The abstracts which follow have been classified for the convenience of the reader under the following headings:

Experimental Studies; Animal Tumors
General Clinical and Pathological Observations
Treatment
The Skin
The Oral Cavity and Upper Respiratory Tract
The Thyroid Gland
The Breast
Intrathoracic Tumors

The Digestive Tract
The Pancreas
The Biliary Tract
The Suprarenal Glands
The Female Genital Tract
The Genito-Urinary Tract
The Nervous System
Bone Tumors
Hodgkin's Disease, Leukemia, Lymphosarcoma

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ABSTRACTS

EXPERIMENTAL STUDIES; ANIMAL TUMORS


The author, who is now a professor in the University of Glasgow, points out that in the last resort the importance which is attached to the carcinogenic substances depends upon whether they are concerned in the etiology of spontaneous human cancer. Bound up with this is another unsolved problem of outstanding importance, namely the manner in which these compounds bring about the transformation of normal cells into malignant cells. If it had not been for the investigations of industrial cancer in the various forms in which it occurs in England, it is improbable that the carcinogenic compounds would have been discovered for many years. As it is, it appears probable that they will continue to furnish useful material for the experimental study of cancer for a long time to come.

3: 4-Benzpyrene, which is probably the most important cancer-producing constituent of coal tar, has a high boiling point and hence is present in appreciable amount only in the higher fractions of the tar. It is likely that the carcinogenic properties shown by some of the mineral lubricating oils are due to similar concentration in the higher distillates. Unconvincing attempts have been made to attribute lung cancer to the dust from tarred roads, pollution of the air by soot and motor exhaust fumes, and to tobacco smoking, but final demonstration awaits further study.

3: 4-Benzphenanthrene has feeble carcinogenic powers. Chrysene was originally thought to be carcinogenic, but proof has been offered that this is due to incomplete purification. 1: 2-Dimethylchrysene, however, recently synthesized by Hewett has a slight carcinogenic activity. Betanaphthylamine has been found to have carcinogenic powers in the production of bladder tumors, and another group, including aminoazotoluene and paradamethylaminoazobenzene, is also carcinogenic, giving rise chiefly to tumors of the liver. In recent experiments in the laboratories of the Royal Cancer Hospital, London, liver tumors have been induced in mice by 2: 2-azonaphthalene and its derivative 2: 2-diacylino-1-1'-dinaphthyl, as well as by 3: 4: 5: 6-dibenzocarbazole.

The benzanthracene group is not the only one with carcinogenic properties. 3: 4-Benzphenanthrene has feeble carcinogenic powers. Chrysene was originally thought to be carcinogenic, but proof has been offered that this is due to incomplete purification. 1: 2-Dimethylchrysene, however, recently synthesized by Hewett has a slight carcinogenic activity. Betanaphthylamine has been found to have carcinogenic powers in the production of bladder tumors, and another group, including aminoazotoluene and paradamethylaminoazobenzene, is also carcinogenic, giving rise chiefly to tumors of the liver. In recent experiments in the laboratories of the Royal Cancer Hospital, London, liver tumors have been induced in mice by 2: 2-azonaphthalene and its derivative 2: 2-diacylino-1-1'-dinaphthyl, as well as by 3: 4: 5: 6-dibenzocarbazole.

The number of carcinogenic agents now known is large and yet there seems to be little correlation among them as to structure. Malignant tumors are induced, also, by ultraviolet light, x-rays, and radioactive substances. Arsenic has been known to produce cancer of the skin, and teratoma of the testis in fowls can be induced by injections of zinc salts under certain specific conditions. Thus it is permissible to assume that carcinogenesis is a biological phenomenon which may be attributed to a variety of different substances and agents, a circumstance which adds to the difficulty of interpreting the biological properties of the carcinogenic compounds. [There is, however, considerable experimental evidence collecting which leads to the conclusion that any irritation of a type which causes prolonged proliferation of groups of cells may facilitate the development of a malignant growth through some process which may for convenience be designated as a mutation.—Ed.] A. F. WATSON

Production of Tumors in Mice by Deoxycholic Acid, J. W. COOK, E. L. KENNAWAY, AND N. M. KENNAWAY. Nature 145: 627, 1940.

In 1932 Cook pointed out that the sterols and bile acids contain in their molecules condensed carbon-ring systems to which is attached a side chain in such a position that a new 6-membered ring can be formed giving the 1: 2 benzanthracene ring system without molecular rearrangement or group migration. Cook and Haslewood, in 1934 (J. Chem. Soc., p. 428), showed that in the formation of dehydronorcholene from deoxycholic acid by the procedure of Wieland, such a ring closure to the 1: 2 benzanthracene ring system
had actually occurred. Dehydronorcholein gave on dehydrogenation the benzanthracene hydrocarbon methylcholanthrene, which was found to be strongly carcinogenic. Afterwards, Fieser and Newman (J. Am. Chem. Soc. 57: 961, 1935) showed that methylcholanthrene could be obtained also from cholic acid, the chief acid of human bile, and the parent hydrocarbon, cholanthrene, synthesized by Cook, Haslewood and Robinson (J. Chem. Soc., 1935, p. 667) was shown to be carcinogenic.

As a carcinogenic compound could be obtained from deoxycholic acid, the authors determined to test the carcinogenic activity of the acid itself. This they applied in solution in a mixture of alcohol and benzene to the skin of 20 mice in the ordinary way. An epithelioma appeared at the site of application in one mouse in 776 days. The experiment was repeated upon 80 mice, but no more tumors were obtained. Deoxycholic acid in sesame oil was subsequently injected into the right flank of 10 mice of mixed stock, of which 5 lived for more than six months. Three of these 5 developed spindle-cell tumors of the type usually produced by carcinogenic compounds. The tumors were regarded as malignant on histological grounds but did not grow when transplanted into other mice of mixed stock. The quantity of deoxycholic acid injected was in all 70 mg. in the course of 300 days. The experiment was repeated using 10 mice of strain C3H, which Andervont has placed first in the order of susceptibility to subcutaneous tumors induced by carcinogenic hydrocarbons, and of these mice one had developed a spindle-cell tumor in 155 days, after receiving a total of 28 mg. in the course of six injections. These results confirm those of Ghiron (reported in the program of the Third International Cancer Congress in Atlantic City, September 1939), who said: "Deoxycholic acid induces transplantable subcutaneous fibrosarcomas in a high proportion of the mice and rats injected. This is believed to be the first experimental production of malignant growths with a compound that exists under some conditions in the human body."

Tumors have occasionally been produced in mice by sesame oil alone, but the authors have obtained so many negative results with the compounds dissolved in this solvent that they do not think the incidence of the tumors recorded above is to be attributed to the oil. There is no evidence that deoxycholic acid can be converted in vivo into methylcholanthrene.

Additional investigations of the staff of the Royal Cancer Hospital, London, have confirmed the results of Schabad (Compt. rend. Soc. de biol. 124: 213, 1937. Abst. in Am. J. Cancer 31: 498, 1937) that some extracts of human livers will produce sarcomas in mice, and Cook (Nature 145: 335, 1940, abst. above) has described two compounds, 2:2'-azonaphthalene and its transformation product 2:2'-diamino-1'-1'-dinaphthyl, which have a specific action in producing malignant tumors of the liver.


In a continuation of earlier studies (Am. J. Cancer 28: 681, 1936) on the factors in the initiation of malignant tumors induced by carcinogenic chemicals, the authors showed experimentally that an increase in the surface area of the tissue exposed to a given quantity of benzpyrene did not result in a corresponding increase in the number of induced tumors or in a decrease in the average time of their occurrence. An increase in the surface area of the tissue exposed, effected by an injection of a given quantity of benzpyrene in discrete masses of smaller volume, increased significantly the average time from injection to observation of the tumors. It would seem, therefore, that the mass of the injected carcinogenic material was a factor in the initiation of the malignant process.

Much more striking differences were observed in the numbers of malignant tumors induced, and in the average time of their appearance, when the concentration of the carcinogenic chemical was varied in foci of equal volume, suggesting that the probability of the occurrence of tumors and the average period in which they occurred was determined not by the number of cells exposed but by the intensity of the irritation.

The authors were unable to repeat the experiments of Rowntree, who claimed intraperitoneal sarcomas developed in rats fed with a crude ether-extracted wheat-germ oil.


The authors found it possible to induce sarcoma in the subcutaneous tissues of mice by long continued injections of 0.5 per cent hydrochloric acid, which they regard as furnishing additional evidence that the range of factors which may induce the production of sarcoma is greater than the range of factors which induce the production of carcinoma, and that the former conditions are correspondingly less specific than the latter. Two photomicrographs are reproduced and four references are included.


Of 114 rats kept either intermittently or continuously on a diet deficient in vitamin A, 91 (80 per cent) showed at autopsy proliferative lesions in the mucosal lining of the stomach. Such lesions were found in only 18 per cent of 74 controls on a normal diet.

Twenty-one rats which survived an exploratory laparotomy after they had been kept for eighteen weeks on alternating A-deficient and normal diets, showed lesions of the mucosa of the stomach, but in only 2 of these were such lesions observed when the animals were killed after having been restored to a normal diet for one year. References are appended.


Following weekly injections of 50 rat units of estradiol benzoate in oil for a period of forty-nine weeks, adenocarcinomata developed in 9 of 30 castrated male mice and 3 of 20 virgin females of line A, in which 80 per cent of the bred females developed spontaneous mammary carcinoma. No adenocarcinomata were observed among control castrated males or a normal male control series. One adenocarcinoma was observed among 20 control virgin females. One spontaneous epithelial tumor is reported as occurring since the termination of the experiment in a male of the stock mice in the laboratory. Five case of leukemia occurred in the treated and control males of the experimental series. No sarcomata were observed. References are appended.


The author found that the radiosensitivity of mouse sarcoma 180 was greatly increased by injections of distilled water following local treatment with roentgen rays. Such injections had no effect upon the growth of the tumors when x-ray was not also applied. The injection of an isotonic or hypertonic Locke-Ringer solution into tumors following irradiation with various doses did not change the course of tumor regression. On the other hand regression was definitely increased by injections of a hypotonic Locke-Ringer solution following local roentgen therapy.

It is important to recognize the fact that these phenomena are true only under very limited conditions. Sarcoma 180 was obtained from a strain of mice no longer available. Hence, any experiments with this tumor will depend largely upon the soil in which it is implanted. Sugiura obtains, for example, 100 per cent regressions following a dose of radiation greater than 1800 r, and 85 per cent with a dose of 1500 r. He does not state in his paper, however, what strain was used for inoculation or whether it was a homozygous one. Previous studies on the lethal point for tumor 180 inoculated in different strains of mice at the Institute of Cancer Research of Columbia University...
have shown that doses of 2500 to 3000 r are required to produce regressions. If a homozygous strain from which an inoculated tumor has arisen is employed, the x-ray dosage necessary to cause its death or regression is higher; it may amount to 4000 r or more. The same situation applies to normal tissues in culture. Thus Faber (Acta radiol., supp. 21, 1935) found that the lethal dose for normal connective tissue is about 1200 r. On the other hand, if this tissue is grown in a medium especially adapted to it, the lethal dose rises to something between 3500 and 4000 r. It must be remembered, therefore, in considering the contradictory results which have been recorded, that in many cases the author failed to realize that the same tumor grows differently in different strains of animals and that specially adapted culture media are necessary for the optimal growth \textit{in vitro} of tissues from different species. All quantitative experiments, except under the conditions specified, that is of a tumor growing in its own homozygous strain, will presumably give conflicting figures.

The abstractor would make one further comment. It would appear that the photomicrographic reproductions of the tumors on page 536 have been wrongly labeled. A is said to represent an untreated mouse sarcoma 180, but C is much closer to the normal appearance of tumor 180 than either A or B.


The authors have attempted to determine whether x-rays in high or low dosage would alter the genetic constitution of a tumor which ordinarily is transplantable in only one strain of mice. The neoplasm selected for this work was one which arose spontaneously in an animal of the dilute brown stock, called dbrB, in 1920. It was an adenocarcinoma and has been carried on for eighteen years by means of successive transplants. When this tumor is inoculated in the members of the same strain, namely the dilute brown or dbr strain, it gives 100 per cent of takes. When, on the other hand, it was transplanted into mice of three other pure strains—Bagg albino, C57 black from Bar Harbor, and Strong CBA—no growth was obtained.

In the experiments recorded in the first of the two papers listed above the tumor was rayed in its dbr host with a dose of 100 r in air, and one week later was removed and inoculated into 46 mice of the three strains in which grafting had previously failed. From these 46 inoculations there were 23 takes or 50 per cent. The irradiated tumor which grew in one of the resistant strains, C57 black, was transplanted for three generations into mice of this strain. The results indicated that there had occurred a change in the tumor which had been carried through four successive transplantations, for 42 per cent of the inoculations were positive. The authors acknowledge that the results are based upon a small number of animals and that it is therefore unwise to draw any conclusions.

In the second of the papers listed above, prepared later though published earlier than the first, the authors report on an extension of the experiment just described. Doses of approximately 1500 r caused regression of the tumor, dbrB, in the original host, which shows that the tumor is extremely radiosensitive, since with most of the mouse carcinomas some 3000 to 3500 r are necessary to produce regression. A dose of 50 r given \textit{in vitro} produced the same change in the tumor as 100 r; following this dosage takes were obtained in 40 per cent of the C57 blacks and successive transplantations with the irradiated tumor showed the same percentage, indicating that the change was a permanent one. The work was repeated using the "New Buffalo tumor," which has been successfully propagated for several years by transplantation in a pure strain of albino mice known as the "New Buffalo" strain. This tumor will not normally grow in other pure strains, such as the C57 or CBA, but exposure to 100 r of x-ray so altered it that when it was inoculated into C57 blacks takes were obtained in about 37 per cent. The authors quote Muller to the effect that thousands of roentgens are needed to produce mutations in insects and the higher the dosage the greater the mutational effect. In their own experience they have been unable to distinguish any quantitative difference between doses of 50 and 100 r.
[In this connection it is interesting to recall that Regaud and Lacassagne (Compt. rend. Soc. de biol. 88: 599, 1923) showed that no permanent changes in the cells of tumors either of the grafted type or of human recurrences were to be noted after treatment with x-ray. Prime confirmed this in an unpublished investigation made at the Crocker Laboratory, using sarcoma 180 as the experimental tumor. He was unable to note any permanent changes in the grafts after repeated irradiations and inoculations. The question, then, becomes one of discovering whether the method used by Reinhard and Werner reveals slight alterations not recognizable when the tumor remains in the host, as is the case with a human tumor, but discoverable only when the neoplasm is grafted into a series of animals of a different strain.]


The purpose of this investigation was to determine whether a petroleum ether extract of normal mouse carcasses increased the number of skin tumors produced by 3:4 benzpyrene when the extract was painted on the skin twenty to thirty minutes before the carcinogenic substance was applied to the same area. Most of the mice that were painted with the extract plus benzpyrene had papillomata than did those that were painted with benzpyrene only, and more carcinomata ultimately appeared in the animals painted with both substances. The authors believe that the differences are statistically significant. Three groups of mice of about 50 each were used for the benzpyrene and two groups of 49 each for the extract plus benzpyrene. Subcutaneous injections of the extract at a distance from the site of benzpyrene application did not affect tumor production. A solution of benzpyrene in a petroleum ether extract of mouse carcasses produced fewer skin tumors than did benzpyrene in benzene.


A material is present in primary and metastatic tissue of the Brown-Pearce tumor of the rabbit which is filtrable, can be desiccated, and is killed by heating to 56°C. When injected into a rabbit bearing the Brown-Pearce tumor it increases the growth of the neoplasm, causes an increase in the number of metastases, and shortens the life of the animal. No immunity is obtained by injecting animals previous to transplantation. The material does not affect the growth of mouse tumors 63 and 180. The use of a similar material derived from a transplantable uterine adenocarcinoma of the rabbit has shown that preliminary treatment with the material does not render the animal more susceptible to subsequent transplantation of the Brown-Pearce tumor and fails to enhance its growth and spread, in contrast to the material from the Brown-Pearce tumor itself.


Daily intravenous treatment with 0.1 c.c. of an extract of brewers' yeast, prepared according to the authors' directions, caused the disappearance of a spontaneous mammary carcinoma in 8 out of 33 mice, a reduction in size of the growth in 10, and no effect on the neoplasm in 15. In all cases the diagnosis was confirmed by biopsy. There had been no recurrence of the tumors that disappeared under treatment.

Wm. H. Woglom


Analysis of the glycolytic activity of the erythrocytes of rats and mice following tumor transplantation showed two waves: (1) an early increase followed by an abrupt fall and (2) a subsequent rise. These changes are related inversely to the catalase content of the blood. Graphs are reproduced and references are given.

Bittner records further observations on the results of foster nursing of the young of high-tumor females by females of a low-cancer strain. He concludes that the development of breast carcinoma in high-cancer strains of mice is probably due to three influences: (a) a breeding-cancer-producing influence transmitted in the milk of breast-cancer stock mothers; (b) an inherited breast cancer susceptibility of one or more dominant factors; (c) a hormonal stimulation influence, which may or may not result from the production of young. Whether or not a sufficient amount of the hormonal secretion is present in virgin females depends upon the stock. A long bibliography is included.


A spontaneous adenocarcinoma of the breast in an inbred female rat of the August strain is described. Subcutaneous, intraperitoneal, intravenous, and intraocular transplantation was successful in 100 per cent of the animals of the same inbred strain. In rats injected intravenously with tumor emulsion the lungs showed numerous papillary nodules, in which cystic changes were subsequently prominent. With a single exception the tumor failed to grow after implantation in animals of alien inbred strains, but grew irregularly in August rats of related lines. The dose of roentgen radiation required to destroy the tumor in vitro was between 5000 and 5500 r. Photomicrographs are reproduced and references are appended.


The author describes a further example of a mammalian tumor successfully propagated in a foreign species. It is derived from a substrain of the Ehrlich mouse carcinoma and at the time of the report was in its 50th passage in rats, having been grown in these animals continuously for thirteen months with 64 to 80 per cent takes. The tumor, known as "Budapest 1938," resembles the Ehrlich-Putnoky tumor and like the latter is regarded by the author as a true heterologous tumor and not a temporary proliferation of the original mouse tumor cells in a foreign host. Six photomicrographs are included and references are appended.


The authors describe a spontaneous hepatoma in mice of the C3H strain, occurring predominantly in males. The tumor arose from the liver cells and not from the bile ducts. It was not readily transplantable and appeared to be essentially benign, though in some instances there were suggestions of malignancy. The females of this strain have a high incidence of mammary gland tumors but few liver tumors. Photomicrographs are included and there is a bibliography.

GENERAL CLINICAL AND PATHOLOGICAL OBSERVATIONS


This paper serves as an introduction to the Lahey Clinic symposium on cancer which makes up the greater part of the June 1938 issue of the Surgical Clinics. The author touches in a general way upon various cancer problems with special consideration of carcinoma of the stomach and lower intestinal tract. He calls particular attention to the possibilities of malignant change in discrete thyroid adenomas and other solid tumors of the neck.

The papers constituting this symposium are abstracted under the appropriate headings.

This review summarizes the results of histological investigations which contribute to current knowledge of the properties of tumors and the laws to which they conform. It includes, for purposes of comparison, a discussion of the properties of non-tumor tissues as revealed in normal embryogenesis, in disease processes, and in experimental lesions. The laws which govern the elaboration of organized structure in tumors are then considered with reference to the inherent characteristics of the parenchyma cells, the interactions of parenchyma and stroma, and the participation of the invaded tissues. A bibliography of 122 references is appended.


Although adipose tissue constitutes a large part of the total bulk of the body, 18 per cent by weight of a person of average nutrition, and is subject to many physiologic variations and pathological alterations, it has nevertheless been the subject of relatively little study. In the text-books on pathology there is scarcely a mention of adipose tissue as being possibly an actively functioning organ and a system subject to its own diseases.

For many years, anatomists, embryologists and pathologists have been discovering and rediscovering the fact that fatty adipose tissue is not merely common connective tissue loaded with stored fat, but to a large extent structurally, developmentally and functionally an independent special tissue more after the order of the ductless glands. The early view, that adipose tissue is merely ordinary connective tissue in which fat has been deposited, cannot be true, for there are distinct differences in the distribution of fat throughout the body. In the human being, for example, it accumulates usually in the abdominal wall and omentum. The hands and feet undergo much less thickening in obesity than the abdominal wall, the thighs, the buttocks, and the shoulders. A full-thickness graft from the abdominal wall when transplanted to the back of the hand may retain its capacity for the deposition of fat and produce a curious boxing-glove effect.

Toldt maintained for many years that adipose tissue is derived from special primitive fat organs characterized by the formation of highly vascular, lobular structures in which a special type of cell exists with the function of storing and giving up fat in accordance with supply and demand. Such specialized tissue for the deposition of fat is well developed in certain species, especially in the hibernating animals. Here in definite parts of the body there develop in embryonic life well defined masses of tissue characterized by a lobular arrangement with a rich blood supply in close relation to masses of cells with abundant cytoplasm and of polyhedral form. When such cells take on fat, it is first deposited in fine granules much as in fatty degeneration or as in the lipid-rich cells of the adrenal cortex. As the granules become larger the cell assumes a moruloid or "mulberry" appearance. Only with the most extreme deposition of fat do all the droplets fuse into one or a few large fat areas; often the nucleus retains its central location and does not take the flattened form at the cell periphery characteristic of ordinary adipose tissue. In emaciated infants subcutaneous adipose tissue may appear in the form of pinkish lobules composed of large cells rich in cytoplasm and resembling closely a glandular structure, with no resemblance to ordinary adipose tissue, but corresponding to the pre-adipose tissue described by embryologists or the brown adipose tissue and hibernating glands in the exhausted stage.

That adipose tissue is, at least in part, originally derived from primitive connective-tissue elements is supported not only by embryological studies but also by its behavior in tumors derived from these structures embryologically. For example, the retroperitoneal lipomyxosarcomas are quite characteristic structures in which mucus may form in abundance and some early lipomas so closely resemble reticulo-endothelial tumors as to indicate the common origin of adipose and lymphatic tissues. Lipomas are not infrequently symmetrical and in such cases a particularly close connection to nerves may be demonstrated. The tumors may be tender or painful. Such a condition recalls the adiposis dolorosa of Dercum. Even benign lipomas may contain immature cells, arousing the suspicion of a beginning malignant growth, which is explained by the fact that mature fat cells seem to be unable to proliferate and growth is accomplished only by the
immature cells. (See in this connection R. H. Jaffé: Arch. Path. 1: 381, 1926.) Very rarely lipomas may take on a malignant character, in which case they demonstrate well the embryonic origin of fat in relation to the primitive myxomatous connective tissue of the early fetus. But such malignant growths are composed of a mixture of adipose and myxomatous tissue descriptively called lipoasarcoma myxomatodes or lipomyxosarcoma. Such tumors may reach great size, especially in the retroperitoneal region. Wells noted one which weighed 31 kilograms and quotes Martin (J.A.M.A. 90: 2013, 1928) as reporting a benign subcutaneous lipoma with teratomatous areas which in fifty-eight years grew to a weight of 27 kilos.

Two types of lipoasarcoma can be recognized: (1) composed of granular cells resembling the adult fat cell type and (2) the embryonal lipoasarcoma or lipomyxosarcoma which exhibits a proliferation of minute vessels, the adventitial or endothelial cells of which, instead of producing fat, form chiefly mucus and occasionally embryonal fat tissue. In the embryonic lipoma the myxomatous feature is apparently provided by the stroma rather than the tumor cells.

Apparently the fat organs are formed from the same embryonic elements as the lymph nodes, namely capillaries and reticulum cells of the vascular adventitia, which relationship is attested by the tendency for lymphoid tissue sometimes to replace fat tissue and conversely, as seen especially in the thymus. The close relationship of bone marrow and adipose tissue is thus explainable and also the occurrence of extramedullary hemopoiesis in adipose tissue. In other words, adipose tissue is to be looked upon as a part of the reticulo-endothelial system, a conception which suggests more active function than has been generally recognized and is in harmony with the gland-like histologic character of the unfatted fat organs. In many of the smaller species of animals, as pointed out above, the fat tissue is of a specialized type and is found in certain locations which have been designated as the hibernating glands. The function of this tissue in hibernation is not known. Its bulk is small, making it possible to furnish only an insignificant amount of food.

On the other hand, the relation of adipose tissue to the endocrine system has been suggested partly because of its resemblance to the involuted thymus or the vacuolated cells of the adrenal cortex. Cramer (Brit. J. Exper. Path. 1: 184, 1920) points out that these adipose glands are rich in lipoid and considers this an evidence of a relation to the endocrine system. Evidence that glands of this type may store vitamin A and D has been brought forward. Glandular adipose tissue of somewhat similar structure is found in some parts of the human body, especially in the dorsal, cervical and interscapular regions, and this tissue is usually found in lobulated masses with cells which are mostly of the multicellular type and associated with lymphoid tissue. In emaciated subjects it is red because of its vascularity. Tumors may occur in the interscapular glands, as has been shown by Inglis (J. Anat. 61: 452, 1927) and a cystic tumor has been reported by Reuben and Peskin (Arch. Pediat. 48: 243, 1928). The buccal gland, which is prominent in children is another example of a specialized fat structure. Cameron (J.A.M.A. 76: 778, 1921) was able to find fifteen cases of lipoma of this structure in the literature and reported a sixteenth.

Wells also discusses steatopygy as an hereditary example of local obesity. In a way lipomas are analogous to steatopygous deposits except that they are not constant in their distribution. Although not racial they may be familial, and an example is quoted of a father and three daughters exhibiting multiple subcutaneous lipomas though nine sons were free of this condition. In some studies of early stages of lipoma formation evidence has been found that the tumor arises from a pre-adipose tissue derived from the normal embryonic mesenchymal tissue.

It is often said that lipomas are not available to the host as a source of nourishment and that despite extreme emaciation they retain their original dimensions. Wells finds that while malignant fatty tumors offer an undoubted example of accumulation of fat in spite of the most severe depletion of fat from normal depots, since nearly all the cases reported in the literature showed marked emaciation, this independence of the fat masses in lipomas from the general metabolism is presumably not always true.

Under the heading diffuse symmetrical lipomatoses, are included the "fat neck" of Madelung and many of the cases of adiposis dolorosa or Dercum's disease. There is
a tendency here for the nervous tissues to be closely related to the sensory disturbances of the diffuse fat deposits and Lyon has shown (Arch. Int. Med. 6: 29, 1910) that circumscribed areas in cases of adiposis resemble simple lipomas. A relation to the ductless glands is shown by all these facts. In some patients there is genital hypoplasia, in others changes in the thyroid or pituitary. The fatty tissue shows no characteristic histologic features and seems to be derived from ordinary adipose tissue and not from the special lobulated fat tissue. The chemical composition of the fat in adiposis dolorosa does not differ recognizably from that of normal adipose tissue. There is nothing constant about the morphology of the fat deposits in this disease. No matter how extensive they are, the hands, feet, and face usually escape. Likewise the degree and character of the neuritic and psychic disturbances are extremely varied.

The condition known as lipodystrophia progressiva or lipodystrophia cephalothoracica is characterized by irregular distribution of fat over the body and while the disease occurs chiefly in females, the pain factor is not as marked as in the dolorosa type, and there seems to be a fairly constant connection with the ductless glands, especially the thyroid, though no consistent changes have been found in the endocrine organs of these patients.

Necrosis of fatty tissue may occur following injury or in some cases spontaneously and has been described chiefly in the subcutaneous fat tissue of the abdominal wall or of the female breast. Described years ago by Künstner, attention has been called to it of late by American authors, chiefly B. J. Lee and F. Adair (Surg., Gynec. & Obst. 34: 521, 1922). The process when it occurs in the breast may suggest a malignant growth, and local necrosis of adipose tissue from whatever cause may stimulate proliferative reaction leading to the formation of what are essentially foreign body tubercles but with special characteristics because of the abundant lipophage cells and often multinucleated foreign-body giant cells. Such lipogranulomas have been mistaken for malignant tumors and have led to excessive operative procedures, especially when they have appeared at the site of a previous operation for the removal of a tumor. See for example H. F. Harbitz (Acta chir. scand. 76: 401, 1935). Mention is made of a survey of the fundamental principles of the reactions of tissues to mixtures of human fat, soaps and cholesterol, published by E. F. Hirsch (Arch. Path. 25: 35, 1938).

Fluctuating atrophy and hypertrophy of the fatty tissues occur frequently in a variety of pathological conditions. The replacement of functional bone marrow by fat is a good example. The fatty infiltration of a damaged heart, the replacement of an atrophic pancreas, the substitution for muscle in the pseudohypertrophic muscular atrophy, are conditions familiar to every pathologist.

Five cuts are reproduced and a bibliography is furnished.


The author first quotes Maude Slye (Year Book of Obstetrics and Gynecology, 1936) to the effect that "as an immediate preventive of malignancy there should be no children nor grandchildren from double cancerous matings," and replies to this that the breeding out of cancer in man is an impossibility, not because of its mode of inheritance but because of the lateness of its development.

Most persons who develop cancer do so after practically all of their children and after a number of their grandchildren are born. Furthermore, there is no way of telling that any person dying without cancer might not have developed it had he lived even a little longer. Still another fact to be taken into consideration is that certain forms of cancer can develop in one sex only so that many matings which might prove to be double-cancerous, were both sexes able to develop all types of tumor, will appear as single- or non-cancerous and therefore permissible.

In breeding mice cancerous animals and their progeny may be ruthlessly discarded. In man other qualifications are to be considered. To refuse the right of reproduction to all with a possible cancer ancestry would be to discard most of the race, many of whom have highly desirable qualifications.

Knowledge of the inheritance of cancer is indeed desirable, not for the possibility of breeding the disease out but as an aid in early treatment.
TREATMENT


Coutard’s method is based on the observations of Regaud, who found that a single dose of x-ray sufficient to sterilize a rabbit’s testicle produced severe lesions of the skin and tissue destruction, but when this same dose was administered in small fractions over a number of days the sterilization was produced without significant effect on the skin and subcutaneous tissues. Coutard utilized this knowledge and administered a large total dose of x-ray to the tumor giving small fractions of this dose daily over a long period of time. Although the amount was sufficiently large either partly or completely to sterilize the tumor, the integrity of the skin, subcutaneous tissues, and blood vessels was not seriously impaired.

Those who use or think that they use Coutard’s method can be divided into two groups: those who follow the method rather rigidly and those who accept the principle but modify the technic to suit their individual needs. The authors themselves adhere to the use of a low intensity and high filtration, but they state that comparable results have been obtained with a high intensity and a filter of 0.5 mm. copper and quote the results of a well-known hospital. [Those, however, who are familiar with the situation know that Coutard’s results have been much better, and less permanent damage to the normal tissues has been produced, by keeping the rate of administration low, as Holthusen showed years ago.]

The writers suggest that it is possible for very serious late skin and other tissue lesions to result from a Coutard series and cite the case of a patient who received x-ray therapy for acne. About twenty years after the treatment the skin began to atrophy and multiple epitheliomas appeared. Details as to the type of treatment are not given, but unquestionably the patient received either unfiltered radiation or lightly filtered x-rays, which obviously caused the serious atrophy of the skin. Coutard has plenty of ten-year patients to observe and serious lesions have not been noticed. The authors state that within certain limits the target-skin distance, voltage, filter thickness and r per minute are non-essentials or objects of superstition rather than of accurate knowledge. Actually, however, the r per minute effect is a matter of accurate knowledge, as is shown in Holthusen’s chart referred to above.

What is interesting about Coutard’s technic is that it is continually being modified as experience is gained by the observation of long series of patients. Coutard himself one of the first to suggest that certain types of tumors should be treated with larger doses at a more rapid rate. The general principles which he laid down early in his work have, however, held very well for the types of tumor he was treating, though with voltages above 400 kv. it has been found unnecessary to produce the skin lesions which he originally regarded, with the lower voltages, as essential in judging the amount of radiation to give. If the rate is kept sufficiently low, even at 200 kv. it is possible to cure carcinoma of the larynx of the squamous type without producing either an epithelitis or an acute lesion of the mucous membranes. Coutard himself has repeatedly answered in the negative the question contained in the title.


This paper gives the substance of the fourth Stanley Melville Memorial Lecture delivered before the Society of Radiographers in London, Feb. 10, 1940.

The definite risks to health which take place when people are exposed to very small quantities of x-rays or gamma rays over a long period of time have led to the formation of a number of commissions both in the United States and Europe to set up the necessary conditions under which such rays may be rendered innocuous. It is certain that for general purposes tolerance is three one-thousandths of an erythema dose per day or two-tenths of an r per normal working day of seven to eight hours. While the protection for 200 kv. has been pretty well established, the use of higher voltages has caused continuous revisions of the commissions’ published statements. Thus at 400 kv., 18 mm. of lead is required for protection and at one million volts, 80 mm., or about 3 inches.
It is probable that for therapeutic purposes the voltages in use will not exceed 600,000 to 700,000. It is more difficult to obtain complete protection from radium because of the very penetrating capacity of the gamma rays, the shorter of which are equivalent to about two million volts. While it is easy enough to get protection in general, the difficulty comes when a number of patients must be visited and radium inserted and later removed. The only possibility of avoiding exposure is to keep as far as possible away from the patients who are being treated and not to leave the radium out where the operators may be exposed to it before or after its insertion or removal. Emanation is simpler because protection is needed only before insertion, not after the substance has greatly decayed.


This is a statistical study of a series of 829 cutaneous carcinomas diagnosed clinically but without biopsy at the Huntington Hospital, Boston. Of these, 778 were treated by radium alone, 21 by radium plus x-rays, 15 by x-rays, 6 by radiation plus surgery, and 9 by surgery alone. In the authors' opinion the results would have been better if x-rays had been used instead of radium. The end-results are interesting. Primary healing occurred in about 94 per cent of the lesions followed for one year. This corresponds to the published records of the treatment carcinomas of the skin, in which 95 to 98 per cent are considered to be cured by radiation, though the writers frequently fail to state their criteria of cure. More than one-fourth of the deaths from cutaneous cancer in this series occurred after primary healing. Of all the tumors treated, 57 per cent showed three-year cures and 48 per cent five-year cures. The Radiumhemmet, with whose results the authors compare their own, obtained 75 per cent of three-year cures and 55 per cent of five-year cures (Magnusson: Acta radiol., supp. 22, 1935). [Presumably the workers there used heavier dosage.]


A series of 214 cases of epidermal tumors of the skin is recorded, in some of which multiple lesions were present. More than half of the tumors—150—were squamous carcinomas preceded by keratotic changes. Among the remainder were 1 squamous carcinoma believed to be due to the ingestion of arsenic, 9 carcinomas due to tar or soot, 30 examples of carcinoma supervening in chronic lupus, 5 roentgen-ray carcinomas, 4 carcinomas arising in scar tissue, and 6 superimposed on chronic ulceration. Notes on methods and early results of radiotherapy are included.

Of 175 patients with epidermal carcinoma seen between 1925 and 1936, 7 died of malignant disease in another site.

References are appended. There are no illustrations.


A brief general discussion of skin cancer with a single case report.


It is well known that Bowen's disease may exist for many years without showing any evidence of malignancy. In the series reported by the author about 40 per cent of the lesions of the mucous membranes ultimately became malignant as compared to about 3 per cent for the skin lesions. Two illustrative cases are recorded, one an atypical squamous-cell epithelioma of the skin of the face and the other a Bowen epithelioma of the floor of the mouth with metastases in the cervical and supraclavicular lymph nodes. The latter case illustrates the possibility of metastasis from this disease without the discovery of gross or microscopic evidence of penetration into the basement membrane. The treatment of the Bowen lesion should be surgical excision rather than irradiation or chemicals. The paper is illustrated with a photograph of one patient and seven photomicrographs. A long bibliography is appended.

A sebaceous-gland adenoma of the scalp in a woman of fifty-nine years recurred twice within nine months following local excision. The second recurrent mass, which measured 4 x 2 cm., was extirpated with surrounding normal tissue and the patient appeared cured fifteen months later. No histologic criteria of malignancy were demonstrable and the author believes that the tumor originated in a congenitally displaced group of sebaceous glands. A photograph of the tumor and good photomicrographs are reproduced and there is an extensive bibliography. Milton J. Eisen

THE ORAL CAVITY AND UPPER RESPIRATORY TRACT


For carcinomas of the lip of grade I malignancy less than 1 cm. in diameter, of brief duration, and without evidence of deep infiltration, deep ulceration, or extension into the cervical lymphatics, local excision is sufficient. [See, however, following abstract.] If the lesion fails to meet one or more of the above conditions, a block dissection of the submental and submaxillary triangles should be done at the time of the original operation. This may be either unilateral or bilateral depending on the position of the primary tumor with reference to the midline of the lip.

If palpable cervical nodes are present or if, at the time of dissection of the submental and submaxillary triangle, metastases are discovered, the dissection should be continued to the crossing of the jugular vein by the omohyoid muscle. If metastases are present in these deep nodes, the dissection should be carried down to the clavicle. When cervical node metastases are found, operation is supplemented by irradiation. Palliative irradiation is the only procedure for advanced cases of malignancy of the lip with extensive and fixed metastatic nodes, in which the above plan of treatment is inapplicable.

The authors report the results in a series of 27 cases in which the plan of therapy outlined here was followed. The patients have been followed for one to ten years with the discovery of only 2 recurrences.


The case described in the title is of interest chiefly as showing that even a relatively early superficial carcinoma of the lip, of low histologic malignancy, may produce lymph node metastases. The patient was without evidence of recurrence four years and a half after removal of the primary lesion and block dissection of the lymph nodes. Photomicrographs are reproduced.


A man of fifty-nine gave a history of sharp pain radiating from beneath the left side of the tongue to the ear for two months. Four or five weeks before admission he had discovered a lump at the base of the tongue. The tumor, in spite of its unfavorable situation, was removed and found to be a grade II epithelioma. At subsequent operations cervical lymph node dissections were done. The nodes on the left showed gross and microscopic evidence of metastasis; those on the right were cancer-free. The patient was well six years after operation.

Attention is called to the frequency of pain referred to the ear in carcinomatous lesions of the tongue situated wholly or in part in the area of glossopharyngeal innervation.

Photographs of the operative specimens and photomicrographs illustrate the report.

The author again describes his technic of implanting lead tubules containing radon in lingual carcinomas after preliminary surface irradiation with radon (see Am. J. Roentgenol. 34: 63, 1935. Abst. in Am. J. Cancer 26: 428, 1936). Non-palpable cervical nodes he treats routinely by radium bomb. For palpable nodes excision is preferred when the neoplasm is a squamous-cell carcinoma with cell nests; with lympho-epithelioma or transitional-cell epithelioma surface irradiation with the radium bomb, alone or in combination with roentgen rays, is the treatment of choice.

Thirty-nine patients have been treated. Of these 25 are dead; 4 are well more than six years and 9 between one and five years; one has lived two years but is in poor condition.

Illustrations are included and there are references to other papers by the author.


In order to measure the radiation dose delivered to malignant tongue lesions by implanted radium, the authors used tongues removed post mortem and so mounted as to approximate conditions of scatter and absorption encountered in practice. Regions corresponding to tumors which had been successfully treated were mapped on the mounted specimens and radium needles were inserted as in the actual treatment. The dosage to various parts of the lesion was measured by spherical Sievert condenser chambers of elektron metal, calibrated by means of a standard source of radium set up at 5 to 10 cm. from the chamber.

Details of six reconstructed cases are given, each with illustrations to show the arrangement of the needles, the sites where measurements were made, and the effects of radiation on the original lesion, as well as a chart giving the dosage measurements at different points. It was found that the minimum dose given in order to procure a satisfactory clinical result is of the order of 5000 r. In many cases, however, the minimum amount reaches values of the order of 10,000 r, while those parts of the lesion near to needles may receive much more than this. The results also suggest that the threshold dosage rate for squamous-cell carcinoma must be below 0.473 r/min.

A bibliography is appended.


Along with the great diversity of anatomo-clinical and histologic forms of laryngeal cancer there is a highly variable radiocurability. No other type of cancer, in Coutard's experience, has given such irregular annual statistics. His average five-year survival rate for patients treated in the years 1921 to 1932 was 27 per cent. The best year was 1932, when 9 patients were treated, with a 66 per cent five-year survival rate; the worst was 1922, with 11 patients treated but no five-year cures. Ten-year cure rates, available since 1921, show a variation from 0 to 50 per cent.

Along with the type of cancer the therapeutic method plays a rôle in the variability of the results. The author discusses the variations in treatment from year to year and points out certain errors which were committed. One of these was an excessive increase of the total dose when the treatment was given in a short time, and a second was the assumption that the same treatment could be applied to cancers of different nature. It is now known that cancers of undifferentiated cells are extremely sensitive and can be cured by all varieties of irradiation, while cancers of very differentiated and infiltrating cells are only exceptionally cured. The former benefit as well from high total doses given over a long time as from relatively low doses given over a shorter time. In the differentiated cancers, increasing the total dose does not always aid in producing a cure, but can, on the contrary, definitely arrest the neoplastic involution.
The life of the undifferentiated cells of a mucous membrane is not as intimately related to their milieu as is the life of differentiated cells; the effect produced upon the former by radiation is direct and quantitative, relatively uninfluenced by the connective-tissue effects which appear after the tumor cells are dead. In the more differentiated growths the life of the cells is more complex, being subordinated to the milieu. Here the radiation effect following the higher daily dose does not represent the sum of the doses, and the fibrosclerotic effect on the vascular connective tissues must be taken into consideration.

It is obvious that this abstract can only summarize the general facts. Anyone who is treating carcinoma of the larynx should study this paper with the greatest care, as it contains many details concerning which the average radiologist is absolutely ignorant. It is based upon the intelligent handling of x-ray dosage in two general types of carcinoma of the larynx. To produce a cure the treatment of the two types is quite different.


A general discussion of laryngeal carcinoma, without new material.

**THE THYROID GLAND**


The author advocates roentgen irradiation following surgical removal of thyroid tumors. Small daily divided doses are given through two portals until a total of 3000 to 4000 r has been delivered to the tumor bed. The results of treatment for a series of 88 cases thus treated are compared with those of a series of 226 cases reported from the same clinic in 1932. A marked improvement is claimed for the more anaplastic types of growth (Group 3 in the classification used here), attributable it is believed to the heavy irradiation by the fractional dose method. The percentage of deaths in the earlier series was 89.7 per cent and for the later 54.3. [These figures are reversed in the author's table!]

**THE BREAST**


A white woman, aged forty-seven, unmarried, began in 1924–25, at the age of thirty-three, to have metrorrhagia of two or three periods each month accompanied by severe headaches. Curettage and ventral suspension were done. The uterus was large, engorged, and completely retroverted. Following operation the periods were regular and the flow was less. The premenstrual headaches became so severe, however, that in 1929, two years after operation, estrogenic substance was given by mouth over a period of three months. The preparation was progynon H, in the form of pills each containing, it is stated, 0.0417 mg. of estradiol. Obviously this treatment was unimportant. At forty-four years of age the patient was sterilized with x-ray. Severe hot flashes, nausea, and headaches followed and for these symptoms injections of progynon B, 0.33 mg. in sesame oil, were administered intramuscularly each week. The menopausal symptoms were relieved but again became severe and from September 1935 to April 1936 the patient was given a total of 8 mg. of estradiol benzoate. Because of a subsequent recurrence of the menopausal symptoms another series of x-ray treatments was given to the ovaries and progynon B therapy was again instituted, over 70 mg. being given between January 1937 and December 1937. In the latter month the patient was found to have a tumor in the left breast and a radical mastectomy was done. Two years later she was apparently well.

The authors seem to consider that the carcinoma which developed was an unusual histologic type and that the changes were similar to those which they have observed in other human breasts following the administration of estrogen. Their photomicrographs, however, do not show anything extraordinary and the lesions are not different from those seen in breasts long before estrogens were administered.
There is a good deal of talk about the production of carcinoma of the breast in mice by administration of estrogenic substances and Lacassagne is quoted as saying that carcinoma of the breast can be induced by estrone benzoate in male mice belonging to a strain the females of which frequently develop the disease. This is not quite accurate. Lacassagne has, in fact, been careful to state that the action of the estrone might be only to preserve the breast tissue in the male mouse from atrophy, the cancer being then produced for the same reason that it appears in females of the strain, in which it develops without any administration of estrogen.

The authors are unable to conclude that the estradiol benzoate which their patient received was a contributing cause of her carcinoma, but they think it is possible or even probable that it was. They are certainly on sound ground when they warn against the needless and excessive administration of estrogenic substances so prevalent today.

**INTRATHORACIC TUMORS**


The author reviews the subject of benign intrathoracic tumors and reports briefly a case of suspected mediastinal dermoid cyst (the patient refused operation) and one of multiple hydatid cyst of the lung. Roentgenograms are included and references are appended.


Roentgen kymography, or the radiographic demonstration of arterial pulsations, finds its specific application in the differentiation of mediastinal neoplasms and aortic aneurysm. Ten kymograms are reproduced to illustrate the utility of the method. [See also Scott and Moore: Am. J. Roentgenol. 40: 165, 1938. Abst. in Am. J. Cancer 36: 637, 1939.]


A woman of twenty-nine years complained of pain in the right side of the chest, cough, and loss of weight. Roentgen examination showed deviation of the trachea and displacement of the heart to the right. A dense shadow obscured the lower two-thirds of the right lung and a diagnosis of atelectasis was made. Bronchoscopy, done in the belief that a plug of mucus or granulation tissue was blocking the bronchus to the right lower and middle lobes, revealed a mass of polypoid tissue, and three hours later a mass of similar appearance was coughed up. Examination of this tissue as well as a piece removed through the bronchoscope showed spindle-cell sarcoma. A second bronchoscopy was done thirteen days later and a mass of soft myxomatous tissue was aspirated, following which roentgen therapy to the chest was instituted. Subsequent bronchoscopies showed a clearing up of the endobronchial lesion and no evidence of peribronchial or pulmonary disease. The patient had been followed, however, only a few months.

Sarcoma of the lung is of rare occurrence, the incidence being given as 0.009 to 0.02 per cent of all autopsies. The literature is reviewed and a bibliography furnished. Roentgenograms, photomicrographs, and a drawing showing the bronchoscopic appearance of the lesion are included.


A case is described in which fatal paraplegia resulted from a large extradural growth secondary to a small symptomless primary bronchial carcinoma. The bronchial tumor, even at autopsy, was almost invisible to the naked eye, and indeed escaped discovery at the first examination of the bronchi. The patient had worked in tin and gold
mines and silicotic changes were present in the bronchial lymph nodes; he had had frequent attacks of influenza and was a heavy smoker.


The case here described is that of an infant dying at the age of three days. Necropsy showed multiple tumors in the heart, the largest, 4.5 cm. in diameter, occupying the septum. These were made up of a wide variety of bizarre cells of embryonic character, many of which were of the spider-cell type which is so characteristic of rhabdomyoma, showing a centrally placed nucleus with the cytoplasm arranged in fine radiating fibrils. Cross-striations were demonstrable under high magnification. Photomicrographs are included and references are added.

**THE DIGESTIVE TRACT**


The authors describe an applicator for the radium treatment of carcinoma of the esophagus consisting of a hard rubber capsule accommodating two or three 10 mg. radium tubes; soft rubber tubing which fits snugly over the corrugated neck of the capsule; an anchoring cord of linen attached to the capsule and carried through the rubber tube; and a flexible wire stylet and handle. Application is made under fluoroscopic control. The sound is permitted to remain in situ from twenty-four to forty-eight hours for the first application, to yield a dose of 480 to 1440 mg. hours. A second application is made within several days, and if the condition of the patient is good, insertions are repeated at three-day intervals until a dose of from 4000 to 5000 mg. hours is given.

Illustrations showing the construction of the applicator and roentgenograms are included, and a bibliography is appended.

**Primary Carcinoma of the Third Portion of the Duodenum, S. Pollack. Radiology 31: 362–363, 1938.**

A case is reported of carcinoma of the duodenum diagnosed roentgenographically. At operation the tumor was found to be fixed to the root of the mesentery and to the superior mesenteric artery. The outcome is not stated. A roentgenogram is reproduced and four references are given. The case is similar to one recorded by Claiborn and Dobbs (Surgery 4: 97, 1938. Abst. in Am. J. Cancer 36: 153, 1939).

**Case of Carcinoma of the Caecum Causing Intussusception, with Special Reference to the Roentgenological Features, A. G. G. Melville. Brit. J. Radiol. 11: 649–656, 1938.**

A case of cecal carcinoma causing intussusception is recorded. In spite of roentgen studies the diagnosis was not made until operation. The roentgenograms are reproduced and the author points out certain features that he believes, in the light of the operative disclosure, should have received more attention. He includes a review of the literature taken from Ehnlmark (Acta chir. scandinav. 76: 147, 1935. Abst. in Am. J. Cancer 24: 455, 1935) and reaches the following conclusions:

1. Wherever a part of the colon is short-circuited and its place taken by a constricted part of small bowel as seen by barium meal examination, ileo-cecal intussusception must be considered.

2. A barium meal examination should be done as well as a barium enema examination in cases such as the one recorded, in which the enema filled up the sheath, obscured its contents, and then reduced the intussusception almost completely, so that the shortening was not appreciated.

3. The cause of the intussusception may be a neoplasm.

Three references are appended.

A resection of the sigmoid colon was done for a columnar-cell adenocarcinoma in a nine-year-old girl. The neoplasm had replaced the normal intestinal mucosa for a distance of 10 cm. and narrowed the lumen of the bowel. Death occurred almost four years later following the development of neurologic symptoms. Necropsy, limited to examination of the brain, revealed a cerebellar tumor reproducing, more or less faithfully, the structure of the intestinal growth. The author raises the question of a possible intestinal polyposis in his patient, but in the absence of a complete necropsy this is undetermined.

A brief review of carcinoma of the colon in the first two decades of life is included. Illustrations and references are furnished.


In 1928 a woman, then aged fifty-three, began to lose weight and to complain of gastric symptoms. Roentgenograms of the stomach were interpreted as showing a cancer, which was considered inoperable. Exploration at the Mayo Clinic showed the upper three-fourths of the stomach, including all the posterior wall and part of the anterior wall, to be involved by what was believed to be carcinoma. Enlarged nodes removed from the gastrocolic omentum were examined by Dr. MacCarty by frozen section methods, and a diagnosis of carcinoma was made. About a month later, December 1928, the patient placed herself under the care of Professors Fischer-Wasels and Holfelder of Frankfort. At that time there was a tumor “the size of a child’s head” palpable in the stomach region. Holfelder gave the patient high-voltage x-ray therapy for about fifteen minutes once a week, for some two months. At the same time Fischer-Wasels treated her by inhalations of pure oxygen plus 4.5 per cent carbon dioxide for forty-five minutes three times a day. She was also given hydrochloric acid and other drugs to activate the mesenchyme and spleen. In addition ultraviolet light was applied. Improvement was rapid. A month after the beginning of the treatment pain disappeared, vomiting stopped, and appetite increased, but the tumor could still be felt. There was a gain in weight of 22 pounds.

In 1932 a tumor developed in the left tonsil, which was removed by Dr. Willy Meyer and diagnosed as Hodgkin’s disease. The patient was then referred to St. Luke’s Hospital (New York), where she was under treatment for some seven years. No systematic therapy was given but as nodules developed they were rayed. In 1936 the right tonsil became enlarged, but roentgen irradiation—some 1800—brought about complete regression. Roentgenograms taken in 1936 showed that the stomach was normal in size, shape, and position.

The patient now remained well until 1938, when she complained of abdominal pain. Examination revealed a palpable mass along the lower border of the stomach. Abdominal nodes could also be felt. Some treatment was given during the course of the year and the patient gained in weight and felt better, but was still not well. In January 1939, she had severe abdominal pain and the abdominal mass was found to be larger. X-ray examination of the abdomen showed no definite lesion.

The patient then went to Boston and there was given about 600 r to a growth which had appeared in the right submaxillary region; this completely regressed. She also received 1100 r to four abdominal ports and the abdominal mass decreased somewhat in size. In June 1939, she was admitted to the Memorial Hospital, where she died four days later. Autopsy revealed carcinoma of the hepatic flexure of the colon. The stomach showed no abnormality. There was no scarring of the mucosal or serosal surfaces, and there was no enlargement of the regional lymph nodes. The only evidence of a lymph node lesion was in the right submaxillary region, where an enlarged node was found. Microscopically this resembled a reticulum-cell sarcoma, but in view of the past data it was thought to be a Hodgkin’s nodule, possibly altered by exposure to x-ray.

This story offers an excellent example of the fallacy of making too broad conclusions from a single example, for, as the authors point out, the case has been quoted in textbooks and articles for nearly ten years as a cured example of carcinoma of the stomach.
ABSTRACTS


The first part of this paper on rectal carcinoma is taken up with a general discussion of the technic of diagnosis and of the preferred method of operating. The author insists upon repeated biopsies if the first fails to show malignant change and protests against the removal of the rectum without a definite microscopic diagnosis. He has seen no evidence that repeated biopsies in any way spread the disease. An important duty is the classification of material as to operability. The operable group may be subdivided into (a) early operable, (b) medium-advanced operable, and (c) borderline or advanced operable cases. The reasons for this classification are given. Binkley prefers the one-stage abdominoperineal Miles type of operation, but points out that it can be done only on patients who are in favorable condition generally. For advanced cases two-stage procedures are valuable. If after the first-stage colostomy there is failure to gain or loss of weight and strength, it is obvious that the patient is inoperable, but he at least has benefited by the colostomy.

Preoperative preparation is a very important matter. The colon should be cleansed by the daily use of saline cathartics and irrigation. High caloric values are necessary to build up the patient. The diet a week preceding operation should consist of carbohydrate, sugar, and fruit juices. The patient with a high temperature should be very carefully investigated to see that there is no local abscess and should have injections of glucose two or three days before operation. Direct blood transfusions of 500 to 700 c.c. are routinely administered prior to operation.

The author regards irradiation as the method of choice for growths measuring 4 cm. or less in diameter. This consists in the external application of roentgen or radium rays with the insertion of gold radon seeds into the tumor or surface application. With this treatment 9 patients out of 31 survived from five to ten years. [Would not the results have been still better with surgery?—Ed.] In advanced though operable disease the author believes that there is a real advantage in combining radiation therapy with radical surgery. Preliminary external applications produce a favorable effect upon both the patient and the tumor. It may be advisable to make interstitial application of gold radon seeds in addition to the external treatment. No statistical evidence is given to support this opinion.


Binkley has found radiation therapy useful in selected cases of rectal and anal carcinoma. The best results are obtained in small, early, operable lesions which have not infiltrated extensively and are sufficiently accessible so that the size, shape, degree of infiltration, etc, can be determined. External roentgen therapy, sometimes in combination with irradiation from a radium bomb, is followed by interstitial application of gold radon seeds for a dosage of 1000 to 5000 millicurie hours. In some cases special rectal applicators similar to the ordinary proctoscope are used for applying radium or radon at a distance of 0.75 or 1.25 cm. from the tumor. Colostomy is seldom required.

Results in a series of 65 cases treated by irradiation are recorded. Of 19 patients with large lesions, representing advanced disease, 12 are dead and 7 are alive, of whom 5 are clinically well, one for two years and 4 for five to nine years. Of 28 patients with lesions of medium size, 10 are alive and symptom-free. Eighteen small lesions were treated. Three of these patients are dead. One died three years after treatment with metastases in the liver, without recognizable cancer in the rectum. Another died ten years after treatment, at the age of eighty-four, and the third lived seven years and died without recognizable cancer in the rectum. The remaining 15 patients are alive and considered clinically free of disease, the periods of freedom varying from fifteen months to ten years.

Thirty-four patients of the entire series were treated more than five years ago and 17 of these lived more than five years.

Examples are given of severe rectal symptoms following roentgen irradiation for carcinoma of the bladder and prostate and combined radium and roentgen therapy for carcinoma of the uterus.

The characteristic rectal lesion following intensive cross-fire irradiation of the pelvis for carcinoma of the bladder or prostate appears to involve all the layers of the rectal wall, producing a progressive constriction of the lumen. The mucosa may show the intense hyperemia and ulceration of an acute proctitis or may later become thin and atrophic. The symptoms are tenesmus, frequency of movements, mucus and blood in the stools, spasms of rectal and abdominal pain, and temporary fecal impaction above the rectal stricture. The rectal lesions found after combined roentgen and radium therapy of cervical cancer are probably due chiefly to the implanted radium. The lesion is confined to a well defined area of the anterior rectal wall beneath the cervix, varying from an intense hyperemia of the mucosa, with swelling of the bowel wall, to a pronounced mucosal atrophy with ulceration and telangiectasis. The symptoms are those of an acute proctitis with frequency of bowel movements, tenesmus, pain, and bleeding.

The reactions following radiotherapy must be distinguished from extension or recurrence of the malignant process. The diagnosis is made on the history and proctoscopic findings. The reactions tend to subside with discontinuance of irradiation, but when stenosis has occurred rectal dilatation or colostomy may be required.

Photomicrographs are included and references are added.

THE PANCREAS


Two cases of pancreatic carcinoma are recorded with special attention to the roentgen features. Roentgenograms are reproduced.

THE BILIARY TRACT


Three malignant liver tumors in children are described, with autopsy findings. The clinical history in each instance was one of progressive asthenia associated with a large right upper abdominal mass. One of the tumors showed a diversity of histologic structures and the author regards it as an hepatic analogue of Wilms tumor of the kidney. Neither of the other tumors showed teratoid characters. Except for the regional lymph nodes in one case there was no other evidence of tumor growth in the abdomen or thorax.

THE SUPRARENAL GLANDS


A man of twenty-nine suffered from paroxysmal attacks of hypertension characterized by nausea, substernal distress, headache, tremor, pallor, numbness of the extremities, and subsequent exhaustion. In the intervals between attacks the blood pressure was normal and there was no evidence of cardiovascular disease. A suprarenal tumor was suspected and exploration was undertaken. The left suprarenal was considered the more likely site since the patient had noticed an increasing tendency to attacks while lying on the left side, since massage over the left gland produced attacks more readily than over the right, and since roentgen films showed the inferior pole of the left kidney a little lower than normal. The tumor proved, however, to be in the
right gland. It was a paraganglioma or pheochromocytoma, and an extract was found to contain 0.38 gm. of epinephrine per 100 gm. of tumor tissue. The patient was given cortin for several days postoperatively. He made a good recovery and four and a half months later was well, having suffered no attacks in the interval.

Blood pressure charts, a photograph of the tumor, and a photomicrograph are included. Five references are appended.


A sixteen-months-old girl had a large abdominal mass apparently attached to the left kidney. A left pyelogram showed lateral displacement of the kidney with distortion of the normal shadow and irregular filling of the renal pelvis and calices. The right kidney was displaced by external pressure. Autopsy revealed a large left suprarenal tumor, measuring 21 cm. in its greatest diameter, with extensive invasion of the pancreas, the diaphragm, and the mesenteric and retroperitoneal lymph nodes. The left kidney was completely enveloped by the tumor over its posterior surface and its pelvic cavity was filled and obstructed by tumor tissue, which also invaded the renal cortex and medulla. The histologic diagnosis was sympathoblastoma. Pyelograms, a photograph of the tumor, and photomicrographs are included. References are appended.

**THE FEMALE GENITAL TRACT**


In the first of these papers the authors describe and illustrate by photomicrographs the histologic appearances of inflammatory processes in the cervix, of early and advanced metaplasia, and of the various stages and types of cervical carcinoma.

The second paper reports a series of 270 cases of cervical carcinoma in which the diagnosis was established pathologically. In 10 of these no treatment was given. The remainder were treated by radium and surgery, by surgery alone, or by radium alone. Except in far-advanced cases radium is first inserted for a dose of 5000 mg. hours or more; five weeks later operability is determined. All patients who display even slight uterine mobility are submitted to radical hysterectomy. Others receive further radiotherapy. The results are presented in a series of tables. One hundred and eight patients were treated long ago for a determination of five-year results. Fifty-one of these, including 8 stage I, 29 stage II, and 14 stage III cases were treated by radium and surgery, and of these 32 or 62.7 were alive after five years. Of 57 cases treated by radium alone, 1 was of stage I, 6 of stage II, 27 of stage III, and 18 of stage IV. Only 1 of this group of patients survived for five years.


A description is given of Hinselmann's colposcope and Schiller's iodine test [see Absts. in Am. J. Cancer 17: 1044, 1933; 29: 618, 1937]. The author concludes that "routine examination by these tests of every gynecologic patient seems the only means in our power at the present time to find carcinoma of the cervix in its first stage."


The author discusses some of the fundamentals of roentgen and radium therapy in disease of the female pelvis.
Sandler points out that the term "dose" as commonly used in connection with radiotherapy is a misnomer, since it does not measure the amount of radiation delivered to the tissues. He is concerned here with the determination of actual dosage delivered by radium as applied by various techniques to the vagina, uterus, and pelvic wall in the treatment of carcinoma of the uterine cervix.

The dimensions of the vagina are of importance for radium distribution and therefore for the depth dose. In certain techniques the presence or absence of the cervix is also of importance in this respect, though the advantage in depth dose gained where the cervix is absent is usually offset by the higher degree of invasion which has made hysterectomy necessary. Another factor to be considered is the spread of the carcinoma. In 50 per cent of early cases the pelvic lymph nodes are already involved, so that any technic to be effective must deliver an adequate cancericidal dose to these outlying areas.

With these considerations in mind a study has been made of three typical methods: the modified Heyman technic employed in the Marie Curie Clinic, London; Regaud's Paris technic; the Manchester technic, which is essentially a modification of the Paris technic. The author describes a method of calculating dosage in roentgens and gives the figures obtained for certain critical points in the pelvis with the different procedures. His conclusions are as follows:

(a) There is a variation of 1000 to 2000 r in the depth dose to the pelvic wall delivered by the same technic in vaginas of different dimensions.

(b) Often the local growth receives more than an adequate cancericidal dose, which, combined with a potent x-ray dose, as in many technics, may be actually dangerous.

(c) The dose delivered to the pelvic lymph nodes is frequently very small, and often falls far short of an effective lethal dose to carcinoma in these regions.

(d) Because of the high percentage of early involvement of the lymph nodes, x-rays must supplement the falling-off in depth dose from radium. To assist in clarifying this relationship, distances from the mid-line were determined at which 3000 r and 6000 r were delivered by radium alone.

(e) If the limits for tolerance lie actually in the mucosa rather than submucosally, then certain points in the vaginal vault set the limits to vaginal tolerance more quickly than the rectovaginal septum.

The paper is illustrated by diagrams. References are appended.


Among the measures suggested by the authors for reducing the mortality rate for cervical carcinoma are the establishment of travelling cancer clinics to work in cooperation with local medical societies; education of the laity to seek medical advice earlier, of the medical profession to make more frequent and more thorough examinations of the cervix, and of both to appreciate the fact that the disease can be treated properly only by an oncologist; adequate treatment by electrocoagulation and irradiation of precancerous lesions in selected cases; non-traumatic irradiation prior to forceful examination, biopsy, and intracervical insertion of radium; the establishment of endowed cancer clinics with trained personnel and adequate equipment. Special attention is called to the improper use of radium by untrained physicians and surgeons, in whose hands it may do far more harm than good.


Roentgen therapy with subsequent implantation of radium, usually for a total dose of 7200 mg. hours, brought about unquestionable palliation in a considerable percentage of 141 cases of cervical carcinoma of Grades III and IV. Bleeding was controlled in 66 per cent of the cases, the general condition improved in 43 per cent, and the local lesion healed in 36 per cent. Pain was relieved in only 5 per cent. Eleven per cent of the
patients were known to have survived from one to six years. Two survived more than five years.

THE GENITO-URINARY TRACT


This is a report of 130 renal tumors seen in the Cook County and Mt. Sinai Hospitals, Chicago, since 1929 and 1930 respectively. In all the diagnosis was verified microscopically. Eight of the patients were children less than nine years of age; the remainder were adults, the majority in the sixth and seventh decades. About two-thirds of the series were males. The classic triad of hematuria, tumor, and pain was observed in only 22 patients, or 17 per cent; in 32 patients there were no symptoms referable to the urinary tract and repeated urinary examinations showed no red blood cells. A palpable tumor was present in 53 per cent and pain in 37 per cent.

The series included 91 hypernephromas, 17 carcinomas of the renal parenchyma (15 papillary and 2 alveolar adenocarcinomas), 8 Wilms’ tumors, 3 fibrosarcomas, 1 adenoma, 1 angioma, 2 fibrolipomas, and 7 tumors of the renal pelvis. Ninety patients were operated upon and metastases were found in about 15 per cent of these. In the unoperated cases autopsy showed metastases in over 90 per cent. Nephrectomy, as early as possible, is the treatment of choice with preoperative and postoperative roentgen irradiation. End-results are not discussed.

Photomicrographs are included and there is a long list of references.


Six cases were obtained by the author from the literature and from personal communications from other physicians, in which kidney tumors were “apparently controlled” by irradiation alone. One patient died after five and a half years, of unknown cause. The others were alive at the time of the report and apparently well, after intervals of eleven months to five years. The patient with the longest survival period was a child of eleven months with a large vascular tumor which on two occasions was explored and found inoperable. X-ray examination five years after irradiation was begun showed no evidence of tumor or of metastases.

Ten further cases are recorded of varying types, all of which terminated fatally. In most of these some regression of the primary growth was obtained by irradiation, but death was due to a recurrence or metastases. In 2 of the cases irradiation was followed by nephrectomy.

The author believes that irradiation alone gives better results than irradiation followed by nephrectomy and that small doses over a prolonged period constitute the method of choice. He advises against biopsy but cites an exceptional case, recorded by Wharton (Arch. Surg. 30: 35, 1935. Abst. in Am. J. Cancer 24: 928, 1935) with survival of the patient, in good health for five years [actually the figure given by Wharton is two years].

One of the case reports is illustrated by photographs of the patient and a photomicrograph. Two references are appended.


Report of a transitional- and squamous-cell carcinoma of the renal pelvis with extension into the kidney. Nephrectomy was done but the patient died five months later. Necropsy showed extension of the disease into the retroperitoneal tissue, and metastases to the regional nodes, lungs, heart, and remaining kidney. A roentgenogram, a photograph of the operative specimen, and a photomicrograph are reproduced. Six references are furnished.


Perirenal tumors may be either lipoblastomas or fibroblastomas. Over 200 examples of lipoma have been recorded. Fibrosarcoma is seen more rarely. The au-
The authors' patient was a man of sixty-eight who complained chiefly of weakness and loss of weight. A mass was palpable in the left upper abdominal quadrant and roentgen examination led to a diagnosis of renal tumor. At operation a large mass was removed surrounding a kidney of normal size and appearance. The microscopic diagnosis was fibrosarcoma. A recurrence three or four months later was treated by roentgen therapy but the patient died.

In view of the poor surgical prognosis of these highly malignant tumors the authors suggest immediate intensive x-ray therapy and refer to one case reported by Young and Waters (Am. J. Surg. 11: 101, 1927) in which a ten-year cure was obtained by this means. [Young and Waters merely mention this case in the course of a paper on radiotherapy of malignant disease of the genito-urinary tract. No details are given and the correctness of the diagnosis may justly be questioned.]

Illustrations and references are included.


The case recorded is not unusual except for the comparative rarity of endometriosis in the bladder. The patient was a woman of thirty-six whose chief complaint was dysuria, exaggerated at the menstrual periods. Cystoscopy showed the presence of an intramural tumor involving the fundus of the bladder. Resection was followed by relief of symptoms. References and a photomicrograph are included.


Five examples of multiple primary malignant tumors with involvement of the genito-urinary tract are recorded. In 4 patients the tumors were present at the same time; in the fifth the tumors developed in succession. The cases were as follows: (1) epidermoid carcinoma of the urinary bladder and adenocarcinoma of the prostate with extension into the wall of the seminal vesicles; (2) carcinoma of the urinary bladder and hypernephroma of the right kidney; (3) carcinoma of the prostate and papillary epidermoid carcinoma of the urinary bladder; (4) carcinoma of the prostate and epithelioma of the ear; (5) a papillary carcinoma of the bladder followed eight years after resection by an adenocarcinoma of the prostate and adenocarcinoma of the colon. All the diagnoses were proved histologically.

The various criteria for the diagnosis of multiple malignancy are discussed and the literature is reviewed. A long bibliography is appended. Photomicrographs of the lesions in the first three cases are reproduced.


A report is made of a series of 314 malignant tumors of the testis treated at the Mayo Clinic in 1920-36. In 242 of these the diagnosis was microscopically proved, in the remainder the clinical diagnosis was regarded as unquestionable. The proved tumors were classified as follows: adenocarcinoma 65; adenocarcinoma with teratoma 22; teratoma 21; seminoma 76; sarcoma 24; embryoma 16; miscellaneous 18. All but 8 patients received radiotherapy either with or without orchidectomy. Among the entire group of 314 cases there were 56 in which radiotherapy was regarded as a failure and in all of these the tumor was of grade 3 or 4 malignancy. Five-year results were available for 213 cases. Of 64 patients treated by orchidectomy and irradiation at the Clinic 34 (53 per cent) lived five years or more after operation; of 5 treated by orchidectomy alone, 2 lived five years or longer. Of patients receiving only irradiation at the clinic 97 had undergone orchidectomy elsewhere, and of these 13 lived five years. Among 47 without previous orchidectomy there were 7 five-year survivals.

The significance of metastases for prognosis is indicated by an analysis of the 69 patients treated by both orchidectomy and irradiation at the clinic. In this group were 22 with metastases and 47 without. Among the former the five-year survival rate was 32 per cent, among the latter 62. The authors optimistically conclude that a patient without metastasis has about a 60 per cent chance of surviving for five years or longer; with metastasis, his chances are about 30 per cent of surviving for the same period.

The patient, forty-three years of age, had a tumor of the testis. The Aschheim-Zondek test was negative. An operation was performed and microscopic examination showed a carcinoma with evidence of embryonal tendency and a teratomatous origin. A photomicrograph shows an area of cartilage included in a carcinomatous area. Aschheim-Zondek tests done on the seventh and fourteenth day postoperatively were both reported negative. About two months after operation, however, a roentgenogram showed the testis to be filled with blood and tumor nodules. The patient died a month later.


An example is recorded of chorionepithelioma of the testis in a man of twenty-two, with bilateral gynecomastia and widespread metastases. The Friedman test was strongly positive. The opposite testis was undescended. Photomicrographs of a cerebral metastasis and of the hyperplastic breast tissue are reproduced.

THE NERVOUS SYSTEM


This is a clinical study of the effects of roentgen irradiation in 44 cases of brain tumor in which the diagnosis was proved by biopsy or necropsy. Six patients died during or shortly after treatment but for reasons which they set forth the authors do not attribute these deaths to irradiation. In 25 cases there was improvement of varying degree and of varying duration. While it is impossible to determine to what extent the improvement was due to roentgen therapy and to what extent to surgery, it is believed that irradiation played a role in all and that in 9 instances this was chiefly or wholly responsible. Six of these nine patients showed either moderate or marked improvement as compared with fair improvement in the other 3. Four were alive at the time of the report.

Of 24 patients with clinically diagnosed brain tumors, 15 showed improvement for from one to seventy-two months and in 9 of these the credit is given chiefly to irradiation. References are appended.


Three cases of colloid cysts of the ventricle are reported. In one of these, described at length, the tumor was removed by Cushing’s transventricular route. The patient survived the operation and the prognosis was considered good. Of the other two patients one died postoperatively and the other as a result of sudden impaction of the cyst in the anterior end of the ventricle. Two ventriculograms are reproduced.


The diagnosis of the case reported here is based on the appearance in the roentgen film of a “faintly calcified irregularly globular shadow” to the left of the midline, above and posterior to the sella turcica. The suprasellar region was explored but no tumor was found.


A man of thirty-one gave a history of frequent epileptic seizures and progressive weakness of the left arm and leg since childhood. X-ray examination showed pronounced asymmetry of the skull and a ventricular diverticulum. Operation revealed a plexus of veins imbedded in the thickened pia arachnoid overlying the cortex in the
posterior part of the parietal lobe, corresponding to the apex of the diverticulum. The author does not appear to be altogether sure of the character of the lesion but believes the most likely explanation is that it is a racemose venous angioma, constituting a part of a more widespread developmental anomaly of the brain.


Report of a case in a girl of sixteen. The original diagnosis was poliomyelitis. Autopsy revealed an arterial angioma of the cord.

BONE TUMORS


The author discusses some of the problems in the diagnosis of bone tumors, especially the differentiation in the roentgenogram of primary osteogenic sarcoma from metastatic tumors and the resemblance of the roentgen picture in centrally located fibrosarcoma, liposarcoma and neurogenic sarcoma to that of giant-cell tumor and fibrocytic disease. He believes that the conception of the so-called Ewing sarcoma as a pathological entity is wholly unjustified and that even the clinical syndrome is ill-defined. Both in point of radiosensitivity and in the presence of rosettes this tumor bears a striking resemblance to neuroblastoma. The opinion is expressed that adequate study would show most or all of the lesions diagnosed as Ewing’s tumor to be actually metastatic growths in the bone. References are appended.


The authors summarize their discussion of tumors involving the sacrum as follows: “Exclusive of metastatic processes, tumors involving the sacrum may be classified according to point of origin as follows: (1) tumors arising within the sacral canal; (2) tumors arising from the body of the sacrum, and (3) tumors arising from structures adjacent to the sacrum: The most common tumor arising within the sacral canal is the ependymal-cell glioma. This tumor causes erosion of the sacral canal by expansion and direct pressure. The margins of the eroded bone are sharp and well-defined. Similar changes, which often are associated with erosion of a sacral foramen, are caused by neurofibromas. The most common tumor arising from the body of the sacrum is the chordoma. The most characteristic feature of the changes produced by a chordoma is the expansion of the sacrum by an infiltrative destructive process. It is often impossible to make a more specific diagnosis than ‘malignant tumor involving the sacrum’ in cases of sarcoma, Ewing’s tumor, metastatic carcinoma, and multiple myeloma. Teratomas are usually characterized by deformity or erosion of the sacrum by an extrinsic mass, in which may be seen teeth or calcification.”

Roentgenograms are reproduced and three references are furnished.


This paper from the Memorial Hospital, New York, lists the indications for amputation in the presence of a bone tumor and describes the technic. In malignant tumors amputation may be undertaken, in the absence of distant metastases, in hope of a permanent cure, or under certain circumstances, even when metastases are present, for palliation. In benign tumors it may be indicated where failure of conservative measures leaves the patient with an extremity functionally inferior to an artificial limb. Amputation undertaken in hope of cure should be above the affected bone and not through it, with the single exception that in cases involving the lower femur amputation through the upper fourth, or subtrochanteric, is preferable to hip joint disarticulation.

Of 79 patients with osteogenic sarcoma undergoing amputation in 1923–33, 61 are known to be dead, two of these having lived eight and ten years; 15 or 19 per cent were
known to be living without evidence of disease, but only 6 for more than five years. Another series of 359 cases of osteogenic sarcoma, covering a longer period, gave a five-year survival rate of 10.5 per cent.

HODGKIN'S DISEASE, LEUKEMIA, LYMPHOSARCOMA


This is a survey of 212 histologically demonstrated cases of Hodgkin's disease. Of the 18 children under fifteen years of age in this series 16 were boys. Of the patients over fifteen the percentages were 65 for males and 35 for females. There was no obvious racial distribution. The most frequent age of occurrence was in the third decade. The most usual initial symptom was lymph node enlargement, which occurred in 80 per cent of the patients. The nodes most frequently involved in any simple inflammatory hyperplasia were the same for Hodgkin's disease, namely the cervical, axillary, and inguinal in order. In only five examples did the epitrochlear nodes show enlargement and in two of these the epitrochlear adenopathy was bilateral. This is useful in distinguishing the disease from lymphosarcoma, in which the epitrochlear nodes are frequently involved. The disease was present in the gastro-intestinal tract in only two cases, the stomach in one and the sigmoid in the other. The author does not specify the involvement of the abdominal nodes, saying that it is difficult to identify them by palpation [a correct statement, though, as a matter of fact, autopsied cases usually show very extensive involvement and many of the patients are greatly improved clinically by the administration of radiation to the abdominal nodes, especially in the later stages of the disease]. The skin was involved in 38 per cent; the bones in only about 7 per cent, which is somewhat lower than the usual statistical record of 16 per cent.

The changes in the blood were not characteristic. About 20 per cent of the patients showed an eosinophilia, the highest being 28 per cent of 27,000 white cells. Fever was seen in about 75 per cent of those dying in the hospital. Many patients have little or no fever, however, during the entire course of the disease.

The average duration of life of 123 patients who died under observation was thirty-two months dating from the onset of symptoms. The average length of time the patients had symptoms before receiving radiotherapy was eight months. The duration of life after the institution of treatment was about twenty-four months.

A pertinent bibliography is given.


A case of Hodgkin's disease and 2 cases of lymphosarcoma are recorded, with renal symptoms, as edema, albuminuria, hematuria, and pyuria. In each instance roentgen therapy to the renal area was followed by great improvement. The authors cannot offer any certain explanation for the improvement. They suggest three possibilities: (1) The symptoms may have been due to obstruction, which was relieved by shrinkage of the lymphoblastomatous tissue following radiation therapy. (2) The symptoms may have been caused by infiltration or direct extension of the disease into the kidneys and improved subsequent to irradiation of the renal lesions. (3) Retrogression of the diffuse disease process by roentgen therapy may have brought about remission of a toxemia secondary to lymphoblastoma, with partial or complete restoration of normal renal function. The diagnosis in all three cases was established by biopsy. References are appended.


This is a report of a case of chronic lymphatic leukemia associated with a mild diabetes and progressive cardiovascular disease. Fifteen years after the diagnosis of leukemia was made a course of roentgen therapy was given and this was repeated from
HODGKIN'S DISEASE, LEUKEMIA, LYMPHOSARCOMA

time to time, on each occasion causing a lowering of the white cell count and an abatement of the diarrhea which was the chief manifestation of the disease. Death twenty-five years after the leukemic condition was discovered was due to congestive heart failure. Autopsy revealed leukemic changes in the lymph nodes, spleen, bone marrow, lungs, pericardium, liver, bladder, and prostate.


A woman of fifty-five with bilateral exophthalmos was found to have numerous enlarged lymph nodes, biopsy of one of which revealed lymphosarcoma. This led to a suspicion of retrobulbar tumor and roentgen therapy was instituted, first to the retrobulbar region and subsequently to the mediastinum, cervical, axillary, and inguinal regions. The exophthalmos diminished and enlarged nodes regressed, but these effects were temporary. Death occurred about seven months after the patient was first seen. Autopsy revealed a diffuse lymphosarcomatosis, and lymphosarcomatous tissue was demonstrable in the retrobulbar fat.