to necropsy there will be found one or more plaques of plastic lymph between the liver and the diaphragm. This is more common on the anterior aspect, so the referred pain is more likely to be in the clavicular region.

I would not have anyone think that phrenic shoulder pain is ever to be relied upon to the exclusion of other symptoms, for the diaphragm has an upper as well as a lower surface, and thoracic disease may irritate this upper surface. That is only one more reason for making a thorough examination, so that no localizing sign may be omitted. It is worth mentioning that pain from diaphragmatic pleurisy is more commonly felt in the clavicular and subclavicular area.

MUSCULAR RIGIDITY

I now come to the symptoms produced by the reflex rigidity of the muscles which bound the abdominal cavity. There should be little need to mention rigidity of the anterior and lateral abdominal muscles produced by peritonitis, since it is familiar to everyone who has seen half a dozen cases of acute abdominal disease. But it is not yet general knowledge—nay, it is often overlooked by the elect—that extensive peritonitis may exist without any rigidity at all.

At the risk of repeating what we all may know already I would point out that irritation of the internal lining of the abdominal cavity is responded to by a greater or lesser degree of rigidity of the muscles which wall in the cavity. There is a large area comprising the pelvic cavity and the median part of the posterior abdominal wall which is *relatively* insensitive or silent when stimulated, giving rise to no rigidity of the overlying or underlying muscles. It is very common to have early pelvic peritonitis without any muscular rigidity. Another fact which is overlooked is that old people with weak muscles and easily tired reflexes frequently show little or no rigidity with peritonitis.

Muscular rigidity of the deep-lying muscles is easily, and I think commonly, neglected. When the diaphragm is immobile on account of overlying inflammation we cannot always have an x-ray apparatus handy to show that it does not move on respiration, but we have an easy clinical test. If the abdomen is retracted with inspiration the midriff must be relatively immobile and is probably inflamed. This reversal of the abdominal wall movement is significant.

Psoas rigidity due to appendicitis or similar inflammatory condition in the vicinity is shown either by flexion of the corresponding thigh or by slight pain on moving the thigh. Slighter degrees may be detected by extending the thigh on the abdomen and noting if it causes pain.

It is seldom that the obturator muscle becomes rigid as the result of peritonitis, since the dense obturator fascia does not readily permit the inflammatory process to pass; but occasionally putting the obturator muscle on the stretch by inverting the flexed thigh will elicit pain and denote some overlying inflamed focus which is penetrating and affecting the muscle.

There is another little test which may be of some value in fat subjects with a suspected inflammatory mass in the region of the iliac fossa and vessels. If the fingers be pressed on to the femoral artery in Scarpa's triangle so as to stop the circulation in the limb, the extra pulsation in the iliac vessels as the result of the block may cause an increase of pain when the inflammatory focus is in contact with the vessels. This femoral test would only be of real use in very fat people, who are notoriously difficult to investigate.

Gross anatomical derangements, with the exception of torsion of viscera and strangled external hernia, are not often obvious in the early stage of acute abdominal

disease. The presence of free fluid and free gas displaces and masks the parts, but usually at too late a stage to be of much practical value.

CONCLUSION

The diagnosis of acute abdominal disease is a fascinating art which may be almost made into a science by attending carefully to the manifold symptoms to which it gives rise. The problems greatly differ from those in chronic abdominal disease. The combat against disease is in the one case a siege and the other a battle, and different qualities are required for success. In the acute disease early appreciation of the menacing forces is essential, and success may sometimes be gained by paying attention to small points which would in a chronic disease be regarded as trivial. In no other class of case is time of such importance, laboratory assistance of so little use, and the opportunity for acute clinical observation so well provided. Though disappointment comes but too often, the reward of paying attention to some of the neglected points which I have mentioned is an increasing number of successful diagnoses, and, what is even more important, an inward sense of something logically attempted, something reasonably done.

ACUTE OSTEOMYELITIS OF THE ILIUM

BY

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Probably it falls to the lot of most general surgeons at some time in their work to meet with this disease, but it is certainly rather uncommon, it presents a very difficult problem with regard to treatment, and there is extraordinarily little to be found about it in surgical literature. A considerable search for what may have been published on the subject during the past thirty years has yielded very meagre results. A case was reported by Murphy in 1916, secondary to furunculosis. A case of osteomyelitis of the ilium, probably tuberculous, was described in 1930 by Ryan and Funston. At a Russian surgical congress at Leningrad in 1925 Krasnobajev reviewed 428 cases of osteomyelitis treated by him in twenty years, with a general mortality of 22.4 per cent. There were twenty patients with osteomyelitis of the ilium—that is, about 5 per cent. of the whole number—and of these eight died. It is therefore more dangerous than osteomyelitis of the long bones. Two patients suffering from this disease have lately come under my care.

CASE I

Public school boy, aged 14. First seen July 19th, 1928, complaining of pain in right lumbar region attributed to a strain whilst diving two days before, when he "felt something go click." No physical signs, but limps a little.

July 20th.—Admitted to sanatorium. Has had no sleep on account of severe pain in buttock. Temperature 100°. Tender over right sacro-iliac joint. Temperature ran up to 102°, pulse 100; pain became very severe. Nephenthe gave no relief; no sleep.

July 21st.—Temperature 104.6°; very ill; pain and tenderness persist. Operation under novocain. Dorsum ilii exposed but not trephined; periosteum scraped through. One doubtful spot of pus seen.

July 24th.—Pain has been better; wound not suppurating. Temperature 103°–104°. Leucocytes 11,000; 89 per cent. polymorphonuclears. Mercurochrome given intravenously.

July 27th.—Abscess of right buttock opened. Culture: pure *Staphylococcus aureus*.

July 30th.—Temperature 102°. Pain in chest; rub. Diagnosed by Dr. Carey Coombs as pericarditis. Abscess of left buttock opened under novocain.

August 11th.—Swinging temperature has continued. Pleuritis and pericarditis stationary. Abscess in front of right iliac bone opened; small crumbling patch of bare bone found.

September 15th.—Pus in left hip-joint, with pathological dislocation. Opened by Mr. C. F. Walters in my absence.

October 15th.—Head of femur excised; through-and-through drainage of hip-joint. Did well for a time, and temperature became normal.

November 10th.—Fever again. Tube put through hip-joint.

January 1st, 1929.—Temperature has remained up. Abscess under left iliacus muscle opened. Better for a week, then temperature 102°.

January 12th.—Pus in left knee-joint evacuated.

March 21st.—Went home, improving, temperature normal.

For a long time there was a persistent sinus over the hip-joint, but eventually this healed, and the patient is now very well.

Summary.—Boy, aged 14. Acute osteomyelitis of ilium, followed by pericarditis, pleurisy, abscess under each iliacus muscle; pus in hip-joint necessitating removal of head of femur; pus in knee-joint. Very ill six months; nine operations. Recovery.

CASE II

Hospital nurse, aged 23. Seen October 2nd, 1930. History of pain in left buttock for a week, really bad for twenty-four hours, and extending down sciatic nerve. No sleep on previous night on account of pain. Temperature 100°–101°. Vomited once. Pain now severe. On examination tenderness over the left sacro-iliac joint. No pain on "crowding" iliac crests; hip-joint moved normally. Per rectum, *nil*.

Operation, incision down to iliac bone in tender area. Outer plate of bone removed over an area one and a half inches across. Marrow looked normal, but culture showed Gram-positive staphylococci, and pus cells present in smear.

October 5th.—Pain much better. Temperature 104°–105°. Delirious at times.

October 6th.—Very ill; delirious. Pleuritic rub.

October 10th.—Purpura. Pleuritis and pneumonia in both lungs.

October 12th.—Died. No necropsy.

Summary.—Nurse, aged 23. Acute osteomyelitis of ilium; bone opened by operation. Pain relieved, but died of pyaemia and septicaemia.

DISCUSSION

In both cases there was a period of several days, three in the one and seven in the other, during which the patient had pain in the buttock, gradually getting worse. There was no known septic focus. The boy thought he had strained the back. Next came violent and persistent pain, unrelieved by opiates, with a rise of temperature, and marked deep tenderness of the dorsum ilii. If the surgeon recollects that there is such a disease as acute osteomyelitis of the ilium the diagnosis is not difficult.

The disease is apt to be severe, running a prolonged course, with numerous complications, both early and late, and considerable danger to life. Both my patients became exceedingly ill with pleuritis; one had pericarditis. The patient that recovered had abscesses in front and behind both iliac bones, and in the hip- and knee-joints. A case is, however, known to me in which a quiet abscess formed in the ilium, necessitating operation, but going on to recovery. This may correspond to the condition known as Brodie's abscess in the long bones.

TREATMENT

This presents a very difficult problem, especially on the day that the diagnosis is first made. The pain is so severe that opiates give no relief, and everybody is very anxious that something should be done to relieve tension.

Operation does certainly make the pain better, but during the next few days the patient is likely to be very ill. In my opinion the opening up of cancellous tissue by removing the outer layer of the iliac bone did indeed reduce tension and allay pain, but precipitated pyaemic symptoms by opening up the veins in the cancellous spaces to infection. There is nothing abnormal to see, so one does not know how much cortex to remove. It seems better, therefore, in an acute case, to treat it as the schoolboy was treated, by draining down to, but not into, the bone, under a local anaesthetic, in the hope (probably vain) that pus will be found under the periosteum. Mercurochrome may be given intravenously to combat septicaemia. Abscesses about the os innominatum must be expected, constantly watched for, and opened when they are found.

SUMMARY

In one published series of cases of acute osteomyelitis of various bones the ilium was involved in 5 per cent., with a mortality of 40 per cent.

Two cases are described, one fatal, one recovering after a long illness and many operations.

The diagnosis is not difficult; several days' pain in the sacro-iliac region; then violent pain, raised temperature, and deep tenderness.

The best treatment is probably to incise down to, but not into, the bone.

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THE PROPHYLAXIS OF TUBERCULOSIS OF THE LARYNX

BY

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Tuberculosis of the larynx is so frequent and so fatal a complication of phthisis that any suggestions for preventing its occurrence, or for securing treatment in its early stages, should be given consideration even if there is no proof that they will necessarily prove effective in all cases. There is abundant proof that in its early stages this complication can be arrested, and in many cases cured, by certain definite measures. These are:

Rest in a sanatorium.

The restriction of the voice to a whisper over a period of some months.

Complete silence for a similar period.

The elimination of sepsis in the upper air passages, because it is well known that any septic process tending to produce laryngitis, whether acute or chronic, affects adversely the progress of laryngeal tuberculosis.

The prevention of cough. By this I mean unnecessary, harsh, and irritable cough producing an unnecessary strain upon the vocal cords.

As long as the pulmonary lesion is chronic it has generally been found that these measures are effective in arresting, and finally curing, a majority of cases of early chronic laryngeal tubercle. It may be necessary to supplement these conservative measures by more active treatment such as cauterization under local anaesthesia, but, generally speaking, the larynx will respond to such treatment if the condition of the lungs is not progressive or fatal. This being so it seems justifiable to draw certain conclusions which may give some indication of how to