

ascites there is usually no tenderness, the walls of the abdomen become very thin from absorption of fat and atrophy of the muscles, there is no vomiting except such as is due to hepatic disease, and there is persistent constipation. The spleen may be uniformly and extensively enlarged so as to fill the cavity, but it differs from ascites in the following particulars: The enlargement is from the left hypochondrium downward; it is firm, inelastic, and non-fluctuating; the dullness maintains with the tumor a constant position, which does not follow the movements of the patient.

Treatment.—There are, besides artificial means, two outlets to the effusion—by the intestinal canal; by the kidneys.

Dry diet has, from the earliest period, been regarded as a most efficient plan of treatment. As it may be tried without interfering with the remedial management proper, it should be enforced in suitable cases. Dry diet consists in absolute disuse of fluids of every kind, and the use of water-free food. It is extremely irksome, but, if patiently carried out, will contribute materially to relief or cure, as either may be practicable. If this method be unavailable, the opposite plan, or the free use of water and diluents, should be enjoined. The best of all diluents for this purpose is skimmed milk, which should be taken with regularity and in as large quantity as the patient can bear. An intelligent medicinal treatment of ascites must be conducted with reference to its cause. Here only the remedies for the removal of the effusion can be discussed. As the cavity is a closed sac, diuretics are not very efficient. The treatment by hydragogue cathartics is the most generally serviceable, and of the remedies belonging to this group the most useful is the compound jalap powder. Several watery evacuations must be passed daily to make any important impression on the effusion; this result is most easily accomplished by the administration of one or two drachms of the compound jalap powder in the early morning, to avoid interference with the digestion. If the jalap is not efficient, elaterium may be substituted; but in the author's experience the former is to be preferred. Notwithstanding the little utility of diuretics, advantage should be taken of any good arising from them. The resin of copaiba, according to Wilks, is an efficient diuretic in this disease. Cream-of-tartar is also useful. Digitalis, especially in the form of infusion, is the best of the diuretics proper. These remedies may be given jointly. To urge the kidneys to their highest activity, the functions of the skin should not be excited, and the cutaneous capillaries must therefore be kept contracted by lessening the warmth of the covering or clothing. An increased action of the skin is generally more serviceable in ascites than diuretics are, unless an obstructive cardiac or pulmonary disease is the cause of the effusion. Most excellent results are now obtained from the use of jaborandi or pilocarpine in the treatment of ascites. Warm clothing,

vapor-baths, and pilocarpine may be used jointly, to maintain constant diaphoresis. Removal of the fluid by tapping is a useful expedient in cases not relieved by the methods advised, but so rapidly does reaccumulation take place that this measure should not be practiced too early. It should not be adopted until the embarrassment of breathing is so great as to prevent sleep. The relief it affords is immense, and is accomplished now so readily that there is a constant temptation to employ the aspirator trocar before the proper time has arrived. The puncture is made in the middle line—the *linea alba*—two or three inches below the umbilicus. It is not necessary to draw off all the fluid, but a sufficient quantity to afford relief. The puncture should be carefully closed. It is sometimes difficult to do this, and the ascitic fluid is permitted to drain away indefinitely; but the practice is bad, for the admission of air to the cavity sets up a septic process, and may excite a fatal peritonitis, as the author has seen.

IDIOPATHIC SUPPURATIVE PERITONITIS is a term applied to a form of peritonitis apparently arising from exposure to cold, and occurring in children. It has the clinical history of peritonitis—sudden onset, fever, small pulse (dicrotic), rapid decline in strength, pain in the abdomen, meteorism, nausea and vomiting, constipation, vesical tenesmus. Pus may be evacuated through the rectum, bladder, vagina, or externally. It is in a high degree probable that the peritonitis is not a primary but a secondary affection, and is due to perforation. The enormous accumulation of gas and its extreme fetidity lend support to this view. Other cases having similar symptoms, and terminating by the discharge of matter, may be examples of the subperitoneal phlegmon.*

DISEASES OF THE PANCREAS.

PRELIMINARY OBSERVATIONS.—So little is definitely known of the diseases of the pancreas that many systematic writers omit the subject entirely. Recently, however, Dr. Fitz, of Harvard Medical School, has demonstrated some new facts of great value, to which reference is made further on. There are, however, some practical points which should receive attention. The pancreas has an office in connection with the digestion of certain kinds of foods. Like the salivary secretion, the pancreatic fluid transforms starch into dextrine and grape-

* See the paper by M. le Dr. Besnier, "Arch. Gén. de Méd.," September, 1878.

sugar. Although its ferment loses its activity in the presence of an acid, yet the pancreatic juice has the power to complete the digestion of peptones that have escaped final action of the gastric juice.* The emulsionizing, or preparation of fats for absorption, is another function of the pancreatic fluid. It therefore supplements the action of all the digestive juices.

Still more important is the action of the pancreatic juice on the bile, whereby certain changes are affected that give distinctive characteristics to the intestinal contents. Appearances that were supposed to be due to the absence of bile or to defects in its composition are now known to be due to certain transformations effected by the pancreatic fluid.

Recent researches by the distinguished American pathologist—Dr. Fitz, of Boston †—have thrown a great light on the morbid anatomy of the pancreas, and have added much to our previously imperfect knowledge of its clinical symptomatology. It may be said, indeed, that all previous studies, fragmentary as they were necessarily, but still constituting the body of our information, have been quite overshadowed by these accurate and painstaking investigations. Besides the new knowledge thus contributed to pathology, it is quite certain that Dr. Fitz has put into our hands new clinical methods for the determination of hitherto unknown morbid states of the organ, and these facts, in turn, give new importance to its physiological relations.

Topography.—The pancreas lies between the xiphoid appendix of the sternum and the umbilicus, extends transversely about ten inches, and is covered in by the lower border (greater curvature) of the stomach and the omentum. The head, so called—at or near the junction of the epigastric with the right hypochondriac and iliac regions—comes into relation to the duodenum, ascending colon, liver, gall-bladder and common duct, and right kidney. Unless in the case of considerable emaciation, or enlargement of the organ, the pancreas can not be felt. When felt it is hard, unyielding to pressure, but a little mobile in position, and on percussion yields a dull, even flat note; but the presence of much flatus will materially modify this result. The pancreas will have an apparent pulsation, in some conditions, when it comes to lie on the aorta.

HÆMORRHAGE AND INFARCTION OF THE PANCREAS.—

We owe our information on this subject to the studies of Dr. Fitz, above mentioned. Now that the condition has been explained, we may well wonder that it has been hitherto a totally unknown subject. When hæmorrhage occurs, much depends on the size of the vessel

* Dr. W. Kühne, Virchow's "Archiv," Band xxxix, p. 130.

† Lectures by Dr. Fitz, Pathologist Harvard Medical College, "Medical News" for 1889

giving way; but, as a rule, only the smaller arteries are affected. When hæmorrhage occurs in the substance of the pancreas, there is sudden and severe pain of a very depressing kind, for it radiates through the solar plexus, and by a reflex has an inhibiting effect on the heart, which becomes slow and feeble. In fact, we find that there appears the usual symptoms accompanying blows on the epigastrium. The changes that follow the hæmorrhage are first those occurring in blood-clot, and second those signifying an interruption of the functions of the pancreas. When the trypsin of the pancreatic fluid, and probably some other constituents, fail to be produced, the stools change in character, are offensive, party-colored, contain much mucus, and also fats appear in quantity determined by the interference of the disease with the making of chyle. As the nutrition fails, the color fades into an unhealthy pallor mixed with brownish tints and spots here and there, the strength rapidly declines, the heart's action grows more and more feeble, and before long death ensues from exhaustion.

A hæmorrhage of sufficient size may kill in a few hours.

In the more chronic cases, there may have been mere extravasation, the symptomatic disturbance is less pronounced at the time, and the various symptoms mentioned above appear in slower manner.

PANCREATITIS.—In the acute form, the changes consist in hyperæmia, increased size and density of the organ, and, it may be, hæmorrhagic extravasation. The inflammation proceeds to suppuration in a portion of the cases, at first in isolated depots, which may subsequently coalesce, forming a large one. Peritonitis may arise when the superficial parts of the organ are occupied by abscesses, and gangrene and sloughing may ensue when there is considerable hæmorrhagic extravasation. Almost nothing is known in regard to the causes of the disease. Men seem to be more frequently affected than women. As pancreatitis seems to have occurred more often several centuries ago, it is highly probable that the excessive use of mercury was an efficient cause. As the functions of the pancreas are merely auxiliary, it is not surprising that but few symptoms are produced when the organ is the seat of an inflammation. Pain, becoming very acute and depressing, is one of the earliest symptoms; it is felt in the epigastrium, and radiates to either shoulder and to the back; there are restlessness, precordial anxiety, faintness, nausea, and vomiting. After much straining, some bilious-looking watery fluid is brought up, but this does not afford relief. There is considerable gaseous distention of the abdomen, and a good deal of gas comes up by eructation. Constipation is also a symptom.*

* Oppolzer, "Über Krankheiten des Pancreas," "Wiener med. Wochen.," 1867, No. 1.

From the beginning there is fever; the pulse, at first full and tense, soon becomes small, feeble, and irregular. The symptoms of depression make rapid progress, and in a few days (four to six) the patient is in a condition of collapse, with shrunken features, cold surface, cold extremities, and failing heart. The marked anxiety and depression from the first and the weak and irregular action of the heart indicate an implication of the solar plexus; for similar symptoms are produced artificially (crushing-blow experiment). It will be difficult to distinguish this affection from hepatic colic, or gastralgia, except by the fever, the rapid and irregular action of the heart, and the early collapse, which are wanting in these two disorders, which also terminate in a few hours—one with jaundice and returning health, the other with complete relief and immediate resumption of the functions. The termination, after a very rapid course, is usually in death; but there may be a gradual decline into a chronic state, ending in abscess or slow induration. Acute pancreatitis may be secondary to other affections—there may occur in it, during the course of acute infectious diseases, the changes included in the term parenchymatous degeneration.

SUBACUTE PANCREATITIS, according to the author's observations, confirmed by Dr. Earle,* is a by no means infrequent affection. A typical case, ending in apparent recovery, and therefore not confirmed by *post-mortem* examination, furnishes the principal data on which the following description is based. Since the symptomatology agrees in the main with the clinical features of the acute and chronic, or sclerotic form, it may be assumed with a high degree of probability that the diagnosis was correct. Various cases have, from time to time, come under my charge, but that above referred to seems to be the most complete. I supplement my own with the careful observations of Dr. Earle, and I avail myself, also, of the classical account of Opolzer.

The symptoms are local and systemic. The former consist in pain and tenderness along the pancreas, and an amount of swelling easily recognized in thin subjects. The pain is rather a sense of distress combined with heat, which radiates in all directions, but especially upward into the chest, and backward under the scapulæ. This uneasiness or pain is accompanied by a sense of depression about the precordial region, and an actual slowing and weakening of the heart's action. At certain intervals, by no means regular in recurrence, paroxysms of a less or more severe character occur, during which the distress in the region of the pancreas—the soreness and uneasiness—are

* "Cirrhosis of the Pancreas," "New York Medical Record," November 8, 1884.

considerably increased above the ordinary level of suffering, the heart's action becomes very feeble, the surface of the body grows cold and is covered by a clammy sweat, and hebetude of mind, or melancholic depression, comes on with the other symptoms.

The digestion is impaired; the food lies heavy, and constipation or diarrhœa occurs, but the former is more common, and they may alternate. The appetite is poor and capricious; nausea is not usual, vomiting is rare, but the sensation of epigastric distress is accompanied by squeamishness. The stools are not healthy—have a pronounced and rather offensive odor, are dark in color usually, scybala are mixed with liquid or semi-fluid material, and they may be sour-smelling, acrid (presence of butyric acid), yeasty, and mixed with merely decomposing matters. An excess of fat may or may not be evident; in my experience usually not—in this respect differing from the stools in cancer of the organ.

The nutrition of the body is lowered in consequence of the insufficient appetite, the feeble circulation, and the impaired intestinal digestion. The face has an anxious expression, the skin a sallow tint, often pigmented in spots, and the mucous membrane of the lips and cheeks is pallid, and the tongue is somewhat pointed, irregularly glazed and dry, and but little coated, as a rule. Some salivation is a common symptom; occasionally it is profuse.

The duration of this affection is rather indefinite. After several weeks or months, an improvement in the general state takes place, the swelling and tenderness subside, the intestinal discharges assume a natural aspect, and ultimately health is restored.

The termination of this disease is probably more often in interstitial pancreatitis, or sclerosis of the pancreas. When this occurs, the symptoms are similar in character to those of the subacute form, but are less sharply defined.

The *chronic interstitial pancreatitis*, affecting parts of the gland, is the form which the chronic inflammation most usually takes. The connective tissue undergoes hyperplasia, and the proper gland-structure wastes. When the whole organ is involved, there may be an entire disappearance of the proper gland-structure, or a part of it may be converted into a connective-tissue bundle. As in cirrhosis of the kidney, cysts are produced by obstruction of the ducts. Calculi form in the ducts, and the duct of Wirsung may be entirely occluded by a calculus, inducing dilatation of the ducts and atrophy of the gland-substance. Abscesses may also result from the pressure and inflammation caused by calculi. Chronic parenchymatous pancreatitis is a less usual form of chronic inflammation. It is probably more frequently secondary than primary—i. e., due to the extension of suppurative inflammation from neighboring parts.

The treatment must be entirely symptomatic. Pain must be relieved by morphine hypodermatically, the stomach symptoms by carbo-lic acid, bismuth, pepsin, ingluvin, hydrocyanic acid, etc., and the chronic interstitial change is best treated by minute doses of corrosive sublimate, iodide of potassium, and similar remedies.

CANCER OF THE PANCREAS.—Much more is known in regard to this than to any other affection of the pancreas. The ordinary form of cancer affecting this organ is scirrhus, and scirrhus characterized by a denser stroma. Medullary and colloid have also appeared in the pancreas, but very rarely. Scirrhus of the pancreas is more frequently secondary than primary, and even as a secondary disease it is very rare, occurring in cancer cases in the proportion of about six per cent. only. It develops most frequently in the head of the pancreas and occurs there as a secondary disease, and extends thence over the body of the organ. It is more frequently confined to the head than to other parts of the organ; in 200 cases there were 33 in which the disease was confined to the head, and in 88 the whole organ was affected.* A tumor of the pancreas of considerable size must impinge on neighboring organs; it may compress the ascending vena cava, causing œdema of the lower extremities; the ductus communis choledochus, causing jaundice; the pancreatic duct, causing dilatation and the formation of concretions; the ureter, causing hydronephrosis, and the duodenum, causing stenosis and dilatation of the bowel above and subsequently of the stomach. It is usual for cancer of the pancreas to extend to and implicate other organs, which may be bound down into a uniform mass, in which the point of initial deposition may not be distinguishable. The duodenum, the stomach, the gall-bladder, the kidney, the liver, mesenteric glands, and peritoneum may all be included in a mass of which the beginning was in the head of the pancreas. Ulcerations into neighboring organs may also take place—as into the stomach, duodenum, vena cava, portal vein, splenic artery, etc.

Cancer of the pancreas is more frequent in males than in females; in Dr. Da Costa's† cases there were 24 males and 13 females: nearly twice as frequent, which is the proportion noted by other observers. As is the rule with scirrhus in all situations, the morbid growth makes its appearance from forty to sixty years of age. Pain is an early symptom, and, as it appears without cause, is persistent and rather increases than diminishes, and as progressive emaciation and feebleness accompany it, especially if the age of the subject be suitable, it is extremely

* Ancelet, "Études sur les Maladies du Pancreas," Paris, 1866, p. 34.

† "N. A. Med. Chirurg. Review," September, 1858, p. 883.

suggestive of malignant disease. The pain is situated in the epigastric region and radiates through the numerous ramifications of the solar plexus, into the back, through the abdomen; it is pretty constant, with paroxysms of great severity in which the suffering is agonizing; it is increased by the erect posture, and is relieved by bending the body forward. The presence of a tumor has a high degree of importance, but it is not always found, and when discovered may be misleading. A tumor is discovered in not more than one third of the cases, owing to the depth at which the pancreas lies. The head of the pancreas has been often mistaken for scirrhus. If enlarged lymphatics be felt, and especially if the cervical lymphatics are enlarged, support will be given to the supposition that an existing tumor is malignant. In a small proportion of cases, an excess of fat in the stools is a symptom which throws light on the case. The appearance of jaundice, the passage of blood by stool, œdema of the lower extremities, and disorders of digestion, are coincident with the extension of the new growth to neighboring organs, and rather confuse than clear up the diagnosis. In Da Costa's 37 cases, jaundice was present in 24, dyspepsia in 25, dropsy (anasarca or ascites) in 15. With the development of these symptoms there is a corresponding increase in the gravity of the constitutional state. The general condition and the cachexia, such as have been described as belonging to cancer of the stomach, are present in these cases. The duration varies somewhat. The most severe terminate in a few months, and but rarely is any case protracted beyond a year. The rate of progress is influenced by the complications—by the pressure on neighboring organs and interference with their functions. Sudden death may be due to erosion of a large vessel.

CYSTS OF THE PANCREAS.—Chronic interstitial pancreatitis is the chief factor in their causation, as in the production of the corresponding cysts of the kidneys. Ducts being obstructed by the growth of the connective tissue (hyperplasia), the contents of the acini—the secretions—accumulate, the walls yield to the increasing pressure, and thus a cyst is formed. Hæmorrhage into such cysts, purulent transformation, and albuminoid degeneration, effect important changes in the contents of these cysts. Obstruction of the duct of Wirsung by a calculus, by neoplasms, by cancer of the duodenum and tumors, will cause a cystic degeneration of the whole gland.

CALCULI OF THE PANCREAS.—These are concretions, consisting of carbonate and phosphate of lime, which have crystallized about a bit of inspissated mucus or other organic matter. To produce them there must be a catarrhal state of the mucous lining of the ducts, a

change in the secretion toward an excess of its earthy constituents, or an obstruction leading to retention of the secretion. The pancreas is also liable to amyloid and fatty degeneration, and is sometimes the seat of secondary tubercular deposits.

DISEASES OF THE LIVER.

TOPOGRAPHY OF THE LIVER.

THE liver, with its annexed apparatus, occupies the right hypochondrium, and extends in part across the epigastrium (Fig. 13). On percussion the area of the hepatic dullness is determined by the position of neighboring organs, as well as by those variations in the size of the liver due to disease and to its own normal elasticity. Under variations of the blood-pressure—as, for example, in mitral obstruction or regurgitation, and in portal stenosis—the size of the liver increases or lessens. Distention of the intestines with air, and emphysema of the lungs by increasing sonority at the borders of the liver, narrow the boundary of the dullness. When the patient is recumbent, the liver gravitates upward and backward; when the patient is upright, it glides downward and forward—hence the area of dullness shifts correspondingly. Besides the variations in the area of dullness due to these several factors, the vertical line of dullness differs at different points: in the axillary line it is four to five inches, and in the mammary line three to four inches. There is a difference between the deep and the superficial dullness. On strong percussion the deeper parts are thrown into vibration, and hence the wider the area of dullness; whereas on slight percussion the shelving margin of the lung vibrates alone, thus lessening the dullness.

In health the inferior border of the liver extends to the margin of the ribs. If on palpation it can be felt beyond, there is probably enlargement of the organ, unless effusion into the thorax or a tumor, etc., depress it downward. In the axillary line the dullness extends to the upper border of the eleventh rib (Fig. 13, XI). Besides the various conditions external to the organ which may affect its position, it should not be forgotten that—as has been stated—the liver has a considerable

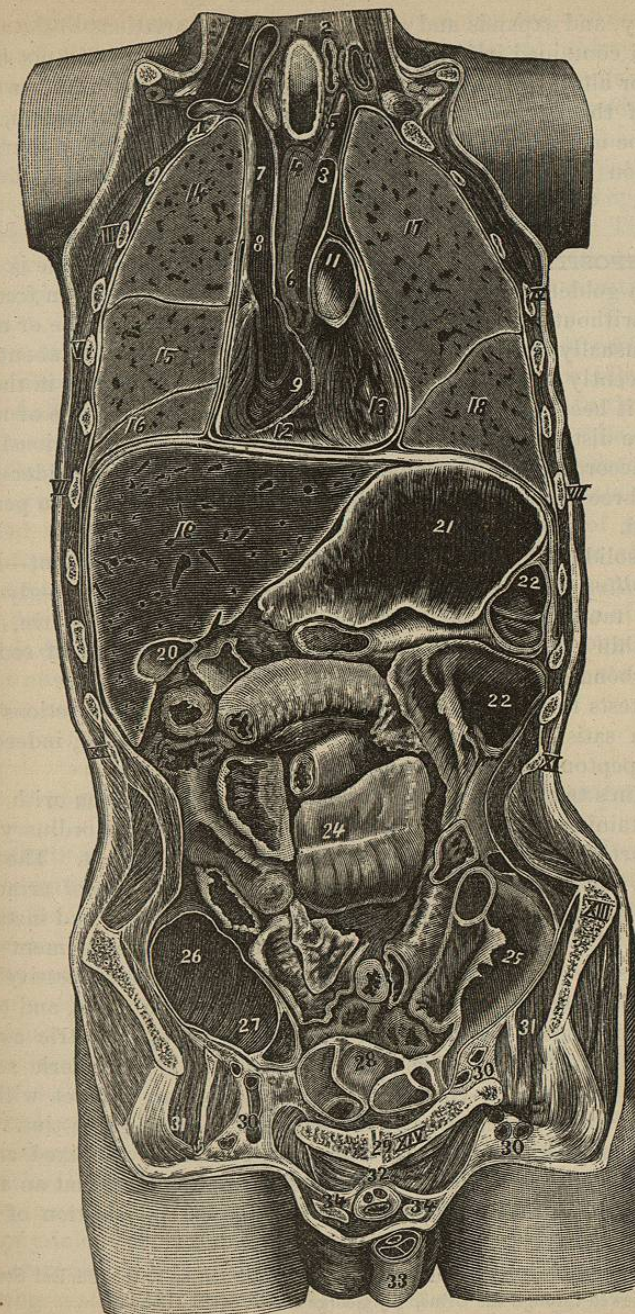


FIG. 13.—HORIZONTAL SECTION OF THORAX, ABDOMEN, AND PELVIS, FROZEN.—1, Section of Trachea; 11, Left Atricle; 13, Left Ventricle; 9, Right Ventricle; 19, Liver; 20, Gall-bladder; 21, Stomach; 26, Caecum; 27, Entrance to Appendix; 25, Descending Colon. After Rüdinger.