

"transitory tumors." If the substance were secreted by the ovaries continuously, instead of intermittently, the tumors would lose their transitory character and would become permanent new growths. In the case of the systemic tumors and of the deciduomata we have to deal with multiple benign tumors of a more or less transitory character affecting one organ or one tissue. We know that the origin of the deciduomata depends on two sets of conditions: (a) That a predisposing chemical substance be produced by a certain organ; and (b) that such a substance having been produced, indifferent stimuli, for instance, traumatisms, are sufficient to produce the tumors. Clinical observation makes it likely that certain tumors, as for instance, sarcomata, have at times been caused by traumatisms. Experimentally, attempts to produce tumors through traumatism or through long continued irritation have never been successful. It may be suggested that such attempts could have been successful only if the necessary "preparatory" substance had been secreted prior to the action of the indifferent stimuli.

As stated above, the new formations which we produced differ in several essential aspects from regenerative proliferation of the connective tissue during wound healing. Furthermore, the processes leading to the formation of deciduomata have nothing in common with so-called inflammatory reactions. Neither do they represent an example of compensatory hypertrophy although there exist cases of compensatory hypertrophy, which apparently almost imperceptibly merge into adenomatous new formations, just as certain hypertrophic processes taking place in the connective tissue in connection with wound healing lead to the production of keloids, which are usually classed among the fibrous tumors. If we injure the perichondrium near the ear cartilage the regenerative processes setting in may lead to the formation of small nests of cartilage. A similar result can be obtained, if we transplant pieces of perichondrium. It is very doubtful whether we should call such small cartilaginous areas, "chondromata." But let us assume that under the influence of an abnormal internal secretion, which suddenly comes into play, the connective tissue of the mucosa of the intestines began to proliferate at circumscribed areas in the neighborhood of places of injury, raising up the epithelium and forming relatively large polypoid out-growths covered by epithelium, we should be much tempted to regard such multiple polypoid out-growths as related to tumor formation, especially if the connective tissue of the mucosa showed a metaplasia into another variety of connective tissue. A sharp line of demarcation between regenerative and tumorous new formations does not exist. We are inclined to use the term "tumor" if the cell proliferation is very marked and limited to a certain circumscribed area and leads to a well defined formation and if—and this is an essential point—we can not entirely account for the tissue proliferation by including it among the regenerative or inflammatory reactions—if there exists an unknown factor leading to the cell growth.

In the case of deciduoma we have found the definite cause for its formation; and it is very desirable to emphasize certain similarities between the deciduoma and various other tumors in order to indicate the possible presence of predisposing "preparing" substances, as the unknown cause of certain tumors. Given such a "preparing" substance, otherwise indifferent stimuli would be sufficient to excite the potential proliferative energy of the tissues. The fact that the deciduomata degener-

ate as soon as the "preparing" substance ceases to be active is no valid reason for denying the designation "tumor" to these new formations. In order to indicate the ephemeral character of such new formations they may be called, "transitory tumors." Even carcinomata may retrogress spontaneously. As I have pointed out in another paper,³ the presence of "preparing" substance can only explain the formation of a "transitory tumor" or at the best, of a tumor that grows indefinitely in the same individual in which it originated, but it can not explain the growth of a tumor which can be transplanted into many other individuals in which such a "growth" substance is not likely to be present. In order to explain on such a basis the inoculability of tumors we should have to assume the hereditary transmission of an increased energy of growth to the following generations of tumor cells which thus would be able to continue to proliferate without the further presence of the growth substance in the inoculated animal. The possibility of such a transmission into later generations has not yet been established. Until such a proof has been given we must assume that transplantable tumors carry with them in the tumor cells or in their direct neighborhood the stimulus which enables them to proliferate in a new host. But it is quite possible that a non-transplantable tumor which originated through the action of a "preparing" substance may grow very rapidly and be, therefore, malignant. Transplantable tumors, on the other hand, do not need to be very malignant. As I have pointed out,⁴ the degree of inoculability and energy of tumor growth are two distinct properties which do not need to be associated in the same tumor. But the transplantability of tumors depends, in all probability, not only on the presence of a permanent stimulus in or near the tumor cells, but on some other factors, as yet unknown. The presence or absence of such secondary factors might determine the inoculability or non-inoculability of a tumor, even if the essential cause in the tumor formation was the same in both cases.

Clinical Notes

CASE OF PERFORATION OF THE GALL BLADDER IN THE THIRD WEEK OF TYPHOID FEVER;

LAPAROTOMY; CHOLECYSTOTOMY; DEATH AND PARTIAL NECROPSY.*

C. H. LAVINDER, M.D.

Passed Assistant-Surgeon, U. S. Public Health and Marine-Hospital Service.

WILMINGTON, N. C.

Ashurst,¹ in 1908, under the title, "Perforation of the Gall Bladder During Typhoid Fever; Cholecystectomy; Recovery," reports two cases of operations on the gall bladder for perforation during the course of typhoid fever, and analyzes nineteen cases of other operations done during the course of typhoid fever for lesions of this viscus. As such cases are rather rare, and are worthy of record, I desire to report one such case:

Patient.—Frank S., No. 777, aged 28, fireman on a tug, was admitted, Feb. 22, 1905, to the medical wards of the U. S. Marine Hospital at Stapleton, N. Y., under my care.

3. Über einige Probleme der experimentellen Tumorforschung, Ztschr. f. Krebsforsch., 1907, v, p. 17.

4. Über einige Probleme der experimentellen Tumorforschung, Ztschr. f. Krebsforsch., 1907, v, p. 18.

* In the service of Surgeon P. H. Ballbache, U. S. Public Health and Marine-Hospital Service, and is published with his permission. 1. Am. Jour. Med. Sci., April, 1908.

History.—He was born in Austria. Habits, family and previous medical history contained no facts of importance. He had been ailing for about seven days; complained of general malaise, weakness, anorexia, chilly sensations, slight cough, nose bleed two or three times, some pain in abdomen, no diarrhea, no chills. He could not speak much English, and, in the absence of an interpreter, his history was unsatisfactory.

Examination.—Examination showed a well-nourished and developed individual, with dull and apathetic facies, coated tongue, slight cough, rapid and dicrotic pulse; heart, normal; numerous dry râles over both lungs; abdomen, several rose spots on the skin, no enlargement of spleen noted; temperature 39° C., pulse 88, respirations 24.

Diagnosis and Hospital Record.—The case was regarded as probable typhoid and the man was put to bed on symptomatic treatment. Up to March 1 it was noted that he daily grew more apathetic, but without delirium. Slight diarrhea developed and he passed four or five liquid, yellowish stools daily. A fresh crop of rose spots appeared; the temperature was not very high, was very irregular and decidedly remittent; twice it reached 40° C. (rectal) for a brief time, but usually was near 38° C., and on February 28 was normal for nearly twenty-four hours. His bronchitis continued; his pulse and respiration showed nothing worthy of note; no jaundice was noted. Plasmodia malariae were not found in his blood and a Widal test was negative (February 26); his urine showed nothing of importance; white blood cells, 6,500 (February 28).

March 1: He had a chill, followed by a rise of temperature, for which no cause could be found. March 2 and 3: It was noted that more rose spots had appeared, that he was very dull and at times a little delirious; tongue was dry; his temperature from March 1 to 6 showed a marked daily remission from about 40° C. in the evening to 37.5° or 38° C. in the morning; pulse and respirations continued about as before. March 2, Widal test was negative; March 3, white blood cells, 11,000; March 5 and 6, Widal test gave a partial reaction; March 5, sputum was negative for tubercle bacilli; a blood culture made for tubercle bacilli was also negative. Tubercle bacilli were sought for on account of the absence of a positive Widal test and the character of the temperature curve. The increase in the leucocyte count was thought possibly due to his bronchitis, which was not severe, however. His abdomen had been examined daily, but nothing found.

Perforation.—On March 7, at 7 a. m. (twentieth day of the disease), he was seized with sudden, severe, abdominal pain, more or less general in character and very severe; dorsal decubitus with flexed knees; general rigidity and tenderness, but both seemed greater in the right lower quadrant. Pulse was small, rapid and wiry; facies distressed and anxious. A short time later a differential count of the white blood cells gave polymorphs 85 per cent., small lymphocytes 4.5 per cent., large lymphocytes 10.5 per cent. Hot applications to the abdomen gave some relief, no anodyne was given. It was thought that intestinal perforation had occurred.

Operation.—At 10 a. m., the patient having reacted somewhat, was removed, with his consent, to the operating room, and under ether I opened the abdomen, making a small incision at the outer border of the right rectus muscle, near the umbilicus. On opening the peritoneum there was a slight flow of dark fluid which appeared to be bile; there was general congestion of omentum and intestines, and both showed dark with distended vessels; the cecum, appendix and ileum were rapidly searched for perforations, but none was found. The color of the free fluid in the peritoneal cavity and the bilious color imparted to the sponges directed attention to the gall bladder; this could be reached through the incision and was palpated; several soft adhesions were felt around a fairly well-distended gall bladder, and one of them being accidentally torn, a gush of fluid was felt over the palpating fingers; the incision was lengthened and the gall bladder was found ruptured. The patient's condition, which was not very good in the beginning, was now growing alarming, so the gall bladder, after a hasty examination, was packed off with gauze from the rest of the peritoneal cavity, opened, drained, and a gauze wick inserted, after it had been anchored in the wound by a large suture; the rest of the incision was closed rapidly with through

and through sutures; the patient in the meanwhile had been given 750 c.c. of salt solution intravenously.

Postoperative Condition.—His condition improved somewhat after the infusion, and he was removed to bed, where he soon reacted from the anesthetic, but still remained in a precarious state. He was given strychnin sulphate, atropin sulphate and a small dose of morphin sulphate hypodermically, external heat was applied, and a little later hot saline solution was given by the rectum; the salt solution was ordered repeated every six hours and the strychnin, hypodermically, every three hours, depending on his condition. The next morning it was thought that his pulse had improved somewhat in quality, though still very rapid, and that his facies was better; his respirations, however, were increasing in rapidity, and mucus was accumulating in his throat; he had had no nausea or vomiting; there was a free discharge of bile on the dressings, which were also somewhat blood-stained. The strychnin and the saline solution by rectum were continued; very small quantities of liquids and whisky were given by mouth, and he was sponged off every four hours so far as dressings would permit. His temperature, which had reached 40° C. a few hours after the operation, continued steadily at this point. During the afternoon and evening he became delirious and talked a good deal, but was otherwise quiet. During the night his pulse showed a slight increase in rapidity, but remained of good volume under the conditions; his temperature remained high; his respirations reached 42. On the morning of March 9 he was in delirium, more talkative, though still quiet in other respects; pulse, 150, still of fair volume; respirations, 40; general condition, much worse. During the day he steadily grew worse, his pulse lost volume, respirations grew more shallow, lungs filled up, tracheal râles appeared, and at 6:40 p. m. he died.

Necropsy.—The next morning at 10 o'clock a partial necropsy was done. I was unable to be present and the following abstract is made from notes kindly taken at my request, by Passed Assistant Surgeon T. D. Berry of the Public Health and Marine-Hospital Service.

The gall bladder was found well held up in the wound by the retention suture, the gauze wick being still in place; it was found walled off by recent adhesions from the general cavity, and there had been no apparent further leakage of bile into the peritoneum; the gall bladder contained still about 50 c.c. of dark bile and mucus, its wall was generally much thickened, and on its outer surface, near the neck, were two spots much roughened and deeply bile-stained; on opening the bladder these two discolored spots were shown to be perforations due to ulceration; the entire mucous membrane was studded with ulcers, ranging in size from 1 or 2 mm. up to 1.5 or 2 cm. in diameter, and numbering about twenty in all; the ulcers were roundish in shape, with sharply defined, punched out borders and fairly clean bases; the mucous membrane around all ulcers was much undermined, and in one or two places the ulcers communicated with each other under the mucous membrane; the two perforating ulcers were of a dissecting type, obliquely through the wall, forming sort of valve-like openings, which probably accounted for a distended bladder at the time of operation in spite of perforations; no gallstones were found, and all ducts were patent except the cystic, which was found completely occluded about 1.5 cm. from its junction with the hepatic duct, and here for a short distance the lumen was obliterated and the duct was nothing more than a fibrous cord.

The general abdominal cavity presented signs of recent peritonitis, the intestines being very moist and flecked with flakes of lymph; there was also a small quantity of cloudy, purulent looking fluid in the pelvis; the mesenteric lymph glands were uniformly, though not greatly enlarged; spleen was not enlarged, weight 165 gm.; on slitting up the lower ileum general hyperplasia and ulceration of the intestinal lymph follicles was noted. Other organs were not examined.

As for the immediate cause of death, it was thought that the patient's resistance had proved insufficient for the sepsis superadded to his typhoid.

It is much regretted that owing to unfortunate circumstances no cultures were made from the gall bladder either at operation or at necropsy.

It might be added that the anesthetic used is open at least to consideration. At the time, under the conditions, ether seemed to be the choice. It can not be denied, however, that the ether undoubtedly exaggerated the bronchitis, and it is possible that it may have contributed, in some degree at least, to the final fatal outcome.

THE LEPROSY-LIKE DISEASE AMONG RATS ON THE PACIFIC COAST.

WILLIAM B. WHERRY, M.D.

Bacteriologist to the San Francisco Board of Health,
SAN FRANCISCO.

It seems worth while recording that out of over 30,000 rats examined, two have been found ill of the leprosy-like disease due to acid-fast bacilli. This disease was first described by Stefansky,¹ next by Dean² of the Lister Institute of Preventive Medicine, and by the last Indian Plague Commission.³ I am informed that Dr. W. R. Brinkerhoff has also found the disease among rats in the Hawaiian Islands.

Both of the specimens I have encountered were large adult female rats (*Mus decumanus*). One was found in San Francisco on February 13, and the other in Oakland on April 17. My particular attention was called to the rats by the general subcutaneous congestion; the congestion and hypertrophy of the cutaneous, axillary and inguinal lymph glands; the presence of numerous minute yellowish tubercles in the subcutis; and the irregular nodular thickening of the skin. Externally there was a noticeable alopecia, especially about some of the largest nodular thickenings, which had ulcerated. No fleas could be found on either rat.

No micro-organisms were found in preparations stained with the ordinary anilin dyes. In decinormal caustic soda preparations numerous rod-like bodies were seen. These did not stain with Loeffler's methylene blue but retained the stain in the tubercle method. When colored with hot carbol fuchsin they resisted decolorization with 20 per cent. nitric acid in 95 per cent. alcohol. In such preparations the morphologic resemblance to the bacilli in leprosy was striking, but when less acid was used, for example, 5 per cent., the rods appeared thicker and more like tubercle bacilli. Smears from the skin ulcers showed that these were discharging enormous numbers of bacilli. The rods were in the greatest numbers in the subcutis and lymph nodes. Very few scattered groups could be found in preparations or sections from the liver and spleen.

The histologic changes in the skin were strikingly like those found in leprosy; but the bacilli, and the so-called lepra-cells crowded with them, were much more numerous than in any leprosy sections I have studied.

Owing to accidents my wild rat and guinea-pig inoculation experiments were failures. Two white rats inoculated subcutaneously over two months ago are still under observation and appear to be unaffected.

ADDITIONAL NOTE.—On reading proof of the above I am able to add that I found two more cases of this disease. Both of these very large specimens of *M. decumanus*, a male and a female, were caught in Oakland. The inmates of a store had noticed the female in their basement for some days previous to its capture and set a trap for it on account of its scabby, hairless

and sickly appearance. The anatomic findings were as above described, excepting that the male specimen showed no cutaneous ulceration. One flea (*Ceratophyllus fasciatus*, Bosc.) found on the male specimen was ground up on a slide and stained by the tubercle method. It contained no acid-proof bacilli. During the past month Dr. George W. McCoy, U. S. Public Health and Marine-Hospital Service, has found seven similar rats from widely scattered parts of San Francisco. My assistant, Mr. A. Venske, recalls having dissected a number of such rats in old Chinatown, San Francisco, in 1901, although at that time the nature of the disease was unrecognized.

CASE OF BRAIN ABSCESS.

W. B. HOLDEN, M.D.

PORTLAND, ORE.

Patient.—Mr. D., aged 35, bookkeeper, came under my care Nov. 1, 1907.

History.—Previous history was as follows: For some weeks he had been suffering from left earache. The tympanum had twice been incised and a little mucus drained for a short time. Headache had been severe and unrelenting. There was loss of weight, constipation, anorexia and difficulty in passing the urine. The temperature had been running from 98 F. in the morning to 99.5 F. in the evenings. Pulse was not accelerated.

Examination.—Examination showed marked photophobia, mental dulness, a peevish restlessness, no anesthetics, no paralysis, pupils negative, tongue heavily coated, mastoid not tender except one-half inch above and behind the external auditory meatus. Catheterized urine showed no changes. The question of diagnosis lay between abscess of brain and tuberculous meningitis.

Blood Examination.—Dr. Wylie Jones was called in to make a differential leucocyte count. November 2 he reported a leucocytosis of 15,000 with polymorphonuclear count of 90 per cent.

Simultaneously the nurse reported Mr. D. in a severe chill, temperature 103 and pulse 110.

Operation.—Operation on the left mastoid was done at once. The antrum and mastoid cells contained some granulation tissue. The dura was exposed by chisel and rongeur above and behind the ear over an area of a square inch. The dura did not bulge. There was strong pulsation of the brain beneath. The upper mastoid cells were followed back until an extradural abscess of a dram or more capacity was opened. The abscess was just above the sigmoid sinus, one and one-half inches behind the external auditory meatus. Gauze drainage was used. The patient slept most of the following night.

Postoperative History.—On November 3 the patient's temperature was 97 F.; pulse, 70. Catheterization was necessary. On November 4 his temperature was 101 F., pulse 84. The following ten days his temperature ranged from 96.4 to 98 F., and pulse from 62 to 70. His headache was relieved, his appetite returned somewhat, and he appeared brighter. Daily catheterization was necessary. Photophobia persisted. The tongue remained coated.

A few days after the operation, word-blindness and loss of memory for words were discovered. He could not tell his letters. He forgot nouns rather than verbs. He called his car an eye. Names of near relatives could not be recalled. His automobile was "the thing you ride around in." The rock pile was "where they pound up things."

November 14: There was weakness, stupor, restlessness and refusal to take nourishment appeared. The patient had been very restless all night.

November 15 at 7:45 a. m., the patient's temperature was recorded as 95.2 F. and pulse as "weak." He was decidedly stupid and wanted to be left alone. He said, "I don't know much." He complained of feeling bad, but not of pain. His pupils were negative and no paralysis was discovered. At 1:30 p. m. his axillary temperature was 100.2 F., pulse 92. At 2:30 p. m. his temperature was 101 by rectum.

1. Cent. f. Bakt., 1903, xxxiii, 481.

2. Jour. Hygiene, 1905, v, 69.

3. Jour. Hygiene, 1907, vii, 337.