

ACUTE CHOLECYSTITIS COMPLICATING TYPHOID FEVER *

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THERE are numerous surgical complications of typhoid fever of which acute cholecystitis is one of the more uncommon. The following case is an example of this complication.

J. J. C. entered a medical service of the Boston City Hospital, September 29, 1906, suffering from typhoid fever.

Previous History.— Negative.

Present Illness.—He had been complaining of general malaise, frontal headache, pain in joints, and weakness for a few days.

Physical Examination.—Showed a man, twenty-eight years of age, medium height and well nourished. General physical examination negative. On the abdomen were a few rose spots; spleen palpable. No abdominal spasm or tenderness.

October 7: Had shown no complications and was considered a moderately sick patient suffering from typhoid fever. This afternoon he had an intestinal hemorrhage and passed about four ounces of blood. He was given morphia and an ice bag was applied to the abdomen. Diet by mouth omitted for some hours. There was no recurrence of hemorrhage during this illness.

October 23: Up to this time nothing unusual had occurred. On this date the temperature rose to 104° from 101° on the previous day, and the pulse rose to 120. There was some general spasm of the abdominal muscles in the right half of the abdomen. Palpation revealed no mass except that the spleen could be felt. No further complication was in evidence and it is doubtful if a cholecystitis were suspected.

October 27: Patient had an attack of severe pain referred to a point just below the right costal margin, accompanied by more or less general spasm. This acute pain subsided and he complained of a dull ache over the whole abdomen.

The above notes are extracted from the medical record. I saw him in consultation about ten hours after the attack of sudden abdominal pain.

* Read before the American Surgical Association, June 9, 1915.

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Examination.—Patient emaciated and pale; general condition very poor; tongue dry and coated; peritoneal facies; abdomen generally markedly rigid; no distention; tenderness most marked in the right lower quadrant. A diagnosis of probable intestinal perforation with spreading peritonitis was made; perforation of gall-bladder was not suspected nor examined for.

Operation.—Ether. A right rectus incision was made, extending down from the level of the umbilicus. On opening the peritoneal cavity considerable bile-stained fluid escaped. Exploration showed much fibrinous exudate and light adhesions around the cæcum and the coils of small intestine in that vicinity. The usual signs of typhoid ulcers of the lower ileum were in evidence but no intestinal perforation was found. In the region of the gall-bladder were many fibrinous adhesions and it was obvious that we had to do with a perforated gall-bladder. Hence, the original incision was closed quickly and the usual one made over the gall-bladder. This organ was exposed by breaking down the adhesions, and bile-stained pus was observed escaping from a small perforation on its inferior aspect, near the cystic duct. Except at this spot, there appeared to be no gangrene of its wall. A probe was passed and no gall-stones were detected. This opening was closed with catgut sutures and covered with the stomach and colon which happened to converge at this point and were fastened there with a catgut suture to wall off the site of perforation. The fundus of this considerably enlarged gall-bladder was then opened and drained in the usual way with a tube fastened in. An additional wick of gauze was passed beneath the gall-bladder.

This patient convalesced gradually without further complication. There was some discharge of bile until December 1, and the sinus finally closed about January 1. The pus obtained from the gall-bladder was reported to be “sterile.”

Historical.—In 1880 Eberth demonstrated that a certain bacillus was the cause of typhoid fever and subsequently it was discovered that it is capable of producing suppuration. As early as 1829 Louis observed a condition of acute suppuration in the gall-bladder during an attack of typhoid fever. At autopsy Futterer discovered typhoid bacilli in the gall-bladder in 1888, and two years later Gilbert and Girode found these bacilli in both the bile and the wall of the gall-bladder after cholecystectomy. In Keene's exhaustive monograph on Surgical Complications of Typhoid Fever, written in 1898, only 4 cases are recorded of operation for suppurative cholecystitis due to the typhoid bacillus.

Condition of Normal Bile.—In health it is supposed that the bile

of man and animals is sterile, and experimentation shows this to be true in animals. Bile recovered from a supposedly normal gall-bladder in man during operation for other conditions is generally found to be sterile. For example, in one series of 23 cases the bile was sterile in 18. Bile possesses very little, if any, antiseptic quality against pyogenic bacteria; on the other hand, it is found to be a fairly good culture medium for typhoid and colon bacilli. In the presence of suppurative lesions in the gastro-intestinal tract, bile frequently contains bacteria. After ligation of the common bile duct in animals, bile becomes infected. Bacteria may be present without causing any lesion of the gall-bladder, appearing in pure culture or mixed infection.

Mode of Entrance of Typhoid Bacilli; Occurrence of Typhoid Cholecystitis.—Typhoid bacilli may enter the bile by one of three routes: 1. In most instances they enter by the circulatory system passing through mucous membranes into the bile. 2. They may be excreted directly by the liver cells into the bile. 3. It is possible but improbable that they ascend the biliary ducts directly from the duodenum.

As a rule, their presence alone is not enough to cause inflammation and it is the best opinion that they are present in the bile in all cases of typhoid fever. While they are supposed to be absent from all other organs in a few weeks after the subsidence of the fever, their stay in the bile may be indefinite. Their persistence in the gall-bladder is probably due to a certain degree of chronic cholecystitis which may not give rise to clinical symptoms and signs. Occasionally such instances occur without a previously recognized attack of typhoid fever. Such patients are known as typhoid "carriers" and, of course, are dangerous to the community. Typhoid bacilli frequently remain in the gall-bladder many months and sometimes years after an attack, often in pure culture. One instance of twenty-six years is recorded.

Although bacilli are generally present in the bile during an attack of typhoid fever, they do not frequently cause an acute cholecystitis. In a large series of autopsies, where death was due to typhoid fever, 2 per cent. were complicated by cholecystitis; in a series of 2864 clinical cases, 18 are recorded as having had cholecystitis, and in another such series of 895 cases, $1\frac{1}{3}$ per cent. were so affected. In a series of 2000 autopsies after typhoid fever at Munich, only five cases of cholecystitis were found. Hence, this is an uncommon complication.

The time of the onset is more often during the third week of the fever and occurs with decreasing frequency as the case progresses. It may come on during convalescence or during a relapse, and has been known to occur independent of any recognized attack of typhoid fever.

It may be that typhoid bacilli, unaided by other factors, are capable

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of causing an acute cholecystitis, but such cases are probably exceptional. This is demonstrated by the fact that, although bacilli are believed to be present in bile in about all cases, this complication of typhoid fever is unusual. Bile stasis from any cause favors the growth of bacteria which are often found in pure culture without the presence of gall-stones. Such attacks are probably provoked by œdema, due to a certain amount of inflammation of the ducts, giving rise to biliary stasis. In other instances of acute cholecystitis complicating typhoid fever, gall-stones have been found. In one series of about 200 cases of acute typhoid cholecystitis, gall-stones were present in 20 per cent. Hence, we are led to conclude that attacks are provoked by obstruction to the escape of bile or by injury from foreign bodies in the gall-bladder.

Pathology.—The pathology does not differ from that produced by other pyogenic bacteria. We have to deal with an acute catarrhal inflammation involving, primarily, the mucous membrane of the gall-bladder and it may extend to such degree as to destroy eventually the wall of the gall-bladder. We may have a superficial inflammation of the mucosa or a more or less extensive necrosis resulting in perforation. There may be multiple ulcers of the mucosa. In most cases perforation occurs near the cystic duct, but it may take place at any point.

Symptoms.—The symptoms and signs of acute cholecystitis due to the typhoid bacillus are the same as those caused by other pyogenic bacteria, but the clinical picture may be very different. If the attack occurs during the height of the fever, it may be entirely masked by the toxic condition and stupor of the patient, and even go on to perforation of the gall-bladder before being suspected. Many mild cases occurring at this time are probably overlooked. If the attack comes on during the period of convalescence or later, the usual symptoms should be observed.

Pain in the vicinity of the gall-bladder is the first complaint, but it may be referred to the epigastrium or, less frequently, toward the right lower quadrant of the abdomen. It is more or less constant and there may be exacerbations of sharp or colicky pain. At about the same time the gall-bladder region is tender and, according to the amount of tenderness, there is a varying degree of muscle spasm over it. The above symptoms become worse as the inflammation progresses. Very often one can palpate a distended gall-bladder and it may be large enough to produce dulness. There may be nausea and vomiting. These are the early symptoms and such a condition would not be often overlooked if a careful daily routine examination were made. This should

be done in all cases and localized tenderness over the gall-bladder should make one suspicious of such a complication.

Meanwhile, certain constitutional changes may be evident. There may be chills or a sudden rise in temperature, if it had previously reached normal, or an additional elevation, if already above normal. The pulse is increased. There may be a leucocytosis of from ten to fifteen thousand and this is significant, because the leucocyte count is not increased in uncomplicated typhoid fever. Jaundice is absent unless there is common bile duct obstruction. The above is the picture of an attack of acute catarrhal cholecystitis. The symptoms may gradually subside spontaneously and complete resolution follow and, undoubtedly, many such cases occur. On the other hand, the cystic duct obstruction may persist and the nutrition of the gall-bladder wall be so interfered with as to produce necrosis which, in turn, is followed by perforation and escape of vesicular contents with or without the formation of adhesions. As a rule, a fatal peritonitis follows unoperated cases.

The signs attending the perforation may be overlooked but should not be if the case is observed with care and regularity. The perforation is generally characterized by sudden pain, often with collapse, soon to be followed by the typical signs of an acute spreading peritonitis, which need not be considered here. The symptoms attending perforation of the gall-bladder do not differ very materially from those caused by perforation of the intestine, which is both commoner and more difficult to cure and, therefore, more serious. If, however, the possibility of a cholecystitis with perforation is borne in mind, fewer errors in diagnosis will be made. On opening the abdomen the presence of bile-stained fluid will be conclusive evidence of the type of lesion.

Diagnosis.—It would seem as though an attack of acute cholecystitis ought to be detected in the majority of instances provided the patient were watched carefully for this complication. Local tenderness and spasm are the chief signs and should be somewhat in evidence notwithstanding the presence of marked toxæmia and stupor due to typhoid fever. Such complication should not escape detection after this period.

An enumeration of a list of lesions for differential diagnosis would include the following: Intestinal perforation, right-sided pulmonary lesions, gastritis, perforation of gastric or duodenal ulcer, appendicitis, acute pancreatitis, peritonitis from any cause.

Prognosis.—Because this complication is commoner during the course of the fever, it is probable that the prognosis, other things being equal, is more grave than when due to other pyogenic bacteria. Many cases of acute cholecystitis, of varying degrees of severity, resolve spon-

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taneously but no one can predict the outcome in any given case. In a series of 154 cases, 25 per cent. perforated. The prognosis depends chiefly upon whether perforation takes place. With rare exceptions perforation is followed by a fatal peritonitis when the case is left unoperated. The outcome of operative interference depends upon many factors. The condition of the patient already may be grave because of the severity of the attack of fever. The lapse of time between perforation and surgical intervention is a factor of the greatest importance, as after any visceral perforation. Prognosis is better if the attack takes place in the late stage of fever and better still at a later period. Mixed infection adds to the gravity, as does also extensive cholangitis. The mortality in the various series of operated cases of perforation as reported runs from 22 to 54 per cent.

Treatment.—The treatment of cholecystitis due to the typhoid bacillus does not differ materially from that due to other pyogenic bacteria, although the operative mortality is greater for obvious reasons. Primarily it is of the greatest importance to have this complication in mind so that, when discovered, its progress may be watched and appropriate treatment instituted. Remembering that tenderness and spasm over the region of the gall-bladder are the early and important signs, it is a very simple matter to make a daily routine examination of this area.

Operation should be avoided if possible because of the general condition of the patient and because many of the cases are mild and resolve spontaneously. If the symptoms increase in severity, it is probably the best judgment to operate. If the gall-bladder can be palpated, this means that there is distention due to obstruction of the cystic duct. If not operated upon, such a gall-bladder will probably empty itself only by perforation, and this additional complication should be avoided if possible. Hence, progress of the local signs without evidence of remission and the presence of a palpable gall-bladder are indications for interference. If perforation of the gall-bladder has taken place, life will depend, other things being equal, upon the promptness of operation.