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Original Articles

GANGRENE OF THE GALL BLADDER. RUPTURE OF THE COMMON BILE DUCT, WITH A NEW SIGN.*

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In 1879 I had the privilege of reporting my first gall-stone operation to the American Medical Association. In the intervening years, the surgery of the gall bladder and bile ducts has been so far developed that individual case reports have no place in our overburdened literature, unless, as by their aggregated number, they add weight to some general principle involved in the choice of and time for operation, or throw light on the causes of death in seemingly simple cases. The two case reports, I submit, do not belong to either category, but their comparative rarity must serve as my excuse for presenting them.

GANGRENE OF THE GALL BLADDER.

Patient.—A. B., male, aged 21, was admitted to the Jewish Hospital June 25, 1905.

History.—The patient, whose father and mother are both living, has never, to his knowledge, been ill, except for a pneumonia four years before the onset of the present trouble. Three days before admission he was taken with very violent pain in the lower part of the abdomen. He attributed it to rather free indulgence in beer, which he vomited after ingesting it. Four hours after the beginning of the symptoms the physician who was summoned administered morphia hypodermatically for the relief of the pain, which had become intolerable. Ice bags were ordered and applied continuously. Although the starvation treatment had been rigidly carried out, the vomiting continued at frequent intervals, except when the patient was under the influence of morphia. The diagnosis of appendicitis had been made and operation advised within twenty-four hours of the beginning of the attack. The bowels were moved by enemata.

Condition on Admission.—The patient was well developed and well nourished. Temperature 100 plus; pulse fluctuated between 100 and 120. The patient had a very anxious facial expression and vomited frequently large quantities of bile-tinged fluid. The tongue was dry and heavily coated. The abdomen was very much distended, with marked muscular rigidity on the right side. Percussion showed excessive tympany which had pushed the liver dullness upward. Although the entire right side of the abdomen was tender to the touch, the tenderness seemed most acute in the lower quadrant and in the loin. The blood count showed leucocytosis of 31,600 white.

Diagnosis.—Acute appendicitis, with gangrene probable.

Operation.—An incision was made through the right rectus. When the peritoneum was opened, a considerable quantity of turbid serum escaped. The coils of distended and congested intestine appeared in the wound covered in many places with flakes of whitish lymph. They were held aside with considerable difficulty. The appendix was readily brought

into view and removed. While it presented evidence of inflammation like the adjacent coils of intestine, there were no adhesions and no signs of perforation. It seemed evident that this was not the source of the peritonitis. The incision was, therefore, elongated for better exploration. There was revealed a tensely distended gall bladder almost uniformly black and without any luster. This appearance of the gall bladder could be seen, through the large wound, to extend to the very neck of the viscus. The examination was made easy by the absence of adhesions, either recent or old. Before deciding to open the gall bladder, as is my invariable custom, the common duct was carefully palpated for a stone or other tangible cause of obstruction, but none was found. After carefully protecting the intestine with aprons, the gall bladder was incised and about ten ounces of ropy, viscid bile mixed with blood clots were removed. There was no pus. The vesical contents were free of odor, and a number of cultures on agar-agar and blood serum were made. All remained sterile. Most careful exploration of the gall bladder failed to reveal either stones or biliary sand. The operation was completed as an ordinary cystotomy, except that enough gauze packing was inserted about the gall bladder to protect the general peritoneum from a new infection from the sloughing process which was sure to ensue. After thorough toilet of the abdomen, the lower part of the wound was closed by layer sutures.

Result.—The operation left the patient with a pulse of 150; the recovery, nevertheless, was rather rapid. Vomiting ceased at once. For ten days the temperature fluctuated between 101 and 103, when it and the pulse rate returned gradually to the normal. On the third day after the operation, the dressings were saturated with bile, which did not come through the intra-vesical drainage tube. Five weeks after the operation the gall bladder was discharged almost en masse from the wound. The black slough showed the various coats quite down to the cystic duct. After the expulsion of the gangrenous mass, the biliary fistula healed rapidly. The patient left the hospital September 3. He has since regained full health and weight. The wound is solidly closed.

RUPTURE OF THE COMMON DUCT, WITH AN UNUSUAL SIGN.

For the following history I am indebted to Dr. J. E. Greiwe:

Patient.—W. B., aged 53, occupation, merchant; residence, city.

Family History.—Father died at the age of 65 from cancer of the stomach. Mother died at the age of 84; cause of death, "old age." One sister died at the age of 48 from cancer of the breast. One brother died in infancy; cause unknown. Four brothers are living; one is now suffering from locomotor ataxia. Another of the brothers, at the age of 6, had an attack of infantile cerebral palsy. Two sisters are living and well.

Personal History.—Patient claims not to have had the ordinary diseases of childhood; in fact, not to have been ill until 6 years previously, when he passed through a moderately severe attack of typhoid fever, from which he made an apparently perfect recovery. In April, 1905, he had what appeared to be a very mild case of acute indigestion, lasting not longer than twelve hours. At that time he had no fever, no vomiting, and considered himself perfectly well on the following day. On Aug. 19, 1905, while on a vacation at Prince Edward Island, he was seized with severe, sharp, colicky pains, which he lo-

* Read before the Southern Surgical and Gynecological Association.

ated in the region of the umbilicus. The pain began at 11 o'clock at night after he had retired and continued to be severe all night; it was partially relieved by an enema on the following morning. He was seen by his physician the next day, who pronounced the attack one of acute indigestion, and ordered a dose of castor oil, which secured a very free movement of the bowels. The pains continued, however, but became less and less intense and disappeared after four or five days, during which time the patient remained on a restricted diet. There was neither fever nor chill during this attack, nor was the patient at any time jaundiced. From that time until the onset of the present trouble, October, 1905, the patient considered himself absolutely well, attending to his business and enjoying perfect health. Even on the morning and afternoon of the day when the trouble began he performed his usual duties about the office. The attack came on suddenly at 6:30 p. m., beginning with a severe chill, which lasted about twenty minutes.

Examination.—I saw the patient half an hour after the chill had subsided. He was resting in bed and seemed fairly comfortable, except for a slight uneasiness, not a severe pain, in the upper right quadrant of the abdomen. Pulse and temperature were normal. There was neither nausea nor vomiting. The bowels had acted freely early in the morning. An examination of the abdomen revealed a tenderness, but very little rigidity, in the right hypochondrium. The region of the ileocecal valve was absolutely free from pain and tenderness. The abdominal walls were very soft and relaxed.

Course of Disease.—The patient was ordered to remain in bed and was given nothing, except a dose of Carlsbad salt early on the following morning. During the night the pains in the right hypochondrium became more severe, and when seen early in the morning there was some slight rigidity of the abdominal wall in this region. The Carlsbad salt had been rejected by the stomach. Pulse was 76; temperature, 99. The region of the ileocecal valve was free from pain and tenderness. During the day he was seen at frequent intervals, and, on account of the severity of the pain, which was sharp and cutting in character and now equally distributed over the whole right side of the abdomen, he was given hypodermic injections of morphia. During the day the pulse and temperature, taken at intervals of every three hours, ranged between 76 and 92, temperature 99.2 to 99.8; the pulse was full and regular. An examination of the thoracic organs revealed heart and lungs in good condition. The urine was high colored and acid; the specific gravity was 1024, and there was a trace of albumin. There was no sugar and only a slight trace of indican. The abdomen became very much distended and decidedly tympanitic; no bowel movement was obtained, in spite of repeated lavage of the colon. The patient suffered excruciating pains, which were now localized very definitely on the right, with the seat of the greatest intensity over the lower right quadrant of the abdomen. There was exquisite tenderness over McBurney's point. Again during the night repeated injections of morphia were given to relieve the pain. All efforts to obtain an evacuation of the bowels during the night and following day were unsuccessful. On Saturday the distension of the abdomen continued; there was extreme tympanitis, pain and tenderness, most marked on the right side, and particularly over McBurney's point. There was no dullness on percussion over this area. After this the patient referred all his pain to the lower right quadrant of the abdomen. The temperature at no time on Saturday rose above 99.2, the pulse varying from 86 to 96. In the evening, at 7 o'clock, lavage of the bowels with warm water, glycerin and Epsom salts produced an evacuation of mucus, which was slightly bile tinged and which had a distinctly fecal odor. After this evacuation of the bowel the patient rested somewhat easier, but on Sunday morning, at 3 o'clock, I was called again to see him. The pains in the right lower quadrant of the abdomen had become very intense, requiring the injection of a half-grain of morphia. There was a distinct change in his facial expression, the breathing had become shallow and rapid, the pulse was small, easily compressible and irregular. The abdomen was more distended and very tender on pressure on the right side low down. There was very little tenderness to pressure over the region of the gall bladder. It was evident from the severity of the peritonitis, the extreme distension and

the changes in character of the pulse and respiration that the time for an abdominal section had come. The patient at no time had been jaundiced, and it was left for the operator to determine the nature of the peritoneal inflammation.

Condition on Admission to the Hospital.—Patient was a large-framed man, with every indication of intestinal obstruction from peritonitis. His facial expression was anxious, pulse about 130, temperature 100. Examination of the abdomen revealed extreme tympany, with the liver dullness very much pushed up and reduced in area. On inspection of the abdomen, attention was called to a marked jaundice of the umbilicus. The navel was of a distinct saffron-yellow color in strong contrast with the rest of the skin over the abdomen. It was the only evidence of jaundice. Tenderness was extremely marked over McBurney's point.

Probable Diagnosis.—Peritonitis of appendiceal origin.

Operation.—Gas-ether anesthesia. An incision was made through the outer border of the right rectus muscle. When the subperitoneal fat was reached, it was found markedly tinged with yellow. With the opening of the peritoneum, there poured forth a quart or more of free bile mixed with serum. The coils of the small intestine were loosely agglutinated and in many places covered with shreds of lymph. It being evident that we had to deal with a rupture of either the gall bladder or of one of the bile ducts, the incision was rapidly elongated. The gall bladder was found quite empty and retracted under the liver. It could readily be traced to the cystic duct, and neither in the latter nor in the gall bladder was there any sign of inflammation beyond the general redness which appeared everywhere on the peritoneal surfaces exposed. The gall bladder did not seem particularly thickened. After thoroughly removing with gauze sponges the free bile in the peritoneal cavity, it was evident that the flow of bile continued from the aperture behind the gastrohepatic ligament. The fat in the great omentum was very deeply stained with bile. By holding the latter aside and pressing the viscera, with gauze aprons to the left, a tear could be felt in the posterior wall of the common duct, through which the bile without question had escaped. The tear admitted the end of the little finger and it was in the supraduodenal part of the common duct. It could not be brought into view. As careful a search as possible was made for a stone, but none was found. The condition of the patient did not warrant unnecessary prolongation of the operation, which was completed by making a stab puncture through the loin and inserting through it a half-inch drainage tube. A second tube was inserted to the anterior surface of the gastrohepatic ligament. About this considerable packing was placed. The flow of the bile from the posterior tube was very free for three or four days, from which time on it gradually became less and ceased altogether in ten days. From this time on the recovery was uneventful.

REMARKS.

Although the cases presented differ in many important points, they have enough factors in common to warrant their consideration together. In the first place, in each of them, a rapidly developing peritonitis made an operation absolutely imperative as an *indicatio vitalis*. In each of the cases the operation revealed a condition which to the naked eye, at least, had all the signs of a peritonitis, which might speedily cause death. In one of the cases there was an unruptured, but gangrenous gall bladder, the contents of which were proved to be sterile; in the other, free bile in large quantities was found in the peritoneum. Unfortunately in this case cultures were not made, but the gall bladder appeared normal. Since the reports of Naunyn,¹ Hayem,² Lane³ and others, which appeared some fifteen years ago, it has become the vogue to look on normal bile as a rather inoffensive agent when thrown into the peritoneum, and experiments in animals have been often made, notably by

1. Naunyn: Klinik der Cholelithiasis, 1892.

2. Hayem: Gaz. des Hôpitaux, 1889, p. 12. Cited. Ehrhardt.

3. Lane: London Lancet, 1891, vol. I.

Erhardt,⁴ to bear out this view. That bile has a tendency to destroy the virulence of the bacteria with which it comes in contact has been fully established, and this doubtless explains the fact that the peritonitis consequent on lesions of the biliary ways is less likely to become rapidly generalized and fatal than is perforation peritonitis from other causes, such as appendicitis. The tendency to the formation of protective adhesions is greater perhaps also because of the natural diaphragm which the colonic arch and the mesentery form between the biliary ways and the general peritoneal cavity below. Abscess formation and even spontaneous recovery, therefore, are not uncommon. It appears even that post-operative results are excellent. Neck⁵ has collected eleven cases of spontaneous rupture of the gall bladder containing stones, with eight recoveries. On the other hand, Korte⁶ has seen nine such patients, of whom five were beyond operative help. Of four patients operated on, two recovered. In the fatal cases, death resulted between the third and tenth days. Moynihan⁷ and Mayo Robson⁸ cite a number of cases in which death resulted from uncomplicated wounds or tears in the biliary ways. It is not safe, therefore, to regard the bile as a too innocuous agent when poured into the free peritoneum. Hahn⁹ has recently collected seven cases of rupture of the ductus choledochus of traumatic origin, in all of which the patients died with one exception. In the case of rupture of the common duct reported, it is more than likely that it resulted from the impaction of a stone. That none was found at the operation does not militate against this theory in view of the previous history of the case. Just when the rupture took place it is impossible to state, but probably not later than thirty-six hours after the onset of the symptoms.

Regarding the diagnosis in the cases presented, it must be regretted that a correct diagnosis was not made of the cause of the existing peritonitis. In the case of gangrene, a diagnosis of appendicitis was positively made, and in that of rupture of the common duct it seemed probable that a perforated appendix would be found. The age of the patient and the history of previous attacks of indigestion and of severe colic made us think of the gall bladder as the source of the peritonitis, but concentration of the tenderness in the lower quadrant of the abdomen made it probable that an appendicitis was present. Both cases emphasize the fact that in the presence of peritonitis a doubt as to its source makes for, rather than against, the advisability of an operation.

I wish here to call attention to a sign which was referred to in the case of the ruptured duct before the incision was made, and one to which I believe attention has never before been directed. It is the localized jaundice of the umbilicus. Although a single case is not usually sufficient to warrant the assumption that something new has been observed, this feature was so marked that I can not refrain from believing that further observation will give to this localized jaundice some value as a sign of free bile in the peritoneal cavity. In the case presented, this feature gained in interest as the staining of the subperitoneal fat with bile was observed in the incision through the abdominal wall. The jaun-

dice is probably the result of inhibition. It makes itself manifest first in the integument of the navel, because this part is thinner than the rest of the abdominal wall.

It is possible, of course, that by reason of the anatomic relations of the round ligament of the liver to the transverse fissure there is a retrograde flow of bile through the lymphatics toward the navel, just as the *caput medusæ* is produced in cirrhosis.

Total gangrene of the gall bladder, to my knowledge, has not been observed, except in the case presented, as an affection independent of gallstones. Altogether, total gangrene of the gall bladder is a rare condition. Kehr and Korte⁶ do not mention it as an independent affection. Czerny¹⁰ describes two cases of gangrenous cholecystitis due to impaction of a stone in the cystic duct. Both patients were operated on, one successfully. Czerny¹⁰ ascribes the gangrene to pressure on the cystic artery, which, except for a very insignificant anastomosis along the attached surface of the gall bladder, is practically an end artery. In both of Czerny's cases the symptoms were those of intestinal obstruction. The gangrene was limited to the mucosa of the gall bladder. In 1894 Hotchkiss¹¹ found a gangrenous gall bladder by operation twenty-four hours after the onset of symptoms. A large stone was impacted in the cystic duct. No cultures were made. The patient died. Ferguson¹² reports a case of gangrene, in which operation was performed on the thirteenth day. Many stones were found. The contents of the gall bladder were sterile. Five weeks after the operation most of the gall bladder came away as a slough through the fistula.

In the case above reported, a most careful search failed to reveal the presence of a stone. Moynihan⁷ reports a case in which gangrene followed the involvement of the hepatic artery in carcinoma of the pancreas. The etiology of the case above reported is far from clear. There was no infection of the gall bladder at any time, at least not by aerobic bacteria. I believe that the gangrene resulted from occlusion of the cystic artery, although the manner of its obstruction must ever remain a matter of speculation. That it resulted from the excessive vomiting which marked the onset of the attack is more than probable. I am inclined to believe that by reason of this vomiting there was a twist in the neck of the gall bladder which involved the patulousness of both the cystic duct and artery. Theorizing may be in vain and even unprofitable, but it rarely lacks interest.

THE REGULATION OF PROSTITUTION.

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Every American traveling in the United States and everyone who goes abroad has often cause to blush when he finds useless and long worn out methods of various kinds introduced and seriously tested, to the great inconvenience of the body politic.

One of these systems, whose ominous mutterings I hear first in one part of the country and then in another, as it threatens to saddle its incubus on our long suffering people, is the regulation of prostitution by some sort of governmental sanction and control. Now, "*réglementation*" or regulation has been so thoroughly tested in

4. Oscar Erhardt: "Ueber die von d. Gallenwegen ausgehenden Peritonitiden."

5. Neck: "Perforation de Gallenblase." Deutsch. Zeitsch. f. Chir., vol. lxxi, p. 334.

6. Korte: *Beit. z. Chir. der Gallenwege*, 1905, p. 192.

7. Moynihan: "Gallstones," p. 167.

8. Mayo Robson: "Gall Bladder and Bile Ducts," p. 68.

9. Hahn: "Subcutane Rupture d. Gallenwegene." Long. Arch., vol. lxxi, p. 1024.

10. Czerny: "d. Nekrose d. Gallenblase," Munch. Med. Wochts., vol. L, p. 929.

11. L. W. Hotchkiss: *Annals of Surgery*, vol. xvii, 1894, p. 197.

12. Ferguson: *THE JOURNAL A. M. A.*, Jan. 24, 1905.