## II. ACUTE PANCREATITIS.

(*a*) **Acute Hæmorrhagic Pancreatitis.**—The admirable studies of Fitz* have crystallized our knowledge on this subject, and brought the affection within the scope of the diagnostician. A majority of the cases occur in persons over thirty. Many of the patients had been addicted to alcohol, and many had suffered from attacks of indigestion, occasionally with severe pains and vomiting.

*Morbid Anatomy.*—The pancreas is found enlarged, and the interlobular tissue infiltrated with blood, and perhaps with clots. In some instances the contiguous tissues may also be hæmorrhagic, and the whole may form a large, firm mass, situated at the upper and back part of the abdominal cavity. The root of the mesentery, the mesocolon, and the omentum may also show hæmorrhages; the other organs may be practically normal. In some instances there can be seen about the lobules areas of opaque white tissue, and upon the omentum and mesentery similar opaque, white specks, which will be referred to subsequently as the fatty necrosis of Balser. In spots the gland-cells may also be found necrotic, while there may be cases showing a marked increase in the fibrous tissue.

The *symptoms* of this condition are remarkable. The attack sets in with violent pain in the abdomen, usually in the upper zone, but in some instances it is general. Nausea and vomiting are present, and usually constipation. Tympanitic distention of the abdomen is of frequent occurrence. Fever may be present, but is an inconstant symptom. There may be early delirium. Collapse symptoms supervene, and death occurs usually from the second to the fourth day, or even earlier. The swelling and infiltration in the region of the pancreas necessarily involve the cœliac plexus, and the stretching of the nerves may account for the agonizing pain and the sudden collapse. In a case which I have reported the semilunar ganglia were swollen, the nerve-cells indistinct, and there was an interstitial infiltration of round cells. The Pacinian corpuscles in the neighborhood of the pancreas were enormously swollen and œdematous.

A *diagnosis* of intestinal obstruction or of acute perforative peritonitis is usually made. A correct diagnosis was made in one case by Fitz, and the possibility of the presence of this condition must be considered in all abdominal cases which come on suddenly with intense pain in the epigastric region, vomiting, and distention of the abdomen. Perforation of a peptic ulcer or perforation from gall-stones might produce similar symptoms, but the previous history would give important indications. In the case in which the diagnosis was made by Fitz, the patient was suddenly seized with severe pain in the epigastrium, followed by vomiting and prostration. The abdomen was distended, temperature slightly elevated, and the bowels were constipated. The diagnosis lay between ob-

* Middleton-Goldsmith Lecture. New York Medical Record, vol. i, 1889.



struction, perforative peritonitis, and acute pancreatitis. Laparotomy was performed, but no obstruction found. The autopsy showed acute hæmorrhagic pancreatitis.

The cases are stated to be uniformly fatal, but recovery may occur, as shown by a case which was admitted to the Johns Hopkins Hospital. Symptoms of obstruction of the bowels had persisted for three or four days, the abdomen was distended, tender, and very painful. I saw the patient on admission, concurred in the diagnosis of probable obstruction, and, as the condition was serious, ordered him to be transferred at once to the operating-room. The coils were distended and injected, and the peritoneal cavity contained a small amount of bloody serum. No obstruction was found, but in the region of the pancreas and at the root of the mesentery there was a dense, thick, indurated mass and there were areas of fat-necrosis in both mesentery and omentum. The patient recovered.

The literature of the past few years shows that this affection is much more frequent than has been supposed. It has a very important clinical and medico-legal bearing.

A point of interest is the relation of the *fat-necrosis* to pancreatic disease. The areas are found in the interlobular pancreatic tissue, in the mesentery, in the omentum, and in the abdominal fatty tissue generally. In the pancreas the lobules are seen to be separated by a dead-white necrotic tissue, which gives a remarkable appearance to the section. In the abdominal fat the areas are usually not larger than a pin's head; they at once attract attention, and may be mistaken, on superficial examination, for miliary tubercles or neoplasms. They may be larger; instances have been reported in which they were the size of a hen's egg. On section they have a soft, tallowy consistence. Langerhans has shown that this substance is a combination of lime with certain fatty acids. They may be crusted with lime, and in a man, aged eighty, who died of Bright's disease, I found the lobules of the pancreas entirely isolated by areas of fatty necrosis with extensive deposition of lime salts. There is no necessary etiological relation between disease of the pancreas and disseminated fatty necrosis of the abdomen. Cases have been found accidentally in laparotomy for ovarian tumor and in instances in which the pancreas has been normal. They may be found in thin persons. The *bacterium coli commune* was present in two cases, with diphtheritic colitis, examined by Welch.

(*b*) **Suppurative Pancreatitis.**—Of twenty-two cases analyzed by Fitz, the majority occurred in adults under forty years of age; seventeen were males. Anatomically, there may be a diffuse suppuration throughout the organ, which is studded with small abscesses. In other instances the abscess cavity is large and the pancreas is converted into an irregular cyst filled with creamy pus. In more chronic cases the abscess may be circumscribed and the contents cheesy. Communications sometimes occur with the duodenum, or the abscess may burst into the peritonæum. Although the disease is usually chronic, it begins with epigastric pain,

vomiting, and sometimes prostration. There is irregular fever, and death may occur in three or four weeks. In more chronic cases there is very slight fever or only occasional paroxysms. The disease may persist for weeks, months, or even for a year.

The symptoms are indefinite and the condition could scarcely be made out during life. Tenderness exists in the epigastrium, or may at times extend to the left and be quite sharply localized over the position of the pancreas, but a circumscribed tumor is rare. Fat-necrosis is not often found post mortem in these cases.

(*c*) **Gangrenous Pancreatitis.**—Fitz has collected fifteen cases. The pancreas may be converted into a dark, slate-colored, stinking mass, or it may lie nearly free in the omental cavity, attached only by a few shreds of fibrous tissue. Complete sequestration of the organ is not uncommon. It may be discharged as a slough from the bowels, and in two cases in which this happened recovery took place. As a rule, acute peritonitis follows. Hæmorrhagic pancreatitis may precede or be associated with it. Death occurs with symptoms of collapse, commonly in from ten to twenty days. Disseminated fat-necrosis is usually present.

## III. CHRONIC PANCREATITIS.

The organ is firmer than normal, the interstitial connective tissue is increased, and there is more or less change in the secreting structures. A special interest has been aroused lately in this affection, as it has been frequently found in diabetes. There may be marked pigmentary changes; a similar condition has been found in the liver. Degeneration of the glandular elements is present in these cases. The sclerosis may be associated with calculi in the ducts.

## IV. PANCREATIC CYSTS.

These commonly result from the impaction of calculi; either biliary, lodging at the orifice of the common duct, or pancreatic, within the duct of Wirsung. The pancreatic concretions consist usually of carbonate of lime. George Johnston has collected 35 cases from the literature. Obliteration of the duct may also result from cicatricial contraction and occasionally from displacement. Eighteen cases of cysts of the pancreas have been collected by Senn. The chief symptoms are tumor in the epigastric region, usually median, or sometimes to one side. When large it has occupied the whole abdominal cavity, and in such instances the diagnosis of ovarian tumor has usually been made. The tumor may develop rapidly, or may be chronic and last for many years. In some instances the tumor attained a large size within a few weeks. Pain is not necessarily present. Fatty diarrhœa did not exist in any of the cases. The stools may be clay-colored, copious, and putrescent.



The diagnosis of the condition must be extremely difficult, yet it seems to have been made in 7 of the 18 cases. Aspiration should be made to determine the nature of the fluid. This has varied considerably, but most frequently has been brownish or chocolate-colored. In only 6 of the 17 cases in which the nature is mentioned was the fluid of a clear serous character.

## V. CANCER.

This is usually scirrhus, and may be primary or secondary. It is not common, as may be judged by the analysis by Segre, who found in 11,492 autopsies only 132 tumors of the pancreas, 127 of which were carcinomata, 2 sarcomata, 2 cysts, and 1 syphiloma. In only 12 of the cases of carcinoma was the disease limited to the gland. The head is commonly affected, and the disease may be limited to this part or extend to it from the stomach or intestines.

The symptoms are variable, and a diagnosis is not often possible. There may be stearrhœa, though it is to be remembered that fatty diarrhœa is not invariably associated with disease of the pancreas. Clay-colored, greasy, and loose stools may be present, with undigested food, as noted by T. J. Walker as a symptom of obstruction of the pancreatic duct. Diabetes may coexist. Although the head of the pancreas can be felt in very thin persons, the tumor masses can rarely be palpated. In the analysis of 137 cases by Da Costa, in only 13 was the tumor recognized by palpation. The general symptoms are those of internal carcinoma. Progressive emaciation, loss of strength, and dyspepsia are present. There is pain in the epigastrium, sometimes paroxysmal. When the head of the pancreas is involved jaundice is almost invariably present.

The disease can scarcely ever be distinguished from cancer in the pyloric zone with involvement of the glands in the hilus of the liver. The movable character of the pyloric tumor and the absence of the hydrochloric acid in the vomit are valuable points. Tumor of the transverse colon is more superficial and movable, is often associated with temporary obstruction, and there may be hæmorrhage from the bowels. In a case with progressive emaciation, epigastric pain, and deep-seated, immobile tumor, with the presence of fatty and greasy stools and the gradual development of jaundice, the diagnosis of cancer of the pancreas is probable.

As the wasting proceeds the aortic pulsation is transmitted with great force through the pancreas and transverse colon, and when a tumor is present the diagnosis of aneurism may be made; but in the latter the sac has not an up-and-down jerking pulsation, but is distensile. In doubtful tumors in this region the examination should also be made in the knee-elbow position.