

means rare. The action of mercury in citrated animals shows that respiration may be considerably stimulated by mercury. When dilute solutions of salts of the metal were injected intravenously into animals after the effect of citrate had worn off, respiration became much more frequent and deeper. The effect in most cases lasted about three minutes, but in one experiment the duration of the effect was about a quarter of an hour. It should be added, in this connection, that the effect of mercury on respiration was independent of the condition of the circulation and that mercury not preceded by citrate never stimulated respiration. However, when considerable amounts of citrate were injected, the subsequent administration of mercury failed to stimulate respiration. Furthermore, we found that large amounts of citrate produced well marked decrease of tolerance to mercury. That mercury may modify reactions to drugs was shown in experiments we carried out with barium and mercury on the isolated heart. We found that when the heart was perfused with barium chlorid in Ringer's solution, after previous treatment with mercury, depression instead of stimulation occurred.

Finally, it may be stated that the action of mercury may be modified also by epinephrin. It was found in several experiments that the onset of delirium cordis and heart block produced by mercury was hastened by the injection of epinephrin.

SUMMARY

In brief, mercury is highly toxic to the heart, causing various cardiac irregularities, such as heart block, delirium cordis and finally paralysis. It is also toxic to the respiration, but the effect in this case is not nearly so pronounced as on the circulation. Furthermore, the action of mercuric salts may be greatly increased by citrate or by epinephrin, suggesting that under certain conditions associated with disturbances of metabolism the toxicity of mercury may be still more increased.

To Remove Rust from Instruments.—First place the instruments in a saturated solution of stannous chlorid, which causes the spots to disappear by reduction. Then rinse the instruments with water and place them in a hot solution of soda soap, and dry. It is also desirable to rub them with a little absolute alcohol and prepared chalk. Another method to remove rust is to place the instruments in kerosene. Paraffin oil is the best preservative against rust, and the most convenient way of applying it without getting an unnecessary thick coating is as follows: One part of the oil is dissolved in 200 parts of benzine, and the objects, after being thoroughly dried and warm, are plunged into the solution. Instruments with joints, as scissors or needle holders, are worked in the fluid, so as to cause it to penetrate into all crevices, and the benzine is then allowed to evaporate in a dry room.—*Pharm. Zentralh.*

INTRAPERITONEAL INSERTION OF BURIED CAPILLARY GLASS TUBES OF RADIUM EMANATION

RESULTS IN TWO CASES OF TUMOR OF THE GASTRO-INTESTINAL TRACT

ISAAC LEVIN, M.D.

Clinical Professor of Cancer Research, University and Bellevue
Hospital Medical College

NEW YORK

The intratumoral application of buried capillary glass tubes containing radium emanation presents a comparatively new departure in radium therapy. The method was originally suggested by Duane, and subsequently developed by the late H. H. Janeway. The

results to date are so gratifying that, in my opinion, the method will play a prominent part in the future development of the whole field of radiotherapeutics.

TECHNIC

Radium emanation—an elementary body in the state of a heavy gas—is the first active product of decomposition of radium. It is collected by means of appropriate apparatus in capillary glass tubes from 3 to 5 mm. long. The tubes, containing between 0.3 and 1.5 millicuries of radium emanation each, are sterilized either by boiling or by immersion in an alcoholic solution of iodine, and are inserted by the aid of a trocar into the tumor tissue. These tubes exert a

comparatively weak but continuous action on the tissues which lasts for several weeks. The cumulative action of 1 millicurie is calculated to equal 132 millicurie hours. Depending on the mass of the tumor, the number of tubes and the strength of each varies. The tumor tissue immediately surrounding the capillary is influenced by the soft beta rays, and may become necrotic. This area of necrosis is minute in extent and acts as a filter on the soft rays. The next zone of tumor tissue is then influenced only by the hard gamma rays of radium. As an ultimate result, the tumor tissue in the vicinity of each capillary tube is replaced by a connective tissue capsule which wholly encloses the tube. The latter meanwhile becomes inert and causes no discomfort to the patient. When the capillaries do not contain more than 1 millicurie of radium emanation and the tubes are not placed too close to one another, there does not take place any sloughing of tissue.

In the course of the last two and a half years, I have used this method extensively on intraperitoneal

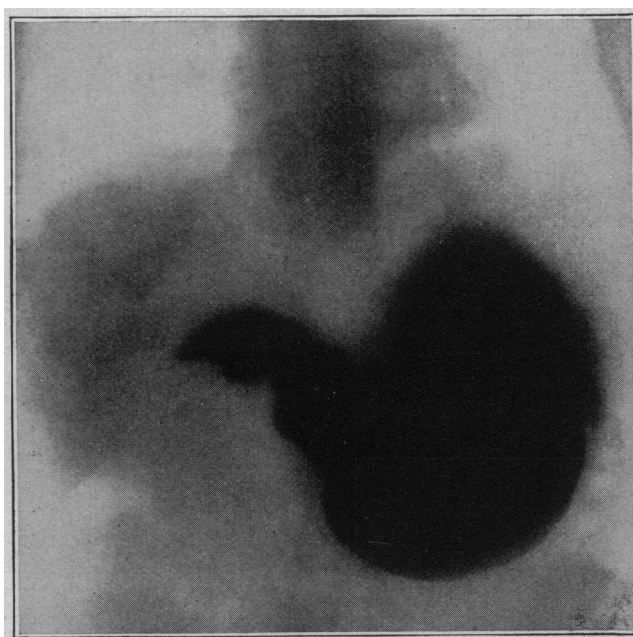


Fig. 1 (Case 1).—Tumor of second part of duodenum before treatment.

tumors of the gastro-intestinal tract, the uterus, the ovaries and retroperitoneal tumors. An exploratory laparotomy is performed. When it is found that the tumor itself is inoperable, i. e., cannot be completely removed surgically, then the emanation tubes are

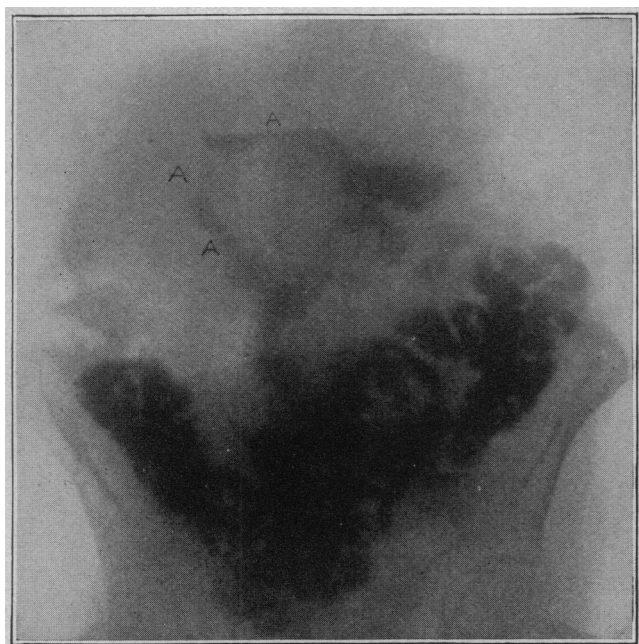


Fig. 2 (Case 1).—Tumor of duodenum after radium treatment: A, patent pylorus.

inserted into the tumor, and this is followed by the necessary palliative surgical procedures. The laparotomy incision is immediately sutured.

RESULTS

The following two cases indicate the results which may be obtained by this method of radium therapy:

CASE 1.—O. B., a man, aged 55, was admitted, Oct. 3, 1921, to the service of Dr. Jerome Lynch at St. Bartholomew's Hospital, with symptoms of pain in the stomach, nausea and severe attacks of vomiting. The patient had lost 45 pounds (20 kg.) within six months. There was a tumor in the middle line of the abdomen, 2 inches above the umbilicus, about the size of an orange, freely movable. Provisional diagnosis was made of a tumor of the hepatic flexure. Roentgen-ray examination (Fig. 1) disclosed a complete obstruction in the pyloric region. None of the barium suspension passed beyond the pylorus. Laparotomy was performed, October 4, by Dr. Lynch. The tumor was situated in the second part of the duodenum, and could not be removed surgically. I inserted radium emanation capillaries throughout the tumor, and then a gastro-enterostomy was performed. November 9, the patient was discharged clinically improved; there was no vomiting, and bowel movements were regular. The patient had gained 4 pounds (1.8 kg.) since the operation. The mass appeared to have receded in size. December 8, the patient was readmitted to the hospital for further study and treatment. He had gained 16 pounds (7.25 kg.) since the operation, and the tumor mass was not palpable. A second laparotomy was performed; the tumor was one fourth of the original size, and very hard in consistency. Again radium emanation capillaries were inserted into the mass, and the wound was closed. December 21, a second roentgen-ray examination disclosed that the barium suspension filled the stomach completely; gastric contents began to empty through a stoma into the jejunum immediately. No other abnormality was noted. Three hours later a very small gastric residue remained; the appearance was such as to

suggest that part of the stomach contents was passing along the normal route (Fig. 2 A, A, A).

The essential points in this case are that the whole volume of the tumor shrank considerably and this shrinkage apparently took place also in the depth of the tumor so that the lumen of the duodenum became patent and the original obstruction of the pylorus was partially relieved.

CASE 2.—S. F., a man, aged 58, a patient of Dr. Leo Buerger, in December, 1921, began to complain of pain in the epigastrium, and constipation. A mass was felt in the region of the transverse colon, slightly movable. Roentgen-ray examination (Fig. 3) revealed a complete filling defect in the middle of the transverse colon. However, the obstruction apparently was not complete, since the barium passed into the peripheral end of the transverse colon. December 31, a laparotomy was performed by Dr. Buerger. The tumor infiltrated diffusely all the walls of the transverse colon, and the whole mass, which measured about 3 inches long by 2½ inches deep and about 2 inches wide (7.5 by 6.5 by 5 cm.) was firmly bound down to the posterior wall of the peritoneal cavity. The tumor, consequently, was inoperable. I inserted radium emanation capillaries into the tumor, and the wound was closed. The patient left the hospital at the expiration of four weeks, feeling well and having regular bowel movements.

Late in March he was examined again. He felt well, and the tumor was not palpable. March 27, a second laparotomy was performed. The tumor was a third of its original size and freely movable, so that possibly an attempt at a radical removal might have been made. However, since the patient felt well, and there was no evidence of obstruction, it was



Fig. 3 (Case 2).—Tumor of transverse colon before treatment: A, filling defect.

decided not to undertake a severe surgical interference, but instead a few more radium emanation tubes were inserted into the tumor, and the wound was closed. June 9, roentgen-ray examination revealed a very striking picture. The extent of the filling defect was somewhat diminished, and a new canal formed between the two ends of the transverse colon. Apparently here again the tumor was shrunk in all directions,

as a result of which a small lumen was formed in the center of the tumor through which the barium emulsion passed. Figure 4 shows the new canal at A.

CONCLUSIONS

Both the method itself and the two cases reported are too recent to indicate the final results of this method of radium therapy in cancer. The efficiency of the method, however, is evidenced by the results obtained in these two cases, as well as in several others which will be reported later. The patients make an uneventful recovery, and there is no rise in temperature, and no peritoneal irritation or subsequent sloughing of tissue.

In a word, the insertion of radium emanation does not add in the least to the hazard of the operation. At the same time, the tumors diminish in size considerably. This shrinkage takes place gradually in the course of from six to eight weeks after the operation.

Inoperable carcinoma of the gastro-intestinal tract presents the most hopeless type of cancer. Surface applications of radium alone is ineffectual in the majority of cases. Deep high voltage roentgen-ray therapy does not influence this class of cases, and is followed frequently in my experience, as well as in that of other investigators, by severe cachexia.

Thus the method of intratumoral insertion of radium emanation produces no general deleterious effect on the organism, and at the same time in every instance causes a shrinkage of the tumor mass. The method seems, therefore, to be of great promise, and should be tested by all surgeons and radiotherapeutists who are in a position to obtain the capillary tubes of radium emanation. 119 West Seventy-First Street.

Medical Teaching in Mexico.—For nearly three centuries, medical teaching in Mexico was in charge of the royal proto-physicians. These, in addition to supervising public health and the practice of medicine, taught the subjects at the university and examined applicants. This practice lasted until Mexico proclaimed its independence from Spain, when the so-called papal university was closed. In 1823 and 1825 bills providing for the organization of a medical school were passed but no action was taken until a physician, Dr. V. Gómez Fariás, became president of the republic and ordered in a decree, dated Oct. 23, 1833, the foundation of the school. This was done on Dec. 4, 1833. Its first head was Dr. Casimiro Licéaga, assisted by a group of twelve professors. The school at first was lodged in convents, but in 1854 the government bought the old building of the Inquisition, which the school still occupies.

TUBERCULOSIS OF THE TESTIS IN A CHILD*

JOSEPH S. EISENSTAEDT, M.D.

Associate Surgeon, Department of Genito-Urinary Surgery, Michael Reese Hospital; Associate, Department of Genito-Urinary Surgery, Northwestern University Medical School
CHICAGO

Whether or not tuberculosis may be primary in the body of the testis has aroused much argument. Hektoen¹ states that "tuberculosis of the testis and epididymis is common, and it may be primary in either organ in the sense that the testis or epididymis may be the first organ in the genito-urinary tract to be affected." It is in this sense that I wish to present briefly the history and pathologic report of a case of tuberculosis of the testis in a child, aged 3 years.

The left testis was almost entirely involved in the tuberculous process, while careful examination of the epididymis failed to reveal any lesion.

Tuberculosis of the testis in children presents apparently a somewhat different pathologic condition and pathogenesis from that affecting the adult male.

REPORT OF CASE

History.—M. M., aged 3 years, was brought to the service of Dr. L. E. Schmidt in the Sarah Morris Hospital, Aug. 31, 1920. The mother said that the child suffered from pain and swelling of the scrotum, especially on the left side. The first symptoms occurred one day before entrance to the hospital. The mother said that while bathing the child she observed swelling of the scrotum, and that the child complained so of pain that she was prevented from cleansing the parts. The mother had not been in the

habit of bathing the child herself, and, therefore, could not state the exact date of the first appearance of the swelling. However, the child had not complained of pain until the day before he was brought to the hospital.

The child had been delivered normally and was breast fed. His appetite had been poor usually. There had been no painful urination, and the child usually slept well. There was no history of previous illness. The family history was negative, except for the fact that the child's father had been suffering with a chronic cough for the last two years.

Physical Examination.—No positive findings were revealed except swelling of the left half of the scrotum. The skin was slightly erythematous, and the left testis was enlarged to about three and one-half times its normal size. The testis was very sensitive to palpation, and the epididymis was apparently also enlarged.

* Read before the Chicago Urological Society, May 18, 1922.

* From the Department of Genito-Urinary Surgery and the Nelson Morris Memorial Institute for Medical Research of the Michael Reese Hospital.

1. Hektoen, Ludvig, and Riesman, David: An American Textbook of Pathology, Philadelphia, 1901.

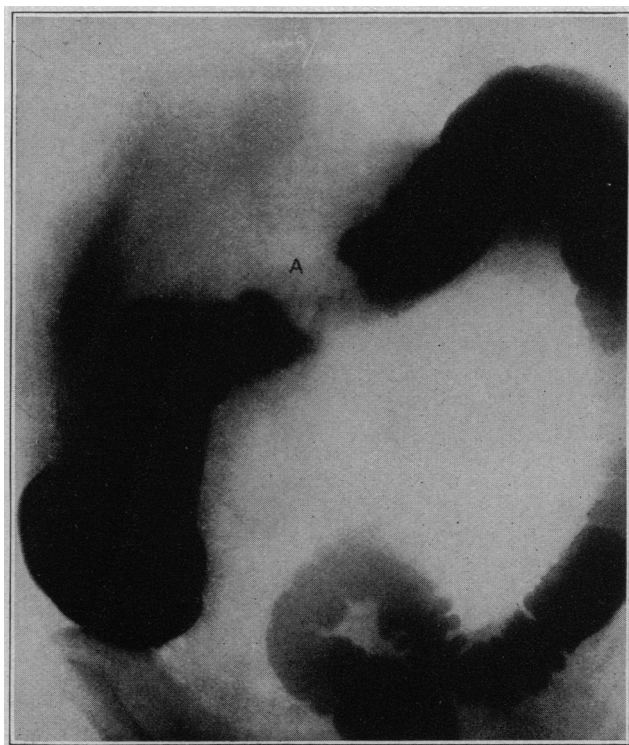


Fig. 4 (Case 2).—Tumor of transverse colon after radium treatment: A, new canal formed between the two ends of the colon.