that mature lay embryos which work back, cause slight lymphatic obstruction and become secondarily infected. Progress of these cases is slow; only a small percentage, generally not more than 5 per cent., have microfilariae in the blood. The acute septic cases are secondary to streptococcal or staphylococcal infection in the body. The site of infection depends on whether the mature or the immature worm is the nucleus; a number of these may be present. In both these conditions an effective filaricidal drug would be of immense value. If the adult parasites could be killed as soon as the microfilariae were detected in the blood, the complications mentioned above could be avoided.

In India a few remedies have been tried from time to time with disappointing results. Rogers (1919-1920) first suggested the use of antimonyl tartrates in the treatment of filarial infections. He tried these compounds in the Medical College Hospital and in the Puri Jail and came to the conclusion that the drug on the whole gave encouraging results. Further work by the late