INTRA-ABDOMINAL APOPLEXY

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Spontaneous rupture of arteriosclerotic vessels within the abdomen is extremely rare. A patient recently operated on by us presented this unusual and striking pathological picture, *i.e.,* rupture of a major branch of the left gastric artery with a dissecting hæmatoma of the gastro-hepatic omentum and a large amount of blood in the peritoneal cavity. A search through the literature has disclosed only two similar cases of hæmoperitonæum actually demonstrated at the operating table, one case which was comparable save for the fact that the ruptured vessel was not located, and one case in which operation was not performed.

Gross aneurisms of visceral arteries are found with comparative frequency and occasionally rupture. Spontaneous rupture of vessels of the extremities[2] has been reported and Lincoln[6] has recorded rupture of the renal artery retroperitoneally. Traumatic rupture of abdominal vessels likewise occurs not infrequently.[7] None of these conditions, however, may be classified as true intra-abdominal apoplexy.

REPORT OF CASES

Case I.—*Authors'*—M. M. K., Surg. No. 35362. A widow, fifty-four years of age, entered the hospital complaining of severe abdominal pain of five hours' duration.

Past History.—The patient sustained an intra-ocular hæmorrhage five years previously. Three years later she sought medical advice because of loss of weight and epistaxis. During the past year she had had occasional attacks of sudden, sharp pain in the precordium, radiating to the left shoulder and gradually increasing in frequency. Six months prior to admission she was told by her local doctor that her systolic blood-pressure was 270. Rest was advised but was not carried out. A gradual loss of forty pounds in weight had occurred during the past two years. There was no history of epigastric distress; there were no bloody, tarry, or clay-colored stools. Her appetite was good and her bowels were regular with saline catharsis.

Present Illness.—While preparing her supper, five hours previous to admission, the patient was seized with a sudden attack of very sharp pain in the mid-epigastrium, rapidly spreading over the entire abdomen. The pain was prostrating in character, constant and agonizing. Nausea developed and she vomited a small amount of clear fluid.

Physical Examination.—A well-developed but poorly nourished, elderly white woman lying in bed with her knees drawn up, obviously in pain. The skin was dry, somewhat wrinkled, but not unduly warm. The heart was enlarged to the left and a rough systolic murmur was audible at the apex. The aortic and pulmonic sounds were of about equal intensity. The peripheral vessels were sclerotic. The systolic blood-pressure was 170, the diastolic was 110. Palpation of the abdomen revealed a board-like rigidity throughout with diffuse tenderness of marked degree, most intense in the epigastrium. No fluid could be demonstrated in the peritoneal cavity. Hepatic dulness was normal. Vaginal and rectal examination disclosed tenderness in both lateral pelvic vaults.

Clinical Pathology.—On admission the temperature was 99.4 degrees by rectum, the pulse rate was 100, and the respiratory rate, 20. The leucocyte count was 16,000 and 20,000 at two examinations. The urine showed a large trace of albumen and a slight trace of sugar. The sediment contained numerous hyaline casts, occasional leucocytes and red blood cells.

Pre-operative diagnosis was cardiorenal-vascular disease and either perforated peptic ulcer, acute pancreatitis, or perforated carcinoma of the stomach.

Operation.—Ligation of branch of left gastric artery, partial evacuation of hæmatoma of gastro-hepatic omentum, removal of blood from the peritoneal cavity; novocain and ether anæsthesia.

After a preliminary dose of morphia and scopolamin, the abdominal wall was infiltrated with novocain and opened through an upper right rectus incision. Bloody fluid escaped immediately after incising the peritoneum. Light anæsthesia with ether was then

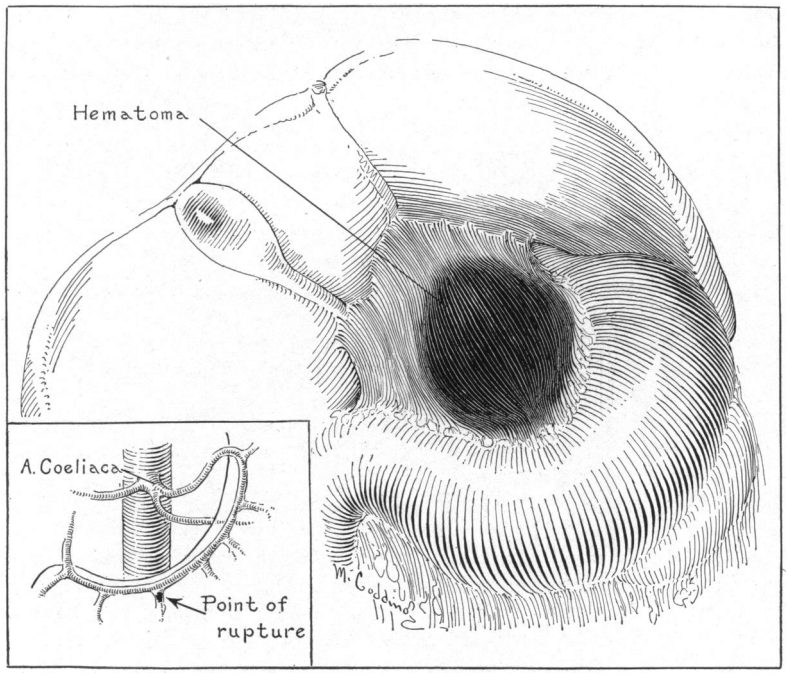

FIG. 1.—Hæmatoma of the gastro-hepatic omentum. Insert shows the point of rupture in a primary branch of the left gastric artery.

induced and a careful exploration was carried out. A large hæmatoma was found in the gastro-hepatic omentum, extending from the mid-portion of the lesser curvature of the stomach upward to the cardia and outward for approximately 3 inches (Fig. 1). The anterior leaf of the omentum was incised near the lesser curvature, the hæmatoma was partially evacuated, and a sclerotic branch of the left gastric artery was found to be ruptured and bleeding smartly. Ligatures were placed around the vessel on each side of the bleeding point and the hæmorrhage ceased. The abdomen was closed with drainage. At the end of the operation the systolic blood-pressure was 180, the diastolic, 100. The patient's general condition was good.

Post-operative Course.—Five hours later the systolic blood-pressure was 260, the diastolic, 135. There was no post-operative vomiting and no abdominal distension. Drainage from the wound was slight. An intravenous phthalein test on the sixth day showed a renal function of 40 per cent. The convalescence was unremarkable. The patient's

general condition improved, the blood-pressure gradually subsided, and she was discharged on the thirty-third post-operative day. The wound was firmly healed; the temperature, pulse rate and respiratory rate were normal; the leucocyte count was 9,300; the systolic blood-pressure was 160 and the diastolic, 95.

Subsequent Note.—The patient was seen eight months later. During this interval she had been well except for occasional headaches. Her blood-pressure was, systolic, 260, diastolic, 145. Abdominal examination was entirely negative. The wound was well healed.

CASE II.—*Starcke.*[8]—A man, sixty years of age, entered the hospital because of severe epigastric pain. The past history included gastro-intestinal symptoms for many years, characterized by eructations of gas, nausea, constipation and occasional diarrhœa. Dyspnœa and palpitation had been prominent during the two years prior to admission.

Physical examination disclosed an elderly man in severe pain. The skin was cold and clammy. The heart was enlarged; a systolic murmur, maximal at the apex, and many extra systoles were audible. The radial arteries were palpably sclerotic. The abdomen was rigid and tenderness was marked, particularly in the epigastrium. Deep palpation was impossible. There was no discernible dulness in the flanks. The temperature was 99.4 degrees.

Operation was performed immediately. The omental bursa was filled with blood which was escaping into the general peritoneal cavity through the foramen of Winslow. A rupture of the gastro-duodenal artery was found to be the cause of the hæmorrhage. The bleeding point was grasped and ligated.

The post-operative course was uncomplicated and two months later the patient was in relatively good health. The systolic blood-pressure was 155.

CASE III.—*Budde.*[3]—A man, twenty-seven years of age, previously well, suddenly developed severe pain in the left hypochondrium. When admitted to the hospital several hours later tenderness and spasm of the abdominal wall were generalized but most marked in the left upper quadrant. A tentative diagnosis of perforation of the stomach or acute pancreatitis was made.

Abdominal exploration revealed liquid blood throughout the peritoneal cavity and large clots in the left hypochondrium. Further investigation disclosed a rupture in one of the branches of the left gastro-epiploic artery. A huge hæmatoma of the omentum was found in this region. The bleeding point was ligated and recovery was complete. The patient was in good health six months later.

CASE IV.—*Hilliard.*[5]—A man, aged forty-eight years, was seized with severe epigastric pain one hour before admission to the hospital. During the previous eight years he had had attacks of dizziness, and headaches associated with marked arteriosclerosis and some loss of power in the lower extremities. During this period, the systolic blood-pressure had varied between 160 and 190. Three years prior to admission he sustained a left hemiplegia from which he had largely recovered.

When admitted the patient was in very severe pain. The abdomen was distended, rigid, and board-like. There was dulness in both flanks; percussion of the liver was normal. The pulse rate was 80; the temperature was subnormal.

Abdominal exploration was performed. The peritoneal cavity was filled with blood. "Hæmorrhagic patches were scattered over the mesocolon." There was no evidence of fat necrosis. No bleeding vessel was found and the abdomen was closed. The patient died six hours later.

CASE V.—*Ducuing and Florence.*[4]—A young woman, eight months' pregnant and seriously ill, was admitted to the hospital because of generalized abdominal pain associated with complete obstipation of forty-eight hours' duration. The respiratory rate was 50, the pulse rate, 90. Considerable flatus and a small amount of fæcal material were obtained after the administration of an enema. The patient was in labor at entry and parturition was completed four hours later.

Her condition did not improve. The abdominal wall was spastic and signs of free fluid were noted. A puncture was made in the pouch of Douglas and blood was obtained. Operation was not performed. The patient died.

Post-mortem examination disclosed blood throughout the general peritoneal cavity. A rupture was found in one of the branches of the superior mesenteric artery with early gangrene of the bowel along the distribution of this vessel.

No statement was made concerning the condition of the vascular system.

Comment.—The case reported by Starcke was entirely comparable to our own except for the site of hæmorrhage. The case of Budde was likewise similar although the author did not record the patient's blood-pressure nor comment on the presence of evident arterial disease. Hilliard's case was comparable in symptoms and operative findings although the actual bleeding vessel was not found. Post-mortem examination was not made and consequently definite proof that the case should be included in this group is absent. The case of Ducuing and Florence was not reported in detail. The accident occurred during labor and the ruptured vessel was found only at autopsy. No comment was made concerning the condition of the vascular system. Whether or not the case should be included in this series or classified as a traumatic complication of labor is uncertain.

It seems unusual that intra-abdominal apoplexy does not occur more frequently. Allbutt[1] has pointed out that the cerebral and visceral arteries are similarly affected in the type of arteriosclerosis which occurs in "essential hypertension." In these cases, next to cardiac complications, cerebral apoplexy is the most common cause of death, yet an abdominal lesion of this type is almost unknown. The relatively frequent incidence of cerebral lesions may depend in part on the variance in anatomical structure of the vessels in the two areas, and in part on the fact that a minute hæmorrhage in the cranial cavity is productive of symptoms out of all proportion to the actual lesion. A similar process within the abdominal cavity may remain entirely unrecognized.

In reviewing these cases certain salient features may be emphasized.

1. Three of the patients presented both historical and clinical evidence of vascular disease. They were hypertensive and showed a marked degree of arteriosclerosis. In the remaining two cases the authors made no comment concerning the condition of the vascular system.

2. The outstanding symptom in each case was sudden and severe abdominal pain, prostrating in character and most intense above the level of the umbilicus. The mechanism of this symptom must depend partly on the irritation of the peritonæum by blood and, in two cases at least, on the distension of the omentum by a dissecting hæmatoma.

3. Physical findings were uniformly marked by a state of partial shock and by the presence of an extremely tender and rigid abdomen.

4. A presumptive diagnosis of perforated peptic ulcer, or acute pancreatitis was made in all cases and, in retrospect, there seems to be no method of differentiation. The evidence of marked vascular disease and the absence

of previous gastro-intestinal symptoms offer the only clue to the true nature of the disease.

Summary.—A case of spontaneous rupture of a primary branch of the left gastric artery has been recorded. Only four comparable cases have been found in the literature. These patients presented symptoms and physical findings which suggested a pre-operative diagnosis of perforated peptic ulcer or acute pancreatitis. Abdominal exploration in four cases revealed a large hæmoperitonæum. The fifth was demonstrated at autopsy. In three instances the bleeding vessel was identified and ligated and the patients recovered. These cases have been classified under the general term of intra-abdominal apoplexy.

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