

theory of iodine in Graves' disease it was indicated only for a short period of time for the purpose of lessening an operative risk and in his opinion was about equivalent to a bipolar ligation.

Doctor Heyd wished to draw attention to the routine post-operative treatment of goitre cases that consisted in the administration by rectum of 500 c.c. of a 10 per cent. glucose solution with 4 c.c. of Lugol's solution every eight hours. Most of the cases of hyperthyroidism that had been operated upon by him were done under rectal anæsthesia with the patient going to sleep in her own bedroom and avoiding thereby all of the exciting causes incident to a trip to the operating room. The surgery of adenoma of the thyroid was, in the opinion of Doctor Heyd, different than the surgery of Graves' disease. If Graves' disease represented a hyperplasia then the operative indication was for a removal of a major portion of the thyroid in order to diminish the secreting units of the thyroid by just the amount represented by the tissue removed. On the other hand, the surgical indication in an adenoma was the removal of a tumor growing within an apparently normal thyroid gland. That this condition seemed to be correct was borne out by the fact that a case with an adenoma with hyperthyroidism usually recovered much more quickly after surgical intervention than did the patient with the hyperthyroidism of Graves' disease. In other words, removal of the offending adenoma of the thyroid brought about a more prompt and a more complete cure or relief from symptoms than did a subtotal resection of the thyroid in the cases of hyperthyroidism of Graves' disease where the recovery was more delayed.

DOCTOR PARSONS, in closing the discussion, said that he agreed with Doctor Heyd in regard to the distinction between the hyperthyroidism of adenoma and that of Graves' disease, but it is hard to prove. In reference to iodine, although he felt that some of these cases were stimulated to activity by the injudicious use of iodine, one must consider this point from the time standpoint in that these patients have carried a goitre for a long time. Something happens which makes them go to a doctor. This may be the beginning of their hyperthyroidism. He gives them iodine and toxic symptoms develop. Is that coincidence, and has the time of the iodine therapy overlapped the development of the hyperthyroid symptoms? If that is so, the iodine therapy was of no importance in the induction of hyperthyroidism, but it seems to happen too often to be a mere coincidence.

Stated Meeting Held January 12, 1927

The President, DR. WALTON MARTIN, in the Chair

PEDICLE GRAFT FOR OS CALCIS COVERING

DR. RALPH COLP presented a man, age thirty-five years, who was admitted to the Surgical Service of the Beekman Street Hospital, November 8, 1925. On the day of admission, when attempting to stop an elevator, he missed the rope and inadvertently caught his right foot between the floor of a moving elevator and the floor of the building, crushing the heel.

PEDICLE GRAFT FOR OS CALCIS COVERING

Examination disclosed a transverse lacerated wound of the right heel down to the tendon Achilles, really a partial avulsion of the heel. The Röntgen examination of the right foot showed an incomplete fracture of the os calcis without displacement. Under anæsthesia the wound was thoroughly irrigated with saline solution for about fifteen minutes and then cleansed with alcohol and ether. After thorough débridement, the laceration was sutured with silkworm gut and silk, and the wound was dressed with vaseline gauze. Dressing a few days after operation revealed that the wound was not infected, but that the lower flap of skin covering the heel; that is an area of about 2 inches x 3 inches, had become black and gangrenous. Within the one week, the necrosis of the heel had progressed so that a circular area about 5 inches in diameter was involved. The underlying granulations, upon removing the slough, however, were fairly clean and in the centre, bone was exposed.

Four weeks after the initial trauma, the wound surface which measured about five by four inches, appeared clean, the granulations red and exuberant, and conditions seemed satisfactory for a pedicle graft.

December 10, 1925, a pedicle graft was transferred to the right heel, employing the following technic: The area of the right heel was thoroughly scrubbed with green soap and water, followed by alcohol and ether, and since this procedure caused bleeding, the granulating area was covered with hot towels and pressure applied by hand of an assistant. A full thickness pedicle graft was cut in the region of the left thigh measuring about 4 inches in length, and about 5 inches in width. The pedicle ran parallel to Poupart's ligament. The thickness of the graft included all tissues between skin and the deep fascia of the thigh. The denuded area which was caused by raising the skin flap was thoroughly covered with Thiersch grafts which had been removed from the anterior aspect of the right thigh. These grafts were held in place with paraffined gauze reinforced by moist gauze dressings. A sheet of rubber dam completely encased this dressing. This dam prevented secretions from the thigh reaching the area of the heel, and the secretions from the heel seeping into the dressings of the thigh. The right heel was then brought up to the anterior aspect of the left thigh where it rested on the rubber dam, and the free edge of the graft was sutured to the periphery of the wound of the heel with interrupted silkworm gut sutures for about one-half of the extent. In order to permit secretions to escape through the graft, it was perforated in several places with a Dakin-tube punch. The parts were then rendered absolutely immobile by a plaster spica, which was applied, completely encasing the lower half of the body. The graft itself was covered with paraffined gauze and a sterile towel. Twelve days later the graft, which was completely viable, was incised at its base for a distance of about one inch on each side. There was free active bleeding from the distal part of the graft. The next day, under local anæsthesia, the flap was entirely divided and the free end sutured to the heel with interrupted silkworm gut. The plaster case was then removed and the area of the left thigh was dressed for the first time. It was found that all the Thiersch grafts had taken.

The patient was discharged January 5, 1926, with the heel completely cicatrized. He was warned because of lack of sensation in the graft to protect the skin from the shoe by means of a layer of rubber sponge. Wound remained completely healed until December 1, 1926, when because of the holiday rush, patient was forced to walk around most of the day and neglected to protect his heel with a rubber sponge, resulting in a small ulcer which has since healed.

DOCTOR COLP also presented a youth of seventeen years, who was admitted

to the Beekman Street Hospital, March 26, 1926. His history dates back to fourteen months before admission, when his right heel was crushed between the street pavement and the platform of a moving elevator. The wound, which involved practically the entire heel, never cicatrized completely, but left an ulcer about the size of a silver half dollar which did not heal in spite of the fact that it was dressed three times a week for over a year. When admitted to hospital he presented a sluggish ulcer about the size of a fifty-cent piece, lying practically on the posterior medial aspect of the right os calcis. The region of the right heel was replaced by dense scar tissue firmly adherent to the underlying os calcis. There was a deformity of the foot with a contracture of the flexors of the leg resulting in an apparent talipes equinus, although when patient walked, the gait was almost normal. The Röntgen examination of the foot showed an old complete fracture of the os calcis about midway through its body. This was healed with the posterior fragment turned markedly to the inner side, and that it was comminuted is indicated by a hole through the outer side of the bone. There was a rather large deforming callus present.

Inasmuch as the ulcer was placed almost directly upon the os calcis and surrounded by dense scar tissue, a pedicle graft seemed to be the only procedure which might effect a cure. Before this could be done, a bed of healthy granulation tissue to receive the graft had to be prepared. April 3, 1926, the ulcer was thoroughly curetted and a small part of the scar tissue about the os calcis was excised and about a dozen holes were drilled into the uncovered os calcis with the hope that granulations might spring up from the medulla and thus cover the bone. The leg and foot were placed in a plaster case in dorsal flexion. Ten days later the wound was clean and granulations were flourishing and beginning to cover in the bone. There was still a great amount of scar tissue surrounding the area of granulations. It took three subsequent operations before all the scar tissue had been excised and drill holes had been bored in the bone which was uncovered by the removal of the cicatrix. An X-ray picture of the heel did not disclose any infective osteomyelitis. About six weeks after his admission, the region of the heel as represented by the posterior portion of the os calcis, was covered with bright red granulated tissue and the conditions seemed favorable for a pedicle graft. Accordingly, on May 17, 1926, a pedicle graft was applied to the right heel for the large defect which involved the posterior portion of the heel, extending from its inferior margin up on to the region of the tendon Achilles for the extent of 5 inches. The transverse diameter of this defect was about 3 inches. The technic employed was similar to Case I.

Six days post-operative the graft was in excellent condition and the pedicle was partially divided one inch on each side. Good active bleeding occurred from the distal side.

Eleven days after the primary operation, the pedicle was completely divided. The area which had been covered with Thiersch grafts was dressed; all had taken. Three days later, the free end of the pedicle graft was sutured into place with interrupted silkworm gut sutures. Following this there was some sloughing of the graft, the granulating area resulting was covered with five small pinch grafts. The patient was discharged July 3, 1926, and since then the affected area has remained completely healed with an excellent functional result.

These cases were shown not only to illustrate the well-known technic of a pedicle graft and to show the practicability of covering the os calcis with

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granulations derived from its own medulla, but to emphasize the importance of pedicle grafts in this region.

The heel because of its anatomical location is made to stand the stress and strain of daily use, large scars, the results of trauma to this region are naturally poorly tolerated, and the resulting chronic ulcers produce total disability in the majority of cases. In wounds of the heel with a loss of substance a full thickness pedicle graft with an adequate supply of subcutaneous fat appears to be the ideal procedure. It should be remembered, however, that sensation is slow to return to the graft and that the heel should be adequately protected from the unsuspected irritation of the shoe until such time as the sensation returns and the skin has adapted itself to its new environment by the development of callus.

TRAUMATIC RUPTURE OF POLYCYSTIC KIDNEY

DR. JAMES N. WORCESTER presented a man, forty-eight years old, who was admitted November 3, 1926, to the Beekman Street Hospital. Just before admission he had been run into by a truck, being struck in left flank. Immediate pain in right flank and right side of abdomen. When admitted he presented marked tenderness and rigidity in the right flank and right abdomen. Slight spasm left flank. Quite marked shock. He showed signs of internal hemorrhage. Catheterization produced pure blood. A rupture of the right kidney was diagnosed and an immediate operation was performed. The kidney was exposed by an oblique incision; on opening the capsule a large amount of blood escaped. On inspecting the kidney it was seen that an abnormal kidney was present. It was very large and studded with cysts and in many places was adherent to the capsule. The pelvis of the kidney was completely torn across and the kidney almost split in half. An attempt was made to tie the renal vessels, doubtful if this was successful. On account of profuse oozing, the cavity was packed with gauze.

Post-operative.—Immediately following operation condition not very good; however, he responded to hypodermoclysis and proctoclysis. Following which convalescence was remarkably smooth. Packing removed on sixth day without hemorrhage and tube inserted. This was gradually shortened. Wound completely healed on discharge. For several days post-operative ran blood in urine and some white cells. Quantity always satisfactory. Specific gravity always low, 1008–1012.

December 1, 1926 Blood chemistry as follows: 20.6 mg. urea nitrogen in 100 c.c.; 2.1 mg. creatinine nitrogen in 100 c.c. Phthalein test: Appearance in eighteen minutes—25 per cent. first hour, 20 per cent. second hour; total, 45. Urine amber, acid, 1010 clear, no casts. Present condition is satisfactory. The left kidney can be felt extending almost down to the spine of ileum.

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DR. HOWARD LILIENTHAL presented a female aged four years, who was brought to the Clinic of the Hospital for Joint Diseases, March 21, 1924. The child had been apparently normal; had weighed nine pounds at birth; nursed for ten months; stood up at eight months; talked at ten months and walked at sixteen months; teeth at eleven to twelve months. The child had gained slowly in weight, although there had been frequent green diarrhoeal stools but without vomiting.

At the age of five months the mother noted that its breathing was distinctly labored but the doctor could find nothing wrong with the lungs. For

two months there was respiratory disturbance but without cyanosis or other sign of deficient aeration. The child's color was pale and the heart's action often rapid. The mother stated that she noted a lump "on the right shoulder blade" at the age of about eight months and she took the infant to the Babies' Hospital, where an X-ray study was made. This was reported as showing: "A large roughly quadrilateral dense shadow in the lower part of the right chest extending over the heart; also into the left chest and down over liver shadow. Right chest above this appears free from lung tissue (!). The right diaphragm appears adherent to the mass. The right chest is smaller than the left. The right bronchus not seen. Probably congenital atelectasis." This report was kindly furnished by Dr. Kenneth D. Nichol, Resident Physician of the hospital on December 16, 1926.

The mother refused to leave the baby but took it to the Lebanon Hospital, where the X-ray report made on April 30, 1923, was as follows: "Fluoroscopic examination of chest of Phyllis H., shows a dense shadow, homogeneous in character, sharply circumscribed, ascending apparently from the lower mediastinum and projecting to the right. The mass is the size of a small orange; its left border projects slightly to the left of the median line and is overshadowed by the heart. The appearance is that either of a cyst or neoplasm ascending from the mediastinum. From its shape and age of the patient we are inclined to believe that it is very likely a cyst."

A puncture was made at the Lebanon Hospital which produced sterile bloody non-coagulating fluid. The Wassermann test and the usual blood and urine examinations failed to show positive indications of disease. Operation was suggested at this time, but the mother refused, and took the child home.

At twenty months of age tonsillitis developed and the patient was taken to Beth David Hospital, where röntgenological examination resulted in corroboration of the former findings.

March 16, 1924, when twenty-one months old, the child suddenly stopped walking because of weakness of the right lower extremity. This became rapidly progressive. At first she was able to stand, but the right foot turned out and she fell on attempting to walk.

When seen by Doctor Pollak at the Hospital for Joint Diseases, it was noted that the patient was a bright, well-nourished child without fever or pain. There was great weakness of the lower extremities, particularly of the right. There was total inability to stand because of paresis of both legs. There was a mass between the right shoulder blade and the spine with dulness upon percussion; breath sounds were exaggerated anteriorly. The blood examination revealed hæmoglobin, 42 per cent.; red blood cells, 3,200,000; leucocytes, 14,000; polymorphonuclears, 42; small lymphocytes, 38; large lymphocytes, 13; transitionals, 1; eosinophiles, 3. Urine examination negative. X-ray studies by Dr. H. B. Phillips on April 14, 1924, resulted in the following report: "Cyst lower right chest. Pressure erosions, spine and rib—and œsophagus is displaced anteriorly." On May 16, Doctor Phillips made another röntgenological study of this case. The final röntgenogram, which is shown herewith (Fig. 1), was by Doctor Jaches.

The child was first seen by Doctor Lilienthal, April 12, 1924, one month after she had stopped walking because of the constant weakness of the right hamstring muscles. At that time, both legs were flaccid and obviously paralyzed. There was a protruding subcutaneous mass covered with normal skin between the right scapula and the spine. It was firmly elastic. X-ray examination showed a large mass in the right chest extending across the

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median line into the left chest above the heart. (Fig. 1.) The opacity of the right side occupied the lower two-thirds of the chest and extended to the left above the heart where there was a large shadow. There appeared to be partial erosion of the adjacent ribs posteriorly and also some erosion of the bodies of the neighboring vertebræ. The child's condition was so good, however, that it was hard to think of the case as one of malignancy.

The patient having entered Mt. Sinai Hospital, on April 15, Doctor Lilienthal operated, using at first local and then general anæsthesia. He resected about one and one-half inches of a rib subperiosteally over the tumor.

He then aspirated with a coarse needle a minute quantity of thick, bloody fluid. The posterior mediastinum was then opened and the capsule of the tumor exposed. This was incised so as to admit the index finger. The wall was tense and the tumor rudely spherical. A large part of the contents was removed with the finger. It consisted of soft grayish-red neoplastic tissue. The total amount removed was a little greater than the bulk of a golf ball

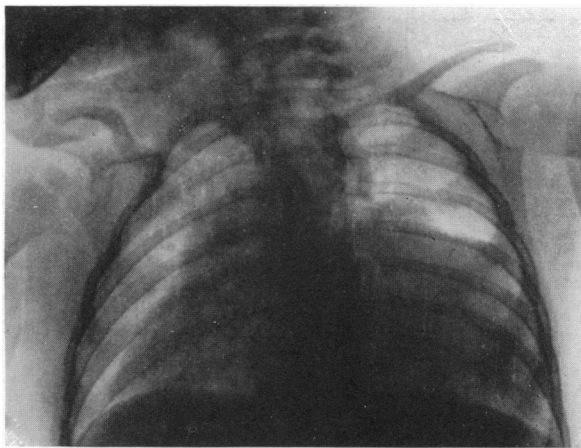


FIG. 1.—Röntgenogram showing condition on March 20, 1923. Before operation.

and the oozing cavity was packed with iodoformized gauze. This gauze was allowed to protrude at the ends of the wound and the skin was closed with silkworm gut sutures. The pleura was not entered. The tumor was examined at the laboratory by Dr. F. S. Mandlebaum with the following conclusions:

“Microscopical examination of the specimen removed from the mediastinum of Phyllis H., shows a tumor composed of rather large round cells of uniform size with a vesicular cytoplasm. A large number of thin-walled blood-vessels are present throughout the tumor tissue and the round cells appear to have a close relationship to the walls of these vessels. For this reason one is justified in making a diagnosis of angiosarcoma rather than lymphosarcoma which ordinarily would be made in a tumor presenting this type of cells. The derivation of the tumor cannot be determined from the material submitted.”

The wound healed nicely and it was advised that treatment with Coley's mixed toxins should be instituted. This was carried out by Doctor Pollak beginning April 25 with one twenty-fifth of a minim. This was followed by severe reaction. For eleven days the injections were continued in increasing doses up to $4\frac{1}{2}$ minims. After this the treatment was refused by the mother on account of the severity of the reaction phenomena.

May 6, 1924, only three weeks after the operation, the child began to walk, the relief apparently having been due to decompression. However, the improvement continued and a series of X-ray pictures by Dr. H. B. Phillips showed gradual disappearance of the tumor mass until at the last observation, October 13, 1926, an X-ray picture by Doctor Jaches revealed what

he considered a normal chest. The child has remained apparently well. (See Figs. 1 to 3.)

In order to get a possible sidelight on the histological picture, Dr. Louis Gross, Director of the Laboratory of Mt. Sinai, was consulted, who gave an opinion which coincided with that of Doctor Mandlebaum, except that his terminology was "hemangio-endothelioma."

Dr. James Ewing was good enough to examine the same slide and dictated the following: "Malignant cellular tumor of embryonal type composed of many blood sinuses lined by two or more rows of tumor cells.

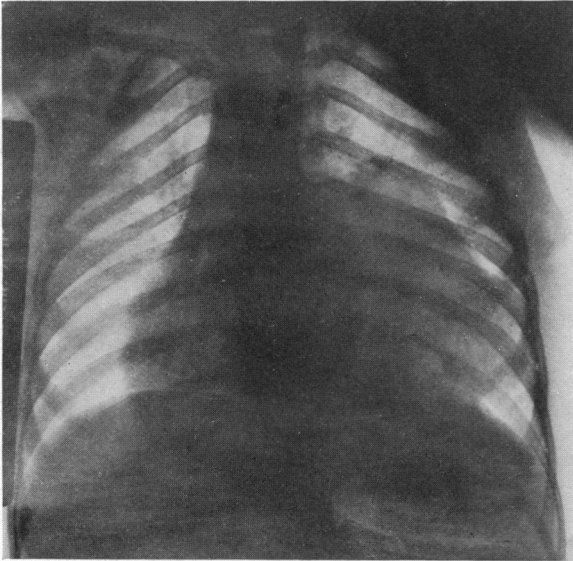


FIG. 2.—Large right shadow still present, though smaller, 17 months after Fig. 1. Tumor of left side practically gone.

Very delicate stroma." It was his opinion that we were dealing with an extremely malignant form of tumor.

The child is presented, walking and with nothing to show for her experience with malignancy except the resulting scar in her back. It is now almost three years since the operation.

Comment.—It will be noted that this child received no treatment of her malignant condition except the administration of the toxins and although the injections were few in number, yet the reactions were excessive. This is not the first time that the reporter

had noted a continuance of the recession in cases of malignancy after this treatment had been discontinued.

DOCTOR LILIENTHAL added that while he presented this case as an isolated one, yet his experience with this form of therapy in a number of other instances had been so favorable that he would strongly recommend its use in inoperable sarcoma and also as a prophylactic post-operative treatment after the surgical removal of operable tumors as well. With the latter object in view, it is not necessary to give doses large enough to produce more than moderate reactions. It should also be noted that in nearly all cases of inoperable malignant growths there are metastases whether demonstrable or not and any treatment which is directed merely to the site of the primary or principal growth should not be expected to affect the distant secondary tumors even though they be of microscopic size.

The action of the toxins is one which affects the entire organism. If there is any selective property in this form of therapy it is manifestly to be preferred to measures which are efficient only at the site of application. In this respect the toxins may be compared to the colloidal lead treatment of

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neoplasms which is being tested at present and with encouraging success by its sponsor, Blair Bell, of Liverpool. In the lead treatment, however, there are at least two disadvantages—first, that of lethal plumbism, and second, the danger of the perforation of hollow viscera which may be the seat of neoplastic disease. When properly administered, Coley's toxins are not directly dangerous to life. There are, of course, reactions, often very severe, but these can be controlled by proper dosage and when all febrile signs have disappeared, which they usually do in a few hours, there is no further danger from the individual dose. Coley has reported numerous cures which have been effected by the toxins and the reporter himself had been fortunate in observing a number of instances in which there has been apparently permanent disappearance of the disease. Some of these will be reported in a forthcoming book which is being prepared by Doctor Coley.

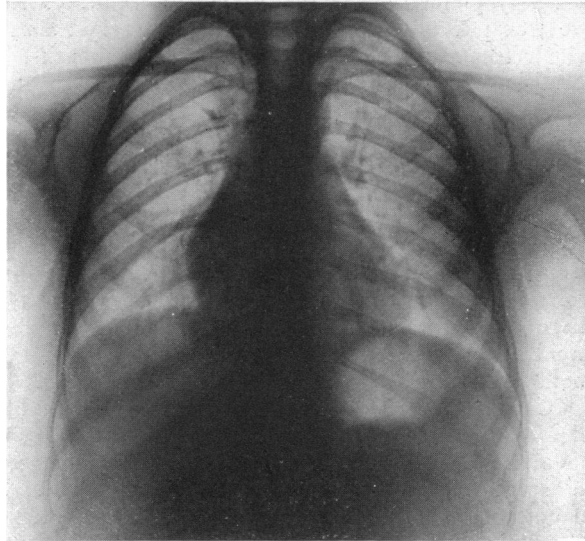


FIG. 3.—The same patient 2½ years after treatment by toxins. Doctor Jaches reports this chest as normal, not counting, of course, the slight changes which may be observed in the ribs on the right side.

Coley believes that about 10 per cent. of successes may be expected. It was the speaker's impression that this estimate is not exaggerated. At any rate, he was convinced that there is nothing which holds out similar hope in the treatment of inoperable malignancy.

DR. WILLIAM B. COLEY stated that he had observed seventeen cases of sarcoma of the spine or sacrum, in all of which the disease had reached the inoperable stage at the time of his first observation. In addition, two other cases of inoperable sarcoma of the spine had been treated with the toxins by other surgeons under his direction, making a total of nineteen cases in all. This series included ten females and nine males. The locality of the tumor was as follows: Two cervical, seven dorsal, seven lumbar and three sacral. A microscopical examination was made in all but two of the cases, and the following classification given: Nine giant-cell, four spindle-cell, two mixed-cell, and two round-cell. The age of the patients ranged from ten to sixty years. Nine, or 47 per cent., of the nineteen cases remained alive and well from three to twenty-four years; one patient died of a recurrence at the end of six years. In the nine cases in which recovery took place, the toxins alone were used.

DOCTOR COLEY gave a brief history of some of the most noteworthy of these cases as follows:

CASE I.—D. G., male, aged twenty years, was always in good health until the latter part of 1901, when he developed a swelling in the mid-dorsal region. This grew rapidly and partial paralysis of the lower extremities developed a short time later. He was sent to the Montefiore Home for Incurables in February, 1902. Examination at this time showed a very large tumor occupying at least five or six of the dorsal vertebræ. The patient had complete paralysis of the bladder, rectum, and lower extremities; and had lost fifty pounds in weight. The condition seemed to be absolutely hopeless. He was put upon the mixed toxins of erysipelas and *Bacillus prodigiosus*, which treatment was kept up for four months. The improvement in his condition was immediate and marked; in a few months he was able to walk about with a plaster jacket. His recovery was complete; and a few years later, he married and now has two children. Physical examination in March, 1924, showed the patient to be in excellent condition and he is still in good health, twenty-four years since the treatment was begun.

Dr. Harlow Brooks, Professor of Pathology, Bellevue Hospital, examined a section of the tumor microscopically, and pronounced it a round-cell sarcoma. Numerous atypical giant-cells were present; but whether or not the tumor would ever metastasize, it was impossible to say. At any rate, there was no question but that it was highly malignant locally, and of very rapid growth, and, undoubtedly, would have killed the patient in a few months had it not been controlled by treatment.

CASE II.—Baby W., male, aged two years and nine months, was first seen in March, 1911. In February, 1911, the father, while holding the child in his arms, was thrown out of a wagon. Nothing was noticed at the time, but the spine of the child was undoubtedly injured. One month later he began to get weak, and in the latter part of March a swelling was noticed about two inches above the upper border of the clavicle on the right side. This increased rapidly in size; and the patient continued to lose power of his muscles. The condition was regarded as infantile paralysis. There was marked muscular tremor of both hands, and almost entire loss of power in the arms; the patient could not move himself at all, neither was it possible for him to hold up his head. An exploratory operation was done by Dr. Stuart McGuire, of Richmond, Virginia, which revealed the presence of a well-defined tumor springing from the laminae and transverse processes of the cervical vertebræ. A section was examined microscopically, and pronounced fibro-sarcoma.

The toxin treatment was begun in July, 1911, and kept up for one year. The child's weight steadily increased during the course of treatment; he regained considerable power so that he was able to move his hands and legs, and could hold up his head. Doctor Ewing examined a section of the tumor microscopically in March, 1922, and stated that while he was unable to offer a positive and exact diagnosis, he was certain that it was a malignant tumor which might well be called sarcoma. He was inclined to regard it either as an endothelioma secondary to the cerebral growth or possibly a neurocytoma derived from misplaced nerve tissue in the cranium.

In May, 1921, Dr. Harvey Cushing performed a laminectomy, and found what he considered a very extraordinary tumor plastered all along the spine, though entirely extra-dural. While Doctor Wolbach, pathologist, at first called it a ganglio-neuroma, on further examination he pronounced it a neuroblastoma of an undifferentiated type.

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There can be little doubt that the tumor found by Doctor Cushing was an entirely different type from the original tumor which clinically and microscopically was unquestionably a highly malignant tumor. That this extensive inoperable tumor completely disappeared under no other treatment than the mixed toxins, and the patient remained well for more than fifteen years, is, certainly, a gratifying result.

CASE III.—H. B. H., male, aged thirty-eight years. In February, 1895, the patient began to lose flesh and strength. Shortly afterward he felt pain in the lower part of the spine over the sacrum and extending down the legs. It was more marked on the right side. On May 2, 1895, he was admitted to St. Luke's Hospital, where he was examined by Dr. F. P. Kinnicut and the other members of the staff. In the opinion of all, the patient was suffering from an inoperable sarcoma of the sacrum and pelvis. He had lost forty-one pounds in weight and could walk only with the greatest difficulty.

May 10, 1895, a brief trial of toxin treatment was begun. The injections were made directly into the buttocks. At the end of one week, the pain had almost entirely subsided; and the lameness was much improved. At the end of seven weeks, the patient had gained twenty-eight pounds in weight and appeared in excellent condition. He remained well and free from recurrence for seventeen years, when, in an accident, he received an injury to his skull which resulted in his death.

CASE IV.—The following case of recovery from an inoperable osteosarcoma of the vertebræ was reported by Doctors Miketta and Oliver, of Cincinnati, in the *Lancet Clinic*, May, 1910. The history in brief was as follows: A young girl, aged sixteen years, first noticed pain in the upper cervical region in 1907. A small lump appeared in the region of the posterior cervical glands in 1908; and in 1909 the symptoms became more pronounced. In August, 1909, she developed paralysis; there were paralytic symptoms from the neck downward. Röntgen-ray examination by Doctor Oliver showed an osteosarcoma of the second cervical vertebræ, which diagnosis was confirmed by neurological examination.

The toxin treatment was begun in October, 1909, and continued until February, 1910, a total of 52 injections being given. Marked reactions and severe chills (sometimes lasting forty-five minutes) followed the injections. The temperature, however, rarely rose above 99 to 101°; and only on one occasion did it reach 103° F. An injection was given every other day, but after a severe reaction was produced, one only every third day was given. Only slight improvement in the condition was noticed at first, but at the end of two months, the improvement was more rapid. Motion and power returned in the head and arm first, and then in the lower extremities. In April, 1910, the patient was able to perform every movement. She made a complete recovery and was still well when last traced, seventeen years later.

CASE V.—Another case is that of a giant-cell sarcoma of the sacrum involving the coccyx. In May, 1912, an operation was performed at the Mayo Clinic consisting of removal of two lower segments of sacrum as well as the coccyx. Administration of the toxins was begun immediately after operation. The treatment was kept up for about two months in doses sufficiently large to produce severe reactions. The patient was well when last traced, eleven years later.

CASE VI.—In August, 1918, Doctor Coley, in consultation, saw a female adult at Mt. Sinai Hospital, in which a diagnosis of sarcoma of the lower dorsal spine had been made. Röntgen-ray examination showed a tumor of the middorsal vertebræ, and there was paraplegia of the lower extremities.

The toxin treatment had already been started, and, on Doctor Coley's advice it was continued. Marked and steady improvement in the condition was noted, until the patient had completely recovered the use of her limbs. When last traced, two and one-half years later, she was in excellent health and able to do her own house work.

CASE VII.—Dr. Torr Wagner Harmer, of Boston (*The Boston Medical and Surgical Journal*, March, 1915), in a series of cases of inoperable sarcoma treated with the toxins, reported the following: A boy, aged sixteen years, had fallen striking on his spine. Pain and tenderness persisted in this

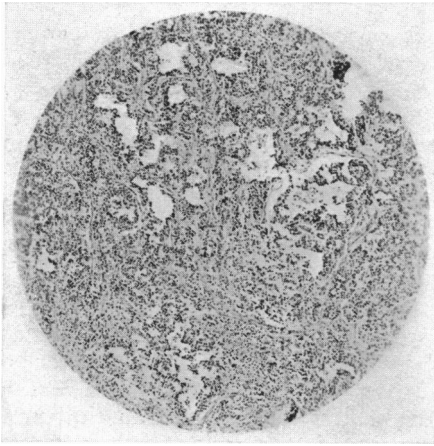


FIG. 4.—Photomicrograph (by Roy M. Allen, magnification 75 x) of section of tumor from the Pathological Laboratory of Mt. Sinai Hospital. See report of Pathologist.

region, followed by numbness over the external and anterior surface of the right thigh, with absolute loss of sensation. The patient was admitted to the Massachusetts General Hospital three months later, at which time he walked with slight instability, complaining of weakness of right knee, and intense pain in lower dorsal region of spine. He was operated upon by Doctor Porter, who removed the transverse process, curetted the bone, and trimmed the capsule as much as possible. Doctor Hartwell examined it microscopically and pronounced it a "richly cellular tumor composed of spindle cells with numerous giant cells. The cells are very atypical and their richness varies in different areas of the tumor, some

places being quite fibrous. There are scattered necrotic areas in the tumor tissue." Treatment with the mixed toxins was started at once and continued for seven months."

Injections were given every other day and then twice a week until a total of 62 had been given; the maximum dose was 18 minims. During the early course of treatment, the injections were made systematically into the belly, legs, and arms, and later into the recurrence which rapidly developed and grew until it measured 5½ inches in length, 3½ inches in breadth and 2 inches in elevation. There was paresis of the right leg. The treatment was kept up in spite of the violent reactions which occurred. The tumor began to slough in several areas and in January, 1913, there was no evidence of any mass nor any disturbance of sensation of limbs. The patient was in excellent health when last traced ten years later.

DOCTOR COLEY believed the result obtained in Doctor Lilienthal's case showed the importance of not abandoning all hope even in the seemingly quite desperate cases. While, he states, it is too early to pronounce this patient definitely cured, the fact that she has remained in excellent health for more than three years furnishes good ground for believing that the result will be a permanent one. Cases treated with the mixed toxins differ from those treated by radiation or even surgery, in that, in the former group once the tumor has entirely disappeared a recurrence seldom takes place and the patient usually remains permanently well. In proof of this he cited the

results found in a recent follow-up of 93 cases of inoperable sarcoma treated with the toxins alone, reported by him before the Johns Hopkins Medical Society in 1896, as follows: 16 patients have remained alive and well from eight to thirty-three years later, and twelve from ten to thirty-three years. Doctor Coley stated that when we consider how very few cases of malignant tumor, either sarcoma or carcinoma, there are on record in which the patients have been found to be alive and well ten years after treatment, the results obtained in the series just quoted become extremely important. Doctor Coley called attention to the report of Doctor Gibson in the *ANNALS OF SURGERY* for August, 1926, covering 437 cases of all types of malignant disease operated upon at the New York Hospital, in which only 64 patients were found to be living and without recurrence, and only 13 had reached the five-year limit.

DOCTOR COLEY stated that Doctor Lilienthal was not only one of the first to be convinced of the value of the toxins in inoperable tumors, but that he was among the first to recognize their value as a prophylactic after operation; and that he had employed this method as a routine measure for twenty years or more. The method, according to Doctor Coley, is based on a clinical observation of a considerable number of cases of all varieties of malignant tumors which have disappeared or shown improvement during an attack of intercurrent erysipelas or as a result of inoculation of living cultures of the streptococcus of erysipelas. In a paper published in the *American Journal of the Medical Sciences* in May, 1893, Doctor Coley collected from literature, 38 cases of malignant disease, in 23 of which an attack of erysipelas had occurred accidentally, and in 15 of which it was the result of inoculation. This series included 17 cases of carcinoma, 17 cases of sarcoma, and 4 cases of either sarcoma or carcinoma. In the group of carcinoma, 3 were permanently cured, 1 was well five years later, and in 10 cases decided improvement was noted. In the group of sarcoma, 7 patients were alive and free from recurrence from one to seven years after the attack of erysipelas. Eschweiller, in a monograph published some years later, made a very complete study of accidental erysipelas associated with malignant tumors, collecting 69 cases from literature. This series included 27 sarcoma, 38 carcinoma, and 4 cases in which the type of disease was undetermined. Of the sarcoma, there were 9 apparent cures, and 4 cases in which the patient had remained well from two to eight years; of the carcinoma, there was complete disappearance of the tumor in 6 cases, in three of which there was a later recur-

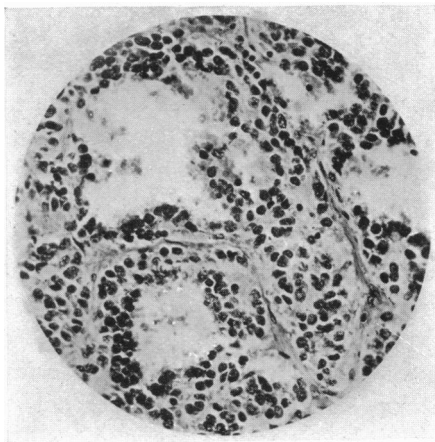


FIG. 5.—Same specimen. Magnification 350 x.

rence. In six cases the patient died of the attack of erysipelas. Since the publication of that paper, Doctor Coley has collected quite a number of additional cases.

Doctor Coley stated that in the last ten years, so much attention had been given to radium and Röntgen-ray treatment of malignant tumors that the value of the method of treatment with the mixed toxins of erysipelas and bacillus prodigiosus had been lost sight of, or relegated to the background. He stated that if treatment by radiation could produce better results than those obtained by the older method then there was no occasion whatever for reviving the latter. He wished to call attention to the fact, however, that a careful comparative study of the end results obtained by the use of the various methods showed that neither radium nor Röntgen-ray had been able to effect anything like the number of actual cures in inoperable sarcoma that have been obtained by the use of the toxins.

DR. ALFRED W. POLLAK said that in the case of the child who had been presented the intensity of the reactions following the use of Coley's fluid was very great. But from the very first injection the healing of the operation wound was extraordinary, and after the third injection the progress of healing of the wound was even ten-fold quicker than before, and after the adverse reaction was over the child seemed to be better generally. The hæmoglobin count was 42 per cent. at the time of operation and after the eleventh injection it went down to almost 30 per cent. Because of the violent reactions the mother requested that the injections be stopped, at least temporarily and Doctor Lilienthal thought this might be done without ill effects and a transfusion be given. While the giving of a transfusion was being considered, the improvement in the patient became so marked that matters were allowed to stand as they were and in a comparatively short time the child was up and around. Last summer, after the tumor had disappeared, very severe whooping-cough developed, there being as many as fourteen violent paroxysms in one afternoon. During the course of this whooping-cough a röntgenogram was taken of the lungs to see if they were affected, but the picture was negative. A severe attack of measles and then of bronchitis followed the whooping-cough, but cleared up without any ill effects.

DOCTOR LILIENTHAL, in closing the discussion, affirmed what Doctor Coley said, in that he is a consistent user of the toxin, but not all of his patients had survived. Nevertheless he considered that Doctor Coley's claims were not exaggerated, for he had had many patients cured who had remained well for a long period of time. Doctor Lilienthal had only one thing more to say and that was a suggestion. Doctor Coley had spoken of the scientific basis for the treatment. It was really empirical in the beginning, founded on the supposed action of erysipelas on sarcoma, which has been known for many, many years. Sir James Paget brought that out at least fifty years ago. (Clinical Lectures and Essays.) Much of the good work

TUBERCULOSIS OF THE BREAST

done in medicine has started as empirical, been sustained by theory and then by anatomy and stood at last on a firm scientific basis. It seemed to the speaker that in this toxin treatment one might find a scientific basis. According to the theory advanced by Gye, it probably takes more than a germ to produce malignancy, so it takes more than a germ to destroy it; Gye believes that it takes a certain chemical substance in the blood together with the germ to produce malignancy. This gives us a suggestion as to why foreign proteins act in producing a cure; they probably produce some change in the physiological chemistry in the body which destroys the medium for the germ of malignancy.

TUBERCULOSIS OF THE BREAST

DR. BURTON J. LEE presented a woman, forty-five years of age, who was admitted to the Memorial Hospital, May 9, 1924. Four months prior to admission, she first noticed a small lump just above the nipple of the left breast. The mass had seemed to remain stationary in size.

When admitted examination of the left breast revealed, beneath the areola, a small mass about one centimetre in diameter, which felt cystic. The skin overlying this mass was slightly reddened, the mass itself was somewhat fixed to the overlying skin and through one small sinus opening, a slight amount of yellow serous discharge was exuding.

Surrounding this mass, the breast, itself, seemed slightly indurated for a distance of about two centimetres. The nipple was not retracted and there was no discharge from the nipple. Axillary lymph-nodes were palpated in both axillæ, there being two nodes palpable on each side. These were moderately soft in consistence and not tender. Examination of the right breast showed a slight degree of indefinite nodulation throughout the breast.

Röntgenographic examination of the chest made by Doctor Herendeen showed some shadows at the apices, suggesting old, healed tuberculosis lesions.

May 10, 1924, the mass was excised through normal breast tissue, going well wide of the involved area on all sides.

Pathological report of the material was made by Dr. James Ewing and is as follows:

"Specimen is a mass of breast tissue 5 x 8 cm. It consists of solid opaque, finely lobulate opaque, reddish-yellow tissue without cicatricial char-

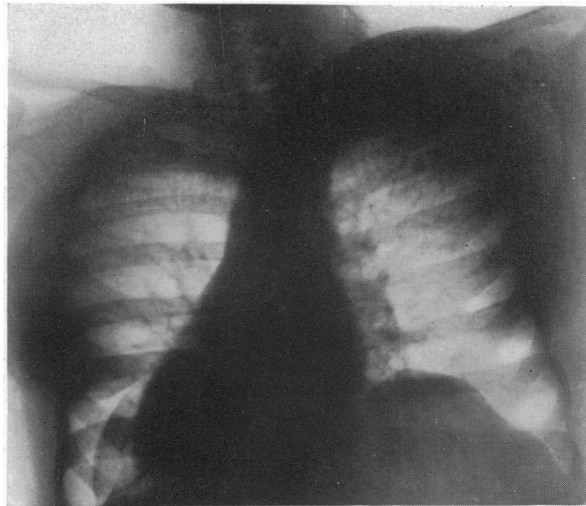


FIG. 1.—Tuberculosis of breast. (Chest plate.)

acter. At one point there are several firm nodules which are ducts distended with inspissated yellow material. No definite sign of carcinoma. The ducts are widely dilated and filled with inspissated exudate fatty material and structures quite typical of miliary tubercles. No signs of carcinoma."

There has been no untoward development since that time, the patient's general health has remained excellent, the breast has remained soft without any evidence of disease and the patient has gained 15 or 20 pounds in weight.

The case was presented, not because of the comparative infrequency of tuberculosis of the breast, but to call the attention to the possibility of treating some of the cases, with limited invasion of the breast, by local excision, rather than mastectomy.

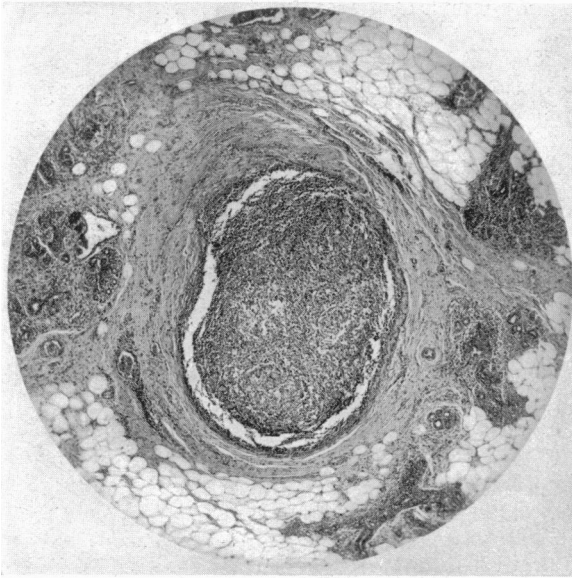


FIG. 2.—Tuberculosis of breast. (Low power.)

DOCTOR LILIENTHAL said that he thought this must be a rare case as all his patients, and those of whom he had previously heard, had pulmonary tuberculosis.

DOCTOR COLEY said that he had observed three cases of tuberculosis of the breast, two of which he had operated upon. One of these cases was a woman, aged twenty years, from whom he had removed the diseased por-

tion without removal of the entire breast. The patient made a good recovery and is still in good condition twenty years later. In this case there was no involvement of the lungs.

DR. WALTON MARTIN said that he had always considered it wiser, in these cases, to remove the whole breast because one surely in that way goes wide of the diseased tissue. In this case, however, the focus was small and Doctor Lee's procedure has proven to be very satisfactory.

DR. JOHN A. MCCREERY said that he considered Doctor Lee was fortunate in finding the lesion to be so circumscribed. In the few cases he had himself seen the disease was so widely disseminated that removal of the entire breast was necessary.

RECURRENT NEUROGENIC SARCOMA OF THE BREAST

DR. BURTON J. LEE presented a woman, sixty years of age, who entered the Memorial Hospital, November 10, 1926. Six years before, she had first noticed a small mass in the left breast. Five years ago an amputation of the left breast was performed at St. Catherine's Hospital in Brooklyn, and she

RECURRENT NEUROGENIC SARCOMA OF THE BREAST

had remained in good health since then, with no evidence of disease, until about six months ago, when she first noticed a small lump beneath the operative scar. This mass had greatly increased in size up to the time of admission. There had been no pain at any time and no cough. The patient thought that she had lost a slight amount of weight in the few months prior to admission.

Physical examination at the time of admission showed a woman of middle age, rather short and stoutly built, who seemed in good general health. There was a vertical scar over the left anterior chest region about twelve centimetres long. Underlying the lower half of this scar was a prominent tumor, 8 x 8 x 10 centimetres, projecting forward. This mass showed considerable fixation to the overlying skin and was

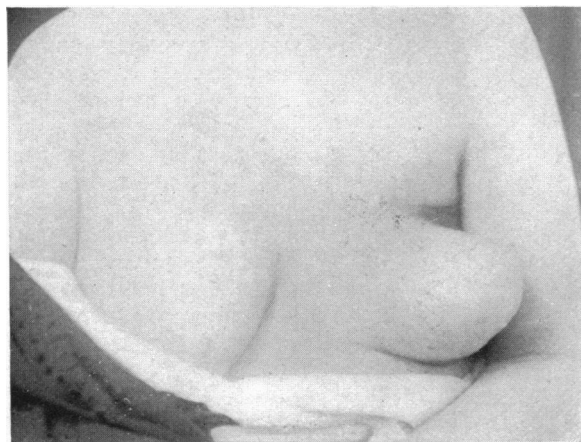


FIG. 4.—Recurrent neurosarcoma of the breast. Photograph before operation.

of a hard consistence, with indefinite nodulation over its surface. The mass, itself, was fairly movable upon the deeper structures of the chest wall.

There were no nodes palpable in either axilla, and although there was slight fullness in the left supraclavicular region, no nodes could be palpated here.

Röntgenographic examination of the chest, made by Doctor Herendeen, was reported as follows:

"There are adhesions of the right lung to the diaphragm. The heart and superior mediastinum appear normal. The large left breast throws a dense shadow, obscuring the lower half of the left

lung. The diaphragm on this side can be seen, however, and appears normal. No definite evidence of pulmonary metastasis."

Physical examination of the chest revealed no abnormal signs.

Two pre-operative low voltage X-ray treatments were given over the region of the tumor and the adjacent portions of the chest wall. The first was given

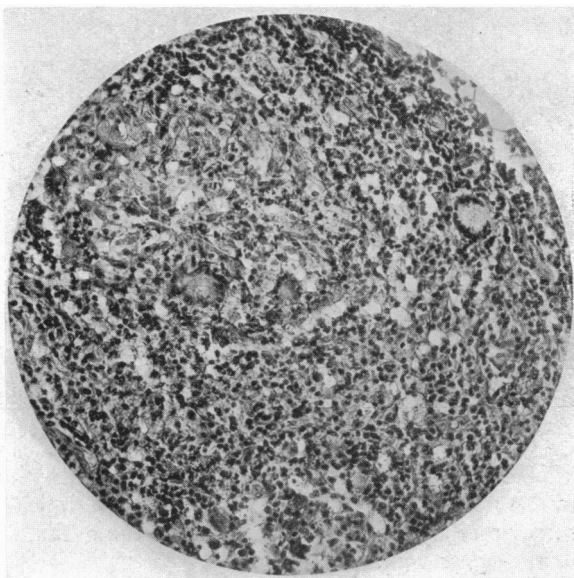


FIG. 3.—Tuberculosis of breast. (High power.)

November 4, 1926, and the second November 6, 1926, with the following factors: Time, 25 minutes, 4 m. a., 10-inch spark gap, 5-mm. aluminum filter, 15-inch focal distance. One treatment was applied anteriorly and the other laterally.



FIG. 5.—Neurosarcoma of breast. (Gross specimen.)

November 11, 1926, under a general anæsthetic, the tumor was excised by Doctor Treves through a transverse, elliptical incision, going wide of the tumor and extending well out toward the axilla, removing all structures down to the chest wall.

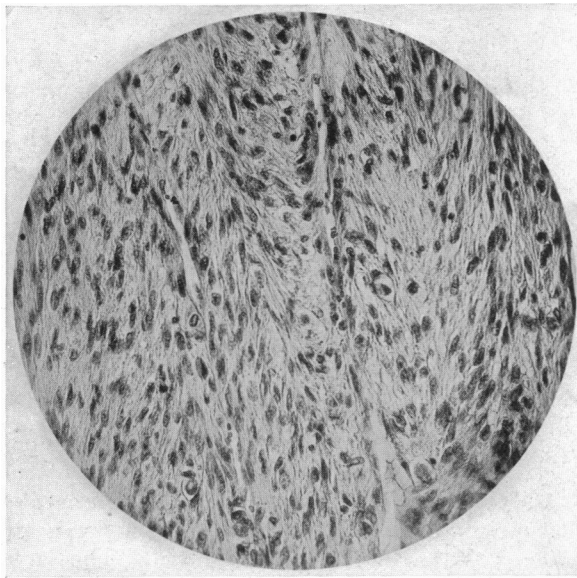


FIG. 6.—Neurosarcoma of breast. (High power.)

Pathological report upon the material was made by Dr. James Ewing and was as follows:

"The breast is the seat of a single solid circumscribed encapsulated tumor mass 7 cm. in diameter. It is very firm, opaque on the periphery oedematous softer, with one necrotic spot in centre. Tumor has the appearance of a fibrosarcoma. Spindle-cell sarcoma fasciculated, somewhat like a neurosarcoma, no epithelial elements."

There was a slight spreading of the wound, due to too early removal of the sutures, but the area of separation healed in rapidly and had prac-

tically closed at the time the case was presented. The case was presented for the following reasons:

First: Because of the great infrequency of this type of neoplasm in the breast.

Second: Because most of the neurosarcomata operated upon recur quite early.

PHLEGMONOUS GASTRITIS

Third: Because it seemed desirable to call the attention of the Society to this type of malignant neoplasm, which, in other parts of the body, is sometimes not recognized.

PHLEGMONOUS GASTRITIS

DR. JOHN C. A. GERSTER read a paper with the above title, for which see May ANNALS OF SURGERY, vol. lxxxv.

DR. H. H. M. LYLE said that twenty years ago when working on the etiology of linitis plastica he tried to trace the autopsy records of some cases in which phlegmonous gastritis had been given as a possible cause of linitis plastica so he could appreciate the amount of hard work Doctor Gerster had put on this paper.

As to the suggestion made by Doctor Gerster that some of the an-acid stomach cases which die after operation may have a localized form of this lesion starting from the gastric operative wound, Doctor Lyle had in mind one such case, and he believes that if routine autopsies were done on all cases one might find it a more common lesion than had been thought.

Undoubtedly more cases of acute phlegmonous gastritis occurred after inhalation or ingestion of the irritating war gases than are recorded. Doctor Lyle had personally seen cases where the gastric mucous membrane had been so destroyed. One of the reasons why more cases were not reported was that only a small portion of the gas cases were autopsied and a still smaller portion had a complete autopsy. Very often the autopsy was quickly done in order to find out what kind of a gas was used and not infrequently only the lungs, heart and liver were examined. It is known that many of the vesicant gases caused marked infiltration and hemorrhages into the submucosa with a resulting destruction of the overlying mucous membrane.

DR. KIRBY DWIGHT reported a case of phlegmonous gastritis on the Medical Service of Doctor Floyde at Roosevelt Hospital. The patient was a man, fifty-four years of age, who came to the hospital last July with dysphagia as the principal symptom. A diagnosis of carcinoma of the oesophagus was made and verified by X-ray and oesophagoscopy. He was in fair condition. Physical examination showed very little; a small lymph-node in the left supraclavicular fossa and a mass in the abdomen above the umbilicus and below the liver, the liver projecting below the costal margin were the only abnormalities. Temperature was normal. White blood-cells numbered 11,000, polymorphonuclears 66 per cent. Free HCl 0; total acidity, 9. He improved under a well-balanced diet and was discharged after three weeks' stay in the hospital and remained well for four months. In November he developed an acute condition and began to vomit, was alarmed and returned to the hospital. He vomited repeatedly after that and had severe epigastric pains, the temperature ran from 101° to 104°, being more often at the latter figure. He died on the sixth day after admission. On opening the abdomen at autopsy the viscera were examined *in situ* and the hardened pyloric extremity of the stomach was palpable below the free margin of the liver. The entire wall of the stomach was indurated and pus came from it on

exploring it with a needle. Microscopic examination showed acute inflammation with miliary abscesses.

As to the possibility of linitis plastica following cases of phlegmonous gastritis, this depends on the definition of linitis plastica. In the old days many cases were reported to be linitis plastica which would not be so considered now. In that time there was a distinction made between leather-bottle stomach and linitis plastica, and the latter was considered to be benign and many kinds of benign processes were classified as linitis plastica. It would seem now, if one follows the teaching of present-day pathology, that it could only be an apparent linitis which could follow an acute phlegmonous gastritis.

DOCTOR LILIENTHAL asked Doctor Gerster if he thought that certain cases of supposed tumor formation, which were never diagnosed and which were apparently cured by gastro-enterostomy, might be of this type. For instance, in one of his cases there was a large pyloric mass with symptoms of obstruction which he had felt sure was a tumor and in which he did a gastro-enterostomy as the first of a two-stage operation; and when he went in two weeks later to do a resection he found a perfectly normal pylorus. He had always thought this was a case of cellulitis of the stomach, but it might have been what Doctor Gerster described as chronic phlegmonous gastritis, an infiltration with or without pus between the musculature and the submucosa.

DR. WALTON MARTIN said that Doctor Gerster had grouped together all the infections of the stomach wall. It is well known that there are a number of chronic infections such as syphilis and tuberculosis as well as the acute infections. This entire group had been considered together, including linitis plastica. It is a difficult question to take up in that way. The acute, diffuse phlegmon is one variety; the more subacute localized infection is another. These form two distinctly different lesions due to pyogenic microorganisms. It is an interesting question to consider where the organisms come from in the acute diffuse phlegmon. Is the starting point a bacterial embolus or is there a break in the mucous membrane? Doctor Gerster has classed together a heterogeneous group of very rare lesions and has brought out a number of most interesting points concerning them.

DOCTOR GERSTER, in closing, said it was common to get a history of previous attacks, lasting a week or two, which had occurred several months to a year before the final one. In two of the ten cases of resection which ended fatally, the patient made a good operative recovery, but died within six weeks after the operation. In one case death was due probably to acute perforation, in the other to a fatal hemorrhage from a ruptured varix of the splenic vein.

Regarding the suggestion that linitis plastica is a preliminary stage of phlegmonous gastritis, this was merely offered as a tentative surmise.

A number of the patients suffering from chronic phlegmon were afebrile at the time of operation, and the condition was, therefore, mistaken for

PHLEGMONOUS GASTRITIS

carcinoma until the resected specimens were subjected to pathological examination.

The speaker had had experience similar to that of Doctor Lilienthal in performing a gastro-enterostomy for a large movable pyloric tumor causing stenosis with gastric dilatation and grossly resembling carcinoma, which at secondary operation a few weeks later was found to have entirely disappeared, from which it was evident that the tumor must have been of inflammatory character.

Regarding post-operative phlegmonous gastritis, when one considered the clinical course and gross pathological findings in fatal cases there appeared to be several instances in which the likelihood of post-operative phlegmonous gastritis might reasonably be assumed, but in the absence of microscopical examination conclusive proof was lacking.

DOCTOR GERSTER said that Doctor Archibald Malloch had furnished him with the history of still another case as follows:

Walter J., fifty-eight years, admitted to Royal Victoria Hospital, Montreal (service of Dr. George A. Armstrong), March 28, 1914; died March 29, 1914.

Six days before admission there was sudden onset of epigastric pain, which gradually increased in severity, vomiting, the vomitus being chiefly bile, and chills.

Physical examination on admission showed a moribund man, with moderate abdominal distention; epigastrium was somewhat resistant. Temperature ranged between 102° and 107°. Pulse was imperceptible; respiration 36. White blood-cells, 9600.

Diagnosis: Acute pancreatitis or perforated ulcer.

The patient died nine hours after admission. Autopsy showed no peritonitis; diffuse phlegmonous gastritis from pylorus to cardia, confined to submucosa; no ulcer.

Cultures gave streptococci.

Microscopical examination showed oedema of mucous membrane. The submucosa was thickened to five or six times normal width, and was crowded with pus cells and streptococci. The muscularis was involved to the peritoneal coat. The duodenal mucous membrane was entirely normal.