their progress to the surface and frequently determines their pointing externally behind the angle of the jaw. In six cases which occurred at the Children's Hospital between November and May, 1904, the duration varied between ten days and four weeks. Chronic, slowly accumulating "cold" abscesses due to cervical caries are not included, of course, in this category. The grave condition of exhaustion frequently seen in a patient with an acute or subacute retro-pharyngeal abscess is due to several factors: to the enforced starvation for many days, to sleeplessness, to toxemia, and to insufficient oxygenation of the blood in cases where the respiration is embarrassed. If now, preliminary to operative interference, the head is thrown back and the mouth held wide open, the tendency is for the base of the tongue and the posterior wall of the pharynx to become still more closely approximated, unless, indeed, the tongue is drawn strongly forward, which perhaps is neglected in the operator's effort to get a clear view. Thus a sudden temporarily complete asphyxiation may ensue, which, with the frenzied struggles of the unreasonable child, may result in cardiac collapse. Perhaps, also, the stimulation of the sensory terminations of the superior laryngeal nerve in the mouth and pharynx by the necessary manipulations may cause a reflex inhibition of the heart and respiration through the pneumogastric and sympathetic nerves, which contributes to the fatal result.

In cases similar to the one reported above, a preliminary tracheotomy would seem to be a conservative procedure. It could be quickly done under cocaine or even without anesthesia, and although the child's struggles might be exhausting they would, at least, not be accompanied by the element of suffocation. The incision of the abscess might then be deferred, if necessary, until the general condition had improved, or, if artificial respiration were required, the opportunity would be most favorable.

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Clinical Department.

A CASE OF ACUTE HEMORRHAGIC PANCREATITIS.

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DIAGNOSIS, OPERATION, RECOVERY.

PATIENT, A. B., female, forty-eight years old, married. First seen by the writer Jan. 10, 1904, at her home, in answer to an urgent summons referred to him by Dr. J. M. B. Farnham.

Family history. — Born in Connecticut. Husband well, but has lived apart from patient for several years. One son, twenty-seven, well. Causes of grandparents' death not known. Father died of acute diabetes

following an attack of "grippe." Mother is well, except for varicose ulcers of leg. One brother subject to malaria and severe dyspeptic attacks. Three sisters died in youth of typhoid and another of "bone-cancer." Two sisters are living at present, the elder, forty-nine years old, is a diabetic of several months' standing.¹ The younger, forty-five years old, was operated on four years ago for uterine trouble, and has been in delicate health since.

Personal history. — Typhoid at age of sixteen. Two miscarriages, the more recent being fifteen years ago. Menstruation has been irregular since, varying from three to six weeks. Has been subject to frequent attacks of indigestion and epigastric pain for many years. Is habitually constipated. Sour foods in particular are poorly borne. Four years ago was treated by a stomach specialist for chronic gastritis, and for a few days was fed by rectum because of nausea and vomiting. Later was sent to hospital, where she was kept on a liquid diet and gradually improved. There she was told that she had a small uterine fibroid. Diphtheria one year ago. Four months ago had a sudden attack of severe epigastric pain with vomiting and marked local tenderness. Was sick for three weeks, then resumed her customary household duties. The epigastric soreness persisted more or less, however, and from time to time she has been treated for it since.

Present illness. — The patient felt as well as usual this morning until nine o'clock, when she was seized by violent pain in the epigastrium radiating to left hypochondrium and scapular region. Vomiting and retching was constant, but without relief of pain. At first, she raised partially digested food, but after that only an occasional mouthful of greenish fluid. No blood has been raised. When seen, twenty minutes after the onset, she was upon her knees on the floor, straining violently in effort to vomit, but raising nothing. She was very pale, beads of perspiration stood upon her forehead, and the radial pulse was thread-like and barely perceptible. Morphine sulphate $\frac{1}{2}$ gr. was immediately given hypodermically, and patient placed on the bed. An additional $\frac{1}{2}$ gr. brought slight relief.

Physical examination. — Well developed and fairly nourished. Pulse small and compressible, 120 per minute. Temperature, 95.5° F. Skin pale, moist and cool. Pupils equal and now contracted. Tongue lightly coated. Heart sounds rapid and feeble. No murmurs. No cardiac enlargement or displacement. Lungs negative. Upper limit of liver dullness at sixth rib, lower not determined because of tenderness. There is extreme tenderness over entire epigastrium, extending over left hypochondrium around the costal margin to the back, where there is a point of especial tenderness to the left of the twelfth dorsal vertebra. Palpation of upper abdomen unsatisfactory because of muscular spasm.

Blood. — A leucocyte count made two hours after onset of symptoms showed 37,000 per cubic millimeter.

Urine. — About 120 cc. passed later in the day. Analysis as follows: Pale; acid; specific gravity, 1.028; albumin, a large trace; sugar, absent; sediment, considerable, showing under the microscope numerous hyaline and finely granular casts, a few coarsely granular casts, very little free fat, a few large and small round cells, some of which are fatty, and numerous squamous epithelial cells.

During the day the morphine was repeated as needed. The pulse remaining of poor quality, $\frac{1}{2}$ gr. of strychnine sulphate was given every four hours. Calomel in $\frac{1}{10}$ gr. doses was ordered hourly during the night. Sips of water were taken from time to

¹ Personal observation.

time, but no diet allowed. The abdomen distended moderately and the tenderness became more diffuse. The patient lay on the right side constantly, and dependent flank showed slight dullness to percussion. Evening temperature, 96.5° F.

Jan. 11, second day. Morning temperature, 96.3° F. Pulse, 120 per minute and of better character. Patient had less pain during the night, slept a little under the opiate, and is more comfortable this morning.

At ten A.M. a suds enema was given and in the effort to pass it the pain came on more severely than before. Three quarters of a grain of morphine, hypodermically, in a single dose, brought partial relief. From now on the abdomen distended rapidly and tenderness became general, with small areas especially marked, one such being just to the right of the umbilicus. There is dull tympany where percussion can be practiced.

During the day the pulse rate increased, and at 4.30 P.M. was barely perceptible at 140 per minute. Temperature, 97° F. Skin covered with cool perspiration. Respirations short and quick and patient manifests great anxiety. Operation had been advised earlier in the day and was now insisted upon. The patient was accordingly transferred to Worcester City Hospital where she arrived at 6 P.M. Pulse, at arrival, 152 per minute.

Operation.— Begun at 8 P.M. by Dr. L. F. Woodward, through whose courtesy the writer uses the following notes upon the case while the patient remained at the hospital:

Under light ether anesthesia a four-inch incision was made in the median line above the umbilicus. There was a considerable subcutaneous fat layer, although the patient is rather slight. Upon incising the peritoneum, several ounces of bloody fluid escaped. The incision was now enlarged downward passing to the left of the umbilicus, about a quart of bloody fluid, containing many fat droplets, escaping. The omentum was heavily laden with fat, and thickly dotted over with small, circular, flattened, white areas averaging 2 mm. in diameter. Upon sponging out the greater omental cavity, the blood was seen to well up from the neighborhood of the foramen of Winslow. Hasty exploration of the anterior stomach wall and gall bladder was negative. Patient being now in an alarming condition, the abdomen was hastily closed with mass sutures, irrigation with hot salt solution being kept up until the last few sutures were tied. In the meantime, two quarts of salt solution was given intravenously. Patient was taken to the recovery-room in poor condition.

For two days following the operation, patient remained in a critical condition, vomiting frequently very small quantities of dark greenish fluid and complaining of pain in upper abdomen. Small amounts of milk and lime water were taken, the vomiting not appearing to be excited by it. Blood-count on first day after operation showed 24,000 whites.

On the third day, bowels were moved by ox-gall enema and pulse had improved decidedly. Catheterized specimen of urine at this time gave the following analysis: High color; acid; specific gravity, 1.028; slightest possible trace of albumin; 2.38% of sugar. Sediment showed rare hyalin and finely granular casts, few leucocytes and large round cells. No blood.

On the fourth day there was but a trace of sugar. Occasional eructations of gas and fluid occurred.

Stitches were removed on the tenth day, the wound having healed by first intention. Liquid nourishment still continued because of nausea. Casts and all traces of sugar have disappeared from the urine.

Twenty-third day. Sat up in bed. Has been taking light solid and semi-solid diet without trouble. Complains still of soreness in left hypochondrium and there is a faint yellowish tinge to sclerotics. On palpation of abdomen there is resistance above umbilicus on both sides of scar, but no definite mass.

Pathological report on section of omentum cut to show whitish areas is: "Fat necrosis of omentum." (Dr. F. H. Baker.)

Thirtieth day, Feb. 10, 1904, weight 101 pounds, White count, 5,200. Hemoglobin, 85%.

April 21, 1904. Patient has gradually improved since leaving the hospital. Complains a little of fine darting pains in neighborhood of scar, and is somewhat constipated. Gets out of doors frequently. Stools are colored normally and yellowish tint has long since faded from sclerotics. There has been considerable gain in weight. Repeated examinations of the urine have failed to show recurrence of either albumin or glycosuria.

DISCUSSION.

The case was a most interesting one from the standpoint of differential diagnosis, the complicated anatomy of the upper abdomen admitting several possibilities, and the striking severity of the initial symptoms unquestionably located the trouble in that region.

The remarkable elevation of the white-count occurring but two hours after the onset of symptoms practically ruled out uncomplicated biliary or renal colic and argued strongly against intestinal obstruction in which the leucocytosis develops more gradually and rarely attains so high a degree unless peritonitis has supervened. The persistent and stationary character of the pain as well as its location was against the two former diseases. Perforation of an ulcer of the posterior stomach wall, pylorus or duodenum or acute pancreatitis were the most probable conditions. The history of frequent attacks of epigastric pain with nausea and vomiting was consistent with any of them but absence of hematemesis, prior symptoms of hyperacidity or the characteristic increase of pain with the ingestion of food and beginning of the digestive process were all against a gastric ulcer. To the absence of tympany with obliteration of liver dullness but little importance could be ascribed for, in the case of duodenal ulcer, the perforation could be retroperitoneal and if of the posterior gastric wall, the gas might be retained in the lesser omental cavity. The association of high leucocytosis with subnormal temperature would be unusual in either perforative lesion, for in such cases the white count depends upon the inflammatory reaction and is associated with rise of temperature.

The family tendency to diabetes was suggestive of, the repeated attacks of epigastric pain and nausea were consistent with, the sudden terrific onset, the location of the pain and its persistent tearing quality, the extreme prostration with subnormal temperature, the severe retching, and later the dullness in the dependent flank were well nigh typical of acute hemorrhagic pancreatitis to which diagnosis the writer committed himself on the evening of the first day.

The white-count of 37,000 is, so far as the writer is aware, the largest reported in cases known to be acute pancreatitis although 19,000 to 24,000 have been observed. Should experience prove this early leucocytosis to be a constant feature of the disease its diagnostic value can hardly be overestimated.

Unfortunately, the operation did not absolutely settle the question of diagnosis as the pancreas itself was not exposed. It did, however, afford strong confirmatory evidence in the widespread fat necrosis with free blood in the peritoneal cavity, two conditions which are only associated in pancreatic disease. The later appearance of glycosuria though transitory is best explained by the assumption of a pancreatic lesion.

In the light of the favorable outcome of the case, question may perhaps be raised as to the expediency of the operation. Obviously, all that it accomplished was the removal of the bloody fluid and clots from the abdomen where if, as is likely, it contained enzymes of the pancreatic secretion it would doubtless have done harm. Evidently the bleeding had ceased sometime before the operation, and that further hemorrhage did not take place was a matter of good fortune hardly attributable to the operation. It may therefore be fairly urged that non-operative treatment would have had a like favorable result. To the writer's mind, however, operation was positively indicated as a diagnostic procedure. Indeed, it should have been resorted to several hours sooner for had a perforation, which was the most probable alternate diagnosis, existed, the best chance for the patient lay in timely operation.

Medical Progress.

RECENT PROGRESS IN SURGERY.

BY HERBERT L. BURRELL, M.D., BOSTON, AND H. W. CUSHING, M.D., BOSTON.

INHALATION OF GASOLINE VAPORS.

SOLLMANN¹ in an article on this subject gives the following conclusions: Gasoline or (petroleum ether) when inhaled has a comparatively slight anesthetic action. The anesthesia is, however, very dangerous, since the substance also produces convulsions, weakening of the heart, vasomotor depression and paralysis of the respiration. The kidneys are also irritated. The effects are produced very promptly and recovery under artificial respiration is also prompt. The cause of the convulsions is not known. They do not occur in frogs.

PARAFFIN INJECTION.

This subject, which during the past few years has aroused considerable attention, has been exhaustively treated in a monograph of one hundred and sixty-six pages by A. E. Stein.² He discusses the history, chemistry, pharma-

cology and toxicology of paraffin; the danger attending its use; the anatomical changes following its injection into animal tissues; the technique of injection; finally, whether hard or soft paraffin or vaseline should be used. He recommends for use a mixture of vaseline and hard paraffin having a melting point of 42° to 43°. This mixture is "plastic" as vaseline, and has also the stability of hard paraffin. The formation of emboli results from injection of that material in a liquid state. When the mixture is so firm that it escapes from the needle point as a fine thread the breaking loose of fine particles which can escape into the blood current is impossible. This requires an especially constructed syringe.

A special chapter is devoted to the employment of this mixture in different organs and tissues and the special technique. This is abundantly illustrated; two hundred and twenty-five bibliographical references complete the work.

ABLATION OF BENIGN MAMMARY TUMORS.

H. Morestin³ advocates the following method for the removal of benign, movable, sharply-circumscribed tumors of the breast. The advantage is the inconspicuous operation scar resulting. The technique consists of making the skin incision in the axilla along the anterior border of the hair growth; then through this opening, to tunnel through the subcutaneous fat to the tumor, which in all of the writer's cases was in the upper half of the breast and generally in the outer quadrant. When reached, the capsule was opened with scissors, the tumor seized with forceps, enucleated and removed. The canal was drained and the wound sutured. Guinard recommends for larger tumors than can be removed as above an incision in the sub-mammary sulcus.

TREATMENT OF PENETRATING WOUNDS OF THE ABDOMEN.

Harris⁴ in concluding his paper read before the Chicago Surgical Society in December, 1903, emphasizes the following points:

(1) In penetrating wounds of the abdomen, there are absolutely no known symptoms which indicate injury to any of the viscera except those noted above in connection with the urinary tract, stomach and, occasionally, the lower bowel.

(2) Except those relating to general shock, all symptoms following such wounds indicate either internal hemorrhage or peritonitis.

(3) To wait for symptoms of perforation of the intestine means to wait until peritonitis has developed, therefore,

(4) Every bullet or stab wound which penetrates the abdominal cavity should be operated on at the earliest possible moment in order to anticipate the advent of peritonitis.

(5) No time should be wasted in attempting to demonstrate the presence or absence of intestinal perforation by such means as the rectal