THE UNIVERSITY OF MINNESOTA

GRADUATE SCHOOL

Report

of

Committee on Examination

This is to certify that we the undersigned, as a committee of the Graduate School, have given Clayton Farrington Andrews final oral examination for the degree of

Master of Science in Surgery

We recommend that the degree of

Master of Science in Surgery

be conferred upon the candidate.

J. de J. Pemberton
Chairman

Louis A. Lucas

L. L. Law.

Louis B. Wilson

Date May 16, 1922

10-20 5M

REPORT

of

COMMITTEE ON THESIS

The undersigned, acting as a Committee of the Graduate School, have read the accompanying thesis submitted by Clayton Farrington Andrews, for the degree of Master of Science in Surgery. They approve it as a thesis meeting the requirements of the Graduate School of the University of Minnesota, and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science in Surgery.

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THESIS

PRIMARY RETROPERITONEAL SARCOMA, WITH REPORT OF CASES.

Clayton Farrington Andrews, Ph.G., M.D.

Submitted to the faculty of the Graduate School of the University of Minnesota in partial fulfillment of the requirements for the degree of Master of Science in Surgery.

March, 1922.

The term "Retroperitoneal Sarcoma" usually includes both primary and secondary growths behind the peritoneum. The secondary sarcomas usually originate in the testicle or ovary and are not included in the report of cases of true primary retroperitoneal sarcomas. To belong to this latter class the growth must originate behind the peritoneum in the post-peritoneal areolar tissue, adipose tissue, or lymph glands, and occasionally in the vertebrae, independently of any organ, as the kidney or adrenal.

The credit of the name is given to Lobstein[1] who gives an accurate description of the gross appearance of the tumors.

The condition is not as uncommon as is usually supposed, although the number of reported cases is undoubtedly reduced because of those not proven by microscopic diagnosis.

J. Dutton Steele[2] in two exhaustive articles, reviewed the literature and reported ninety-six cases of primary retroperitoneal sarcomas, five of his own and ninety-one collected cases. Trout and Meekins[3] reported twelve additional cases, two of their own and ten collected from the literature, making a total of 108 reported cases. The largest tumor of this type on record was reported by Bull[4] and weighed thirty-four pounds after removal. The microscopical diagnosis of this tumor was myxo-fibro-chondro-sarcoma.

In addition to the 108 cases mentioned above, I have collected six cases from the literature, and report twenty-eight proven cases seen at the Mayo Clinic. (There are also on record, ten other cases of clinically undoubted primary retroperitoneal sarcomas, which are not included in this series for the reason that the diagnoses were not proven by microscopical examination.)

Of the collected cases, a round cell sarcoma was reported by Smithies[5]; Christie and Bernstein[6] reported a case of perforation of the duodenum due to a fibro-sarcoma; Taft and Jarvis[7] report the removal of a six and one-half pound large spindle-cell retroperitoneal sarcoma with recovery; Hill[8] reports the case of

a lymphosarcoma in a boy of 6 years, treated unsuccessfully with Coley's fluid; Babcock and Wohl[9] report two cases, one of lymphosarcoma, and one of spindle-cell sarcoma. With the 108 previously reported cases, the six additional collected cases reported above, and the twenty-eight cases from this series, brings the total to 142 cases in the literature.

Etiology

The cause of these tumors is not known, though in a very few instances, trauma seems to have a definite relationship, according to Coley[10] who reports a history of trauma, from one week to a little over a year previously, in 27 per cent of 170 cases. None of these cases however, were retroperitoneal. Only one of our cases. (No. 18). gave a history of trauma, this being a kick in the abdomen two years previous to the discovery of the tumor. Even with the history of trauma one must hesitate before saying that it is causative in a given case, as it may be but an incidental feature. Some pathologists consider syphilis and tuberculosis as predisposing causes.

The ages of our patients ranged from two and one-half to sixty-two years.

1 to 10 years----4

11 to 20 years----1

21 to 30 years----2

31 to 40 years----6

41 to 50 years----9

51 to 60 years----4

61 to 70 years----2

There were twenty-three males and five females. It would thus appear that these tumors occur most commonly in the fourth and fifth decades, and are seen far more often in males than in females. In Steele's series the sex apparently had no relation to the incidence of the growths. Rarely do we find more than one tumor, multiple growths being present in but one case. (3.5 per cent). Thirteen (46.4

per cent) were found upon the left side, nine (32.1 per cent) on the right, three (10.5 per cent) were pelvic, two (7 per cent) were central, and one (3.5 per cent) occupied both sides of the abdomen.

Symptoms.

The symptoms appear insidiously, are very indefinite and varied. In general, the symptoms are those due to the organs pressed upon. The duration of the symptoms to the time of appearance at the Clinic varied from two weeks to three years, an average of eight months. The onset is usually with indefinite abdominal pain, at times colicky, and accompanied by nausea, vomiting and gaseous distention. Lumbar pain is also a common complaint, as is pain in the leg. The attacks may simulate gall stones though this pain is less severe, but is apt to be more constant. Steele considers diarrhoea an important symptom, while Keen states that most of these patients suffer from constipation. In our series the bowels were regular in fourteen cases (50 per cent), there was diarrhoea in two (7 per cent), constipation in eight (28 per cent), and both diarrhoea and constipation in one case. Edema was present in but two cases. As a rule it begins at the ankle and extends upward. Urinary frequency was a complaint in six (21 per cent), while dysuria and hematuria were each seen in one case. Jaundice occurs when the common duct is pressed upon by the tumor, but this was not present in any of this series. Ascites was present in but one case. An almost constant symptom is loss of weight, which is often very marked and very rapid, and is usually accompanied by great loss of strength. Nearly one-half the cases showed a moderate fever, ranging from 99 to 102 degrees, during some stage of the disease. Blood counts were available in twenty-four cases, eleven of which (45 per cent) had a hemoglobin estimation below 70 per cent.

11.

The x-ray has been of great value in aiding diagnosis in our cases, by ruling out tumors of the stomach and intestines by the report of "Tumor extrinsic"*

* Meaning outside of the gastrointestinal tract.

Its use in conjunction with the cystoscope will rule out a genito-urinary mass, as was done in several cases seen by us.

The mass, usually deeply placed, may be mobile or immobile, firm or cystic, smooth or irregular, tender to touch or painless. One of the most characteristic findings, when present, is the location of the colon resting in a groove upon the anterior surface of the tumor. If laterally placed, the mass may be impossible to differentiate from liver, kidney, suprarenal, or spleen. If found low in the pelvis, rectal or vaginal examination will often give the most valuable information. Rare retroperitoneal serous cysts may confuse, but these are very slow growing and attain an enormous size. Aneurysm must also be considered, but the pulsation, thrill, or bruit, lack of emaciation and anemia, together with slower growth, should readily distinguish. Lipomas or myxo-lipomas are much slower growing, reach a greater size, show a marked fluctuation, and produce pressure symptoms much later. A rapid growth in a retroperitoneal lipoma is very apt to mean a sarcomatous change. The word "Degeneration" is purposely avoided in this connection, as the recent work of our pathologists shows that the change from a benign to a malignant condition is not one of degeneration, but a very active, though abnormal, generation. Enlarged tuberculous ablymph glands may be distinguished by the history, uniform enlargement of the abdomen, greater emaciation, shorter course, greater tenderness, higher fever, and often by the discovery of tuberculosis elsewhere in the body. It is also far more common than is retroperitoneal sarcoma. The most common errors are the diagnosis of ovarian cysts and renal tumors, which can usually be avoided by careful physical and special examinations.

Metastasis was found in about 33 per cent of our cases and this is practically the same proportion found by Steele. The most frequent points of metastasis are the liver, lungs, or lymph glands, but the spleen, kidney, skin, omentum, muscle, pleura, heart, bone, spinal cord, dura, adrenal, or mesentery

may show secondary nodules.

Pathology.

The most common type of sarcoma in our series was found to be the small round cell, or lymphosarcoma, which occurred in ten of our twenty-eight cases. The next common was the spindle-cell and fibrosarcoma, each being present in four cases; the mixed-cell, fibromyxoma, and myxo-sarcoma in two cases each; small and medium round cell, myxo-osteo-chondro-sarcoma, and giant-cell sarcoma in one each; the latter tumor was made up for the most part by tumor giant cells.

In the beginning the mass is usually firm and often lobulated. Later, it is prone to undergo hemorrhagic, mucoid, or purulent degeneration, with the formation of a cyst. Upon removal, the irregular mass frequently is found encapsulated, quite hard, and may show lobulated cysts. It cuts with considerable resistance, hemorrhagic areas are not uncommon, and dense whorls of fibrous connective tissue are seen. If muscle be present it often is salmon-colored, while cartilage and bone appear much the same here as elsewhere.

Microscopically, the cells are most frequently arranged in masses which extend irregularly into strands of more or less dense fibrous tissue. The sarcoma cells are usually associated with abundant capillaries composed of a single layer of endothelial cells. In some instances the blood channels have no endothelium, the blood lying in immediate apposition to the tumor cells. This is likely the explanation of the frequency of hemorrhagic degeneration, as well as the metastasis to the lungs and liver by way of the blood stream. The more highly differentiated the cells composing the tumor, the more benign is the neoplasm. The most malignant and infiltrative of the retroperitoneal sarcomas is the lymphosarcoma, which is the least differentiated. The cells are massed closely together, have a single deep-staining nucleolus, with but little cytoplasm; there is very little interstitial connective tissue; in the rapidly growing types,

mitotic figures may be seen. Unfortunately this is the most frequent type of retroperitoneal sarcoma.

The medium and the large round-cell types are much less common and also less malignant than the small round-cell sarcoma. The cells may be round or oval, the cytoplasm more abundant, and the nuclei larger. There is more likely to be connective tissue between the cells. Such neoplasms are less destructive and break down more slowly than do the lymphosarcoma.

Large and small spindle-cell sarcomas show the typical elongated, somewhat pointed cells with oval or spindle nuclei. These cells are arranged in bundles around the capillaries, with quite definite interstitial connective tissue. They are far less malignant than the round-cell sarcomas.

It is not uncommon to find a mixture of the above types of sarcomas, as is well illustrated in Case 13 (Fig. 7).

Again, the above tumors may be combined with various other tissues to form the so-called "Intermediate" types, as illustrated by the osteo-sarcomas, chondro-sarcomas, liposarcomas, myxo-sarcomas, fibro-sarcomas, and so on. True bone, cartilage, fat, muscle, or fibrous tissue is found in these tumors, together with the masses of closely packed, rapidly growing, malignant cells.

Giant-cell sarcomas make up but a small part of the retroperitoneal tumors. The one case in our series originated apparently from the vertebrae, near the bifurcation of the aorta. Giant cells may be present in many sarcomas, but only when they predominate, is the tumor termed a giant-cell sarcoma. These cells are large, with several nuclei, which tend to arrange themselves together in the middle of the cell. The cytoplasm is opaque, and may contain fat vacuoles or red blood cells. Spindle-cells make up the bulk of these tumors, which are usually very vascular.

Treatment.

The treatment of retroperitoneal sarcomas has been most unsatisfactory

and the prognosis is bad. Potassium iodide has been given internally, but without any appreciable benefits. Coley's serum seems to have been of service in many cases in acting as a palliative measure. Surgical removal has been the treatment of choice for years, but it is too frequently hampered by the location, size, infiltration, vascularity, and adherence to vital structures, preventing complete removal. That operation offers very little for these unfortunate people is obvious from a study of the following facts: twenty of the twenty-seven cases operated upon in this series were found to be inoperable at the time of exploration; seven were enucleated or removed as far as possible; in five of these patients the tumor recurred; one died the day following operation, and we have been unable to get further data on the seventh case.

The combination of radium and x-ray treatments has given some very excellent results in some of our cases. Bowing and Desjardins,[12] of this clinic, have several such cases undergoing this type of treatment at the present time. The cases include both the primary and secondary retroperitoneal sarcomas. In several of the patients, the mass has entirely disappeared, they have gained weight and strength, and are able to carry on their work. It is yet too early to claim permanent cures in such conditions, but if the great improvement is only temporary, it is surely well worth while, and achieves more than any previous method of treatment. Where a retroperitoneal sarcoma is suspected, a two weeks' course of radium and x-ray will be of great aid as a diagnostic measure. If the tumor is sarcoma, an appreciable diminution in size will be noted. If not, no damage has been done, and the mass may be explored. In this manner many patients would be saved the pain and expense of a fruitless operation, and receive the benefit of the best treatment that we now have at our command.

Summary.

1. Retroperitoneal sarcomas are seen frequently enough to be constantly

kept in mind in abdominal diagnosis.

2. Trauma is apparently not a factor in the cause of retroperitoneal sarcomas.

3. Metastasis occurs in about 33 per cent of cases and is most frequently found in the liver and lungs.

4. The most characteristic finding is the location of the colon in a groove upon the anterior surface of the tumor.

5. The small round-cell or lymphosarcoma is the most common type and also the most malignant.

6. The prognosis is always unfavorable. A combination of radium and x-ray treatments seems to accomplish the most in the treatment of these neoplasms.

Case 1. H. C. (36910). Male. Apr. 26, 1910. Age 40. Three weeks ago patient discovered a movable mass in the left side of the abdomen--no soreness--has lost 25 lbs. since last fall--slight nocturia since discovery of tumor --some dragging pain in middle of back after exertion, for past few months. Bowels regular. Some slight pain in lower left abdomen during past winter--not present past few weeks.

PE. Tumor lower left quadrant--partially movable with base partially fixed--tumor palpable per rectum.

Hb 78 per cent RBC 5. 400,000 WBC 6600.

Urine:- Occasional RBC.

Operation April 27, 1910. (W. J. M.) Large retroperitoneal sarcoma about 12 by 12 by 18 cm., having its origin retroperitoneally, in the inner layer of the mesosigmoid. Tumor enucleated. Prognosis not good as to cure.

Microscopic diagnosis:- Fibrosarcoma.

In July, 1911 the patient began to have drenching sweats when asleep, diarrhoea, and aches and pains in the abdomen. Lost 25 lbs. in fifteen months. Tumor recurred in the same location in March, 1911 and patient suffered with pains in right leg and thigh. Fever 99 to 102.

Had x-ray treatments for months--died Oct. 15, 1911 after a marked loss of weight.

Case 2. F. J. K. (37608). Male. May 14, 1910. Age 31. History of chancre with rash four years ago. Continuous treatment for two years.

Patient apparently well until one year ago when he had a spell of unconsciousness lasting two hours. This was followed by frequent headaches and more anti-luetic treatment. Some difficulty in maintaining equilibrium.

In January, 1910 first noted right abdominal mass which has been enlarging and becoming harder. Had constant epigastric pain at first--lately pain is in right lower quadrant--lost 12 lbs. in five months. Cannot eat much because of

pressure sensation and spells of vomiting lasting two to three days. Temperature normal. Bowels regular.

Urine:- Negative. Hb 75 per cent.

PE. Movable mass extending from ensiform to just below umbilicus in midline. Quite tender.

Operation May 21, 1910. (W. J. M.) Inoperable lymphosarcoma retroperitoneally, involving lymph glands. Patient died in October, 1910.

Case 3. G. F. (69466). Female. June 20, 1912. Age 6. Enlargement in left flank noted ten weeks ago--child began to complain seven months ago--was uneasy--fretful--dyspneic, and suffered indefinite abdominal discomfort. Severe pain began two months ago and began to lose weight at same time. Appetite poor. Obstinately constipated and painful bowel movements for two months. Had exploratory operation elsewhere six weeks ago. Retroperitoneal tumor found, somewhat lobulated, about 3x4 inches in size, springing from borders of the vertebrae at bifurcation of the aorta. Base was hard, simulating cartilage; upper portion soft and freely movable. Specimen reported sarcoma. Patient examined at Clinic June 20, 1912. Abdomen very tense with large left and central tumor which bulges against the anterior abdominal wall. Specimen of the tumor was brought to the Clinic with the patient and examined by Dr. MacCarty who reported giant cell sarcoma, the tumor giant cells predominating in the microscopical picture. No answer has been received in response to our questionnaire.

Case 4. J. S. S. (71100). Male. July 25, 1912. Age 54. "Stomach trouble" for ten years--moderate pain off and on in pit of stomach, navel, upper and lower right abdomen. Severe diarrhoea in past three weeks, with a history of occasional diarrhoea for the past ten years, worse past six months. In July, 1911 had a severe pain in epigastrium for twenty-four hours with slight icterus (?). Has been worse all this summer with diarrhoea and weakness. Best weight 150 pounds. Present weight 119 pounds. Had a hemorrhage from the bowels three

years ago. Slight paralytic stroke last November.

PE. Resistance over entire abdomen. Tender along line of transverse colon. Stools show a few RBC. No parasites. Urine:- Negative.

Gastric analysis Total acids 70 Free HCL 70 Combined acids 0.

Operation Aug. 2, 1912. (W. J. M.) Retroperitoneal tumor at head of the pancreas underneath mid portion of the duodenum close to the transverse colon near hepatic flexure, and adherent to the liver. Inoperable. Specimen removed for diagnosis reported oval and spindle cell sarcoma. Following operation the patient was treated with x-ray and Coley's serum for a time, but died February 22, 1914 of paralysis or apoplexy.

Case 5. R. S. (99151). Male. Jan. 19, 1914. Age 19. Four months ago began to have constant pain in left hip, worse at night. Treated for rheumatism which helped for a time. Three weeks ago a mass was found in the left pubic region--is losing weight. Fever of 102 for past three days.

PE. Fixed mass attached to left iliac crest--firm--extends to both outer and inner surfaces. Palpable per rectum. Some pain in left hip on motion.

Urine:- Few pus cells. Hb 78 per cent RBC 4.52 WBC 9000.

Operation Jan. 21, 1914. (M. S. H.) Inoperable retroperitoneal mass left iliac fossa with erosion of inner surface of the ilium. Specimen removed for diagnosis reported lymphosarcoma.

Received Coley's serum at home. Died in May, 1914.

Case 6. C. A. (101025). Male. Feb. 21, 1914. Age 29. Three months ago began to have pain under left costal margin which gradually worked to the mid-line, and has been continuous for the past six weeks. Continual uncomfortable feeling in the abdomen. Some nausea for the past few days. Not much loss of weight recently. Had a recent acute attack of pain radiating to the penis and scrotum.

PE. Upper left quadrant rigid and very tender with palpable mass. Tempera-

ture 99.

Urine:- Negative. Hb 90 per cent.

X-ray of Colon showed an incompetent ileo-cecal valve with a redundant transverse colon and sigmoid.

Operation Feb. 25, 1914. (W. J. M.) Retroperitoneal sarcoma in the region of the tail of the pancreas, about 2 x 4 x 9 cm. Tumor enucleated without expectation of a cure. Pathological report Small and Medium round cell sarcoma. Died April 19, 1914 from recurrence of the tumor in same area, rapid emaciation, and much pain. A lump also appeared behind one ear.

Case 7. G. C. (129170). Male. April 20, 1914. Age 4. Patient had pneumonia two and one-half years ago. Exploratory operation two weeks ago for abdominal tumor. Ten months ago patient began to have abdominal cramps lasting a few seconds and returning every twenty to thirty minutes for about nine weeks. Four weeks ago cramps began again and a mass, the size of a hen's egg, was noted in the right iliac fossa. Mass explored elsewhere, three days later, and a large firm, friable, easily bleeding mass was found in the region of the cecum, which was not removed.

Operation at Clinic April 23, 1915. (E. H. B.). Inoperable sarcoma springing from behind the peritoneum. 6 x 3 inches. Many enlarged glands along the aorta. Specimen reported lymphosarcoma. Patient died August 6, 1915.

Case 8. W. U. (130262). Male. May 6, 1915. Age 32. HPI. Two weeks ago began to bleed severely from the rectum. Became weak. Was severely constipated. Has lost 15 pounds in four weeks.

PE. Patient is anemic looking. Few external and internal hemorrhoids. Hb 38 per cent RBC 3.42 WBC 11,800. Had clamp and cautery operation May 12, 1915. (WES). Returned to Clinic July 6, 1915 complaining of lumbar backache, which has interfered with sleep for about two weeks. Blood count about same as on previous visit.

Proctoscopic examination negative except tenderness high on left side of rectal shelf. X-ray shows redundant sigmoid flexure. Diagnosis was made of secondary anemia.

Patient returned Nov. 3, 1915 complaining of a hard lump in the lower left quadrant of the abdomen and diarrhoea. Since July he has had pain in the left iliac fossa daily. Four to twelve stools daily, never bloody, but some cramps, with bladder and rectal pains at times, radiating to the penis and testicles. Two weeks ago found a hard lump just below the umbilicus. Says he finds it one day and it is gone the next day. Has lost 14 pounds in five months.

Urine:- Negative. Temperature 100.8. Hb 68 per cent RBC 4.80 WBC 13,000.

Proctoscopic examination negative for 8 inches. X-ray colon shows redundant transverse colon and sigmoid. Appendix visible. Tumor extrinsic.

Cystoscopic examination showed tumor to be extra-cystic.

PE. Tender mass lower left quadrant of abdomen, movable laterally.

Operation Nov. 12, 1915. (W. E. S.). Sarcoma in lower abdomen pushing mesentery of small intestine forward. Specimen removed for diagnosis reported small spindle cell sarcoma.

No reply to questionnaire.

Case 9. J. E. H. (157750). Male. April 23, 1917. Age 43. Patient came to the Clinic in April, 1916 complaining of bladder trouble and constant pain in the right leg for the past week. At this time Dr. C. H. Mayo removed an hour-glass stone from the bladder, and also a bladder diverticulum.

Patient returned in April, 1917 complaining of progressive atrophy of right leg and thigh, with pain, during the past year. Has lost 15 pounds in weight.

PE. Palpable mass the size of a grape fruit in upper and lower quadrants of right abdomen. Palpation of tumor makes right leg and thigh tingle.

Hb 68 per cent. Urine Pus cells iii. X-ray of kidney, ureter, and bladder revealed a small shodow over the transverse spine of the second lumbar vertebra

on the left side. Probably extra-renal.

Cystoscopic examination showed a cystic cellule at the site of the previous diverticulum.

Operation May 4, 1917. (E. S. J.) Inoperable retroperitoneal sarcoma in the region of the right flank. Specimen removed for diagnosis reported fibro-myxo-sarcoma.

Patient received 2300 Mg Hrs. of radium after operation.

No reply received to questionnaire.

Case 10. R. F. (174094). Male. Oct. 2, 1916. Age 57. CC-; Constipation.

HPI. Has had much constipation during the past year, which is gradually growing worse. No pain or melena. Much flatus but no distention. No gastric symptoms. Has lost 20 pounds in past four months. Occasional difficulty in urination, especially if no bowel movement. Gets up at night two or three times to urinate.

PE. Irregular mass in hypogastrium and left iliac fossa, which is hard in places but not painful. Seems fixed.

Proctoscopic examination revealed an extra-rectal mass on left wall about $1\frac{1}{2}$ inches inside sphincter, which is soft and fixed.

Urine:- Negative. Hb 73 per cent.

Operation Oct. 6, 1916. (C. H. M.) Retroperitoneal sarcoma. Drainage of malignant cyst of the pelvis. Large tumor filling pelvis and lifting bladder into abdomen and crowding the sigmoid behind it. Quart of black blood removed from the tumor which apparently arises from the mesentery of the recto-sigmoid. No metastasis found. Pathological diagnosis spindle cell sarcoma.

Following operation patient had radium, x-ray, and Coley's serum, and gained a little weight for a time. Death (?).

Case 11. W. J. M. (174518). Male. Oct.5, 1916. Age 45. Patient had

a chancre fourteen years ago.

CC. Large spleen-pain in left upper abdomen and lumbar region.

HPI. Two years ago began to have a dull pain in left lumbar region and around left costal margin. Attacks came every few days, then would be free for a time. One year ago had a very severe attack of pain in region of left costal margin, requiring a hypodermic for relief. Since this time the pains are more in front, beginning at the nipple line and extending to the left lumbar region. One year ago first noted a lump under left costal margin, which has gradually enlarged. Aside from the pain, the only symptom complained of is easy fatigue. Has had eight x-ray treatments in the past month without decrease in the size of the tumor. Has lost 9 pounds in four months.

PE. Temperature 98. Hard, firm, slightly movable mass upper left quadrant of abdomen with dullness to sixth interspace in nipple line. Feels as though soft structures are interposed between outer edge of tumor and parietal peritoneum. Colon inflated and seems to be in front of tumor.

Urine:- Pus cells 1 & 11. Hb 68 per cent RBC 3.50 Wasserman Negative.

Cystoscopic:- Negative kidneys. Left kidney apparently pushed down.

Operation October 17, 1916. (E. S. J.) Inoperable retroperitoneal sarcoma running from diaphragm almost to pelvic brim and displacing large vessels to right. Adherent to spleen, which was pushed up under diaphragm. Specimen removed for diagnosis reported lymphosarcoma. Patient died in November, 1916.

Case 12. E. J. K. (187820). Male. March 9, 1917. Age 31.

FH. Mother died of carcinoma of the uterus. One maternal uncle died of cancer.

CC. Distress in left iliac fossa and pain in right leg. For one year following an appendectomy elsewhere, had multiple abscesses in various parts of the body; one very bad one in groin which was lanced, freeing about a pint of pus. Three years ago noted a growth in appendiceal scar, which was not very

painful. Some enlargement in past year. Lost 35 pounds in weight in past five years, about 12 pounds in past five months.

PE. Pale young man. Hard, fixed mass left iliac crest. Rectum and pelvis negative.

Urine:- Pus cells 1. Colon ray shows extrinsic tumor with cecum displaced to left.

Operation March 24, 1917. (W. J. M.) Fibrosarcoma growing from anterior surface of sacrum, internal surface of ilium, and lower lumbar vertebrae, just above sacro-iliac joint. Tumor removed. Tumor presented a hard mass in right iliac fossa, about 20 cm. in diameter, and absolutely fixed, extending upward to lower border of the right kidney. Placed retroperitoneally and covered by the psoas and iliacus muscles.

Pathological diagnosis fibrosarcoma.

Patient died March 25, 1917. Post-mortem examination revealed disseminated metastasis of sarcoma to the lungs with marked post-operative hemorrhage. There was a large nodule in the lower lobe of the right lung, as well as multiple nodules throughout both lungs. No appreciable decrease in amount of blood in Inferior Vena Cava.

Case 13. W. N. (194292). Male. May 15, 1917. Age 48.

CC. Cancer of the Bladder.

HPI. In August, 1917 patient noted some pain on retaining urine, followed by pain in the back. States that a doctor put him to sleep and examined the bladder, found no tumor, but advised exploration for a tumor outside the bladder. This was done seven weeks ago, and was afterwards told that he had a cancer of the bladder and that there was no help for him. Since then has noted a hard mass in lower left abdomen. No weight or strength loss. Hb 67 per cent.

Urine:- Negative.

PE. Recent suprapubic operative scar. Rather soft mass filling pelvis, up

to level of umbilicus on right, and iliac spines on left.

Cystoscopic examination showed a tumor behind and below the bladder. There were multiple nodules in the lower rectal mucosa.

Operation May 21, 1917. (E. S. J.) Inoperable retroperitoneal sarcoma with nodules in the liver. Pathological report mixed round and spindle sarcoma. Following operation patient was treated with 4550 Mg Hrs of radium, but died in November, 1917.

Case 14. J. P. W. (197918). Male. June 15, 1917. Age 62.

PMH. Patient injured right hip in a fall thirty years ago. Has had five gall bladder attacks, requiring hypodermics, in past four years.

CC. Pains in abdomen.

HPI. Has been losing weight and strength in the past year. Has lost 51 pounds. Last winter began to have pain in right lower abdomen, which extended to the right hip last March. Pain is often of a "scalding" nature. Much gas, with rumbling in left abdomen, accompanied with a "colicky" pain passing across abdomen to right hip. Bowels regular. Good appetite until two weeks ago.

PE. Temperature 99.3 to 100.8 Hb 48 per cent RBC 3.65 WBC 18,000.

Urine:- Pus 1.

Hard firm, deeply attached mass extending from right groin, in mid-clavicular line, to just below the right costal margin in same line.

Operation June 25, 1917. (C. H. M.) Retroperitoneal sarcoma. Large fixed tumor of right abdomen, apparently originating in right iliac fossa, and extending upwards, even filling the kidney fossa. Large blood vessel crossing over tumor and dense adhesions to the peritoneum. Gall bladder filled with stones. No metastasis found in liver. Tumor about 20 cm. in diameter. Specimen removed for diagnosis reported mixed cell sarcoma. Patient died December 25, 1917.

Case 15. Mrs. J. McC. (201215). Female. July 17, 1917. Age 59.

CC. Tumor lower abdomen.

HPI. Tumor in right lower abdomen first noted in March, 1917. Grew rapidly, but no pain. Urinary frequency in the past winter. Considerable edema of lower left leg in past two weeks. Slight weakness. No gastrointestinal symptoms. Has lost 20 pounds since onset of illness.

PE. Large elastic mass in pelvic inlet extending up to umbilicus. Cervix pushed upwards and backwards. Tumor occupies chiefly the right lower quadrant and mid-line.

Hb 68 per cent WBC 6200.

Operation July 24, 1917. (E. S. J.) Retroperitoneal sarcoma attached to bladder, pushing up uterus, and also attached to several loops of small bowel and transverse colon. Inoperable condition. Specimen removed reported spindle cell sarcoma. Radium 2000 Mg Hrs after operation. Patient died December 16,1917

Case 16. Mrs. D. H. (227733). April 12, 1918. Female. Age 32.

PMH. Abscess right breast nine years ago.

CC. Lump in abdomen. Indigestion.

HPI. Says she was perfectly well until four to five weeks ago, when she began to have a sick heavy feeling in the "stomach", coming about two hours after meals. Some pyrosis. Only relief is abstinence from food. No hemorrhages from stomach or bowels. Three weeks ago her doctor found a mass in the left epigastrium.

PE. Chronic cystic mastitis both breasts. Firm tumor with sharp edges, descending with respiration, in middle and upper left abdomen. Two nodules the size of a small orange, at lower edge. Temperature 99.2 Pulse 128.

Urine:- Negative.

Hb 60 per cent RBC 4.22 WBC 7400. Wassermann:- Negative. Phenolsulphonphthalein 35 per cent in thirty minutes. X-ray of stomach negative. Mass extrinsic.

Cystoscopic examination shows kidneys uninvolved.

Operation April 25, 1918. (E. S. J.) Inoperable retroperitoneal sarcoma, very large, evidently primary retroperitoneal origin. Lies behind stomach and colon. Left kidney movable. Growth is fixed. Specimen reported lymphosarcoma, possibly originating in a lipoma. Patient died September 2, 1918.

Case 17. P. H. H. (229340). Male. April 27, 1918. Age 61.

CC. Pain in right abdomen with vomiting.

HPI. Four weeks ago began to have pain in right abdomen constantly, and one week later began to vomit in the evening, about five hours after eating. Never vomits after liquid meals. Eating increases pain. Constipated for three weeks. Bowel movement sometimes relieves pain. Some nocturia, and some pain in lumbar region. Has lost 20 pounds, but has been on a restricted diet. Tumor noted four weeks ago, and is becoming larger.

PE. Large tumor filling right abdomen from pelvis to underneath ribs, back to and seems to envelop right kidney, and lifts front of abdomen. Extends only to median line. Temperature 100 to 101.4 Pulse 110.

Urine:- Albumen 111 RBC 111 WBC 111. Hb 60 per cent WBC 11,000.

X-ray of chest and kidney, ureter, and bladder negative.

Cystoscopic report "Extra-renal tumor", with upward displacement of kidney.

Operation May 14, 1918. (E. S. J.) Large degenerating retroperitoneal lipoma attached to lower pole of right kidney. Large lipoma dissected out and removed. Occupied entire right side and extended across brim of pelvis, to the left. Multiple small lipomata in peritoneum removed.

Pathological report Myxosarcoma, probably originating in lipoma. Weight 3900 grammes. Had 700 Mg Hrs of radium after operation.

No reply to questionnaire.

Case 18. J. McC. (230176). Male. May 2, 1918. Age 57.

CC. Growth in upper left abdomen.

HPI. Two years ago was kicked in the abdomen and back by a horse. There was

much soreness in the back and ribs for several weeks. About one year ago noted a growth in left side which has enlarged rapidly in the past six months. There is continual uneasiness in the left hypochondrium, as well as cramps after exercise. Heavy foods cause distress. In December, 1917 had a diarrhoea for three weeks. Since then bowels are regular. Six weeks ago began to have urinary frequency alternating with scanty urination. No hematuria or pyuria. Has lost strength rapidly in past six weeks, and has lost 20 pounds in weight. Has lost 33 pounds in past six months. Pulse 70. Temperature 98.8.

PE. Mass in left hypochondrium six fingers breadth below left costal margin. Slightly grooved. Left inguinal hernia present seven years.

Urine:- Negative. Hb 75 per cent RBC 5.16. Wassermann negative.

Phenolsulphonphthalein 80 per cent. X-ray of urinary tract negative as was the colon, and the tumor was reported to be extrinsic.

Cystoscopic examination showed no evidence of renal involvement. A diagnosis of probable splenic tumor was made.

Operation May 13, 1918. (E. S. J.) Retroperitoneal sarcoma. Excision of specimen. There was an inoperable tumor at least 30 cm. in diameter with broad attachment to all the surrounding tissue. Pathological diagnosis: round cell sarcoma. Patient still living.

Case 19. T. J. (246653). Male. Sept. 24, 1918. Age 44.

CC. Mass in lower right abdominal quadrant.

HPI. About ten days ago patient noted a mass, about the size of an orange, in the lower right abdomen. Mass was hard but not tender. Two weeks prior to noting the lump, had a dull aching pain in the above area. He has lost over 15 pounds in the past two months.

PE. Temperature 99.2. Pulse 78. Firm fixed mass in right lower quadrant, not tender, regular outline. Some tenderness in right kidney area.

Urine:- Negative. Hb 70 per cent RBC 4.4[illegible] WBC 6400. X-ray of colon shows

a filling defect in the cecum. X-ray of chest showed bronchial thickening.

Operation Oct. 2, 1918. (E. S. J.) Inoperable retroperitoneal lymphosarcoma lying behind the cecum and the mesentery of the small intestine. Excision of specimen for diagnosis, which was reported to be lymphosarcoma.

Patient received x-ray treatment for several weeks and returned to the Clinic in February, 1919, feeling very well, is working, and has gained four pounds. Bowels are regular and he has no pain.

The patient died some time later, but the date of death could not be obtained.

Case 20. M. R. B. (250614). Male. Nov. 11, 1918. Age 32.

CC. Abdominal tumor.

HPI. First noted enlargement of the abdomen one year ago. August 18, 1918 felt a "hardness" in the abdomen and his doctor said there was a tumor in the region of the right kidney. No pain or discomfort. No intestinal or urinary symptoms. Weighs 6 pounds more than he did a few months ago.

PE. Extremities show loss of substance. Tumor fills entire abdomen and is very hard.

Urine:- Shows albumen 11. Hb 84 per cent RBC 4.84 WBC 7600. Wassermann negative.

Operation Nov. 14, 1918. (E. S. J.) Very large retroperitoneal sarcoma attached to right kidney removed, together with the right kidney. Too intimately attached to kidney to separate. Tumor extended from diaphragm to brim of pelvis. Weight 13¾ pounds. Pathological diagnosis fibrosarcoma. After operation patient had x-ray treatment. On January 10, 1919 patient had gained 25 pounds in weight. He returned to the Clinic in July, 1920, giving a history of typhoid fever in 1919. He had noted a recurrent mass in the right abdomen on July 7, 1920. Two months previously he had been examined and no mass found. There were no symptoms and the weight was 16 pounds more than on his first appearance here. Physical examination at this time showed a hard oval mass in the right mid-abdomen. Hb 75

per cent RBC 5.10.

Second operation July 13, 1920. (E. S. J.) Recurrent retroperitoneal sarcoma of right abdomen. There was a metastatic tumor in the retroperitoneal space on the right side, which was removed. There were small nodules above this in the liver and in the retroperitoneal tissue just below the diaphragm. Weight 350 gm.

Pathological diagnosis:- Fibrosarcoma. The patient received radium treatments from July 28 to August 21, 1920 and from December 9 to December 13, 1920; a total of 19642 Mg Hrs of radium. The response was very slow, though the patient's condition seemed very good. Patient died at home some time later, the exact date being unobtainable.

Case 21. Wm. H. (251374). Male. November 21, 1918. Age 42.

CC. Tumor right abdomen.

HPI. For the past year the patient has had attacks of pain, lasting about one hour, in the appendiceal region. Pain often radiates to the right testicle. Occasionally he passes large amounts of urine. Two months ago he first noted a lump in the right mid-abdomen which has gradually enlarged, now being the size of a grape fruit. There are severe pains at times over the tumor and extending through to the back. Has lost 30 pounds in the past year and 25 pounds of this was lost in the past three months. Gets up two or three times at night to urinate.

PE. Dilated veins over upper abdomen. Firm, smooth, kidney-shaped tumor in upper right abdomen and in epigastrium. Right inguinal hernia and varicocele. Small nodule in right lobe of the prostate.

Urine:- Shows pus cells 1. Hb59 per cent RBC 3.35 WBC 9000. Wassermann negative. Blood urea 25 Mgs per 100 cc. of blood. Kidney functional test 40 per cent in two hours and fifteen minutes. X-ray of chest and genito-urinary tract was negative.

Cystoscopic report was "Indeterminate". Not enough evidence to warrant

diagnosis of kidney tumor.

Operation December 3, 1918. (J. deJ. P.) Extensive retroperitoneal sarcoma. Exploration with excision of specimen for diagnosis. Growth filled entire right abdomen and extended across the median line so that removal would have endangered the aorta and the vena cava. No definite attachment to kidney.

Pathological diagnosis: Spindle-cell sarcoma. Patient died at home a few months later.

Case 22. H. G. T. (275504). Female. June 16, 1919. Age $2\frac{1}{2}$.

CC. Abdominal tumor.

HPI. In July, 1918, at the age of $1\frac{1}{2}$ years, the patient had bronchitis. Was seen by a doctor who noted an abdominal enlargement, which has gradually increased to its present massive size. Bowels regular and no urinary symptoms. Eats as well as usual. Umbilical cord did not heal and drop off until the twenty-fifth day after birth.

PE. Heat rash. Is underweight. Firm abdominal mass extending from brim of pelvis to costal margin, almost completely filling the abdomen. Mass feels cystic.

Urine:- Negative. Hb 70 per cent RBC 4.48 WBC 8000. Wassermann negative. Chest x-ray shows elevated diaphragm on right. Heart displaced to left.

Operation June 24, 1919. (W. J. M.) Inoperable abdominal tumor, clinically lymphosarcoma, origin unknown, situated retroperitoneally, filling entire abdomen. Excision of specimen.

Pathological report: Fibrosarcoma. Patient received 5100 Mg Hrs of radium after operation up to July 17, 1919, but died on November 13, 1920.

Case 23. E. W. R. (295043). Male. October 30, 1919. Age 41.

PMH. Generalized burns of face and hands with hot water.

CC. Pain at end of spine. Sciatica.

HPI. In December, without known cause, began to have pains in the coccyx,

which gradually grew worse, keeping him awake at night. For the past three months has had very severe sciatic pains, associated with pains in the coccyx. Cannot bear weight on end of spine. Buttocks feel numb. Since summer of 1919 the stools are "ribbon-like", with imperfect control of the sphincter. No melena.

PE. There is a mass, size of a hen's egg in the hollow of the sacrum and slightly to the right of the mid-line. Not connected with the rectum and not painful; the skin over the sacrum is reddened and there is much pain and tenderness there. There is numbness about the anus, and pain on pressure of muscles along the course of the Sciatic. Wassermann negative.

Urine:- Negative.

X-ray of lumbar spine and sacrum negative. Suspicious for prostatic stone. X-ray of chest negative.

Operation Nov. 5, 1919. (W. E. S.) Operative diagnosis: Retroperitoneal colloid carcinoma involving the spine. Exploration with partial removal of tumor. Coccyx removed for exposure and a retroperitoneal tumor found, firmly attached to the spine. It was larger than a grape fruit and filled with a gelatinous material which was bloody. Growth had honeycombed the sacrum and appeared as though it had eaten almost through the promontory of the sacrum. As much of interior of tumor as possible was removed. Condition hopeless.

Pathological diagnosis: Myxo-chondro-sarcoma. Patient received 4200 Mg Hrs of radium per rectum up to December 10, 1919.

Returned to Clinic March 25, 1920. Reports general health excellent. Thinks he has gained 17 pounds. Good control of bowels which move regularly. Physical examination shows a small discharging sinus over lower sacrum. Rectal examination shows mass probably as large as before. No radium or x-ray treatment since previous visit here. He was given 3011 Mg Hrs of radium, and x-ray treatment with Coolidge tube while here. Patient then returned home. Returned again on July 22, 1920 complaining of constipation and sciatic pains in right leg, so

severe that he had to quit work. Another sinus is present in sacral region.

He was given 2312 Mg Hrs of radium in two treatments at this time, and a second operation performed, which consisted merely of enlarging the old incision to permit the giving of heavy doses of radium. There was a fixed mass firmly attached to the anterior surface of the sacrum.

Unable to trace patient.

Case 24. K. S. (297816). Male. Nov. 24, 1919. Age 3.

CC. Urinary frequency and loss of weight.

HI. Six weeks ago patient was seen by a doctor because he had not voided for eighteen hours. He was catheterized and a large amount of urine withdrawn. The child then appeared normal except for some frequency. Three weeks later the same incident was repeated. He now voids six times in the day and about two times at night. He has lost weight and strength. Appetite good. Bowels regular.

PE. Mass in lower right and mid-quadrant of the abdomen, chiefly on the right side. It is smooth, spherical, and not definitely fixed to the pelvic wall. X-ray of chest, and genito-urinary tract negative.

Urine:- Shows albumen 1 and RBC 1. Hb 60 per cent RBC 3.38. WBC 5000.

Operation December 5, 1919. (W. E. S.) Bladder distended with urine. Behind it and in the region of the prostate is a hard tumor about 8 cm. in diameter and situated extraperitoneally. The tumor was enucleated. It seemed as if the tumor was partly in the bladder wall, and as it was enucleated the prostate was thrown posteriorly and the bladder anteriorly. The urethra was injured and a plastic operation was performed upon it. Incontinence of urine is to be feared. Tumor seems to have been thoroughly removed. The interior of the tumor consisted of myxomatous pale yellow, soft, fibrous material. Radium advised. Prognosis as to cure 10 per cent.

Pathological diagnosis: Myxo-sarcoma probably originating in a lipoma. Jan. 24, 1920 patient received 100 Mg Hrs of radium, and on Jan. 26 he was given a

treatment with the Coolidge tube. At this time he shows a gain in weight and strength, and has perfect control of the urine. The testicles are somewhat swollen. He complains of pain in both knees at the time of urination. Some infiltration is felt high up in the rectum, and there is a small round nodule in the prostatic region.

Patient died March 18, 1920, of exhaustion, following a recurrence which seemed to extend upward into abdomen from below.

Case 25. F. T. (304223). Male. January 26, 1920. Age 26.

PMH. Appendectomy in October, 1919.

CC. "Lump in stomach".

HPI. The appendix was removed in October, 1919, after an illness of two days. At operation the surgeon found a mass involving the intestines and the bladder wall. The patient first felt the mass, two months after operation. It is painful and tender at times, and has been growing gradually. He has been losing weight and strength. There has been some urinary frequency and urgency at times, since the operation. Bowels are fairly regular.

PE. Pulse 84. Temperature 99.2. Inguinal glands firm. Large nodular, firm, fixed mass in lower abdomen reaching from left superior iliac spine to McBurney's point, and above, almost to the umbilicus. The mass is palpable per rectum.

Urine:- Negative. Hb 80 per cent WBC 10,000.

X-ray of colon shows a filling defect of the sigmoid--may be due to extrinsic tumor. X-ray of kidneys, ureters, and bladder negative.

Ascites questionable.

Operation Jan. 31, 1920. (E. S. J.) Retroperitoneal lymphosarcoma. Exploration. Removal of specimen. Inoperable. Tumor almost filled the pelvis with loops of intestines adherent to it, and involvement of glands.

Pathological diagnosis: lymphosarcoma.

X-ray treatment given on Feb. 17, 1920. During 1920 the patient received 51,262 Mg Hrs of radium, and was dismissed on Dec. 9, 1920, in good general condition, and was losing no weight. Has been doing some work during these treatments. There was no palpable tumor at the time of dismissal.

This patient is living at the present time, and is in fairly good condition.

Case 26. A. B. (319811). Female. June 14, 1920. Age 39.

CC. Lump in left upper abdomen and in left groin.

HPI. The tumors were first noticed in February, 1920, following a very severe cold. There has been much trouble with gas and constipation. The tumors have enlarged slightly, and the one in the groin has been tender for the past week. Tires easily. Some abdominal distention.

PE. Abdominal tumor, the size of a baby's head in the left and central mid-abdomen. Moderately fixed, and is palpable per rectum. Mass the size of a goose egg in left groin, which is fixed to the ramus of the pubis.

Urine:- Shows pus cells 1. Hb 69 per cent. RBC 4.36. WBC 6800.

X-ray of chest shows "Old Tb both upper lobes. Old pleurisy upper right lobe". Colon ray negative. X-ray pubic bone negative.

Operation June 23, 1920. Local anaesthesia. (W. J. M.) Excision of gland in left inguinal region, and exploration of abdominal tumor which is apparently retroperitoneal, behind the umbilicus, with a mass of glands in left inguinal region; undoubtedly the same as this diffuse tumor.

Pathological diagnosis: Lymphosarcoma.

Radium was given from the time of operation up to September 3, 1920. On the tenth of this month the tumor was reduced about 80 per cent. Following this, several x-ray treatments were given. A note was made on Nov. 30, 1920 that the menses had stopped, there were hot flashes, and nervousmess. Otherwise the patient feels well, and has gained 18 pounds, and there are no abdominal symptoms. On physical examination no masses could be felt in the abdomen, pelvis, or

inguinal region. The patient returned to the Clinic in December for further treatment.

Case 27. R. V. V. (342361). Male. Nov. 30, 1920. Age 42.

PMH. Mother had a cancer of the womb.

CC. Pains in abdomen.

HPI. Definite appendiceal attacks in 1912 and 1914, but none since. Health excellent until five months ago, when there was a gradual onset of pain, short and sharp, running superficially across the abdomen. This has been constant since the onset. Pain has no relation to food or bowel movement. There has been gradually increasing constipation in the past six weeks. No melena or diarrhea. Has lost 30 pounds in five months. Is weak. No urinary symptoms.

Patient developed an acute phlebitis of the left leg on Dec. 6, 1920.

PE. Inflamed and tender veins of left leg. Considerable periphlebitis. Patient shows some emaciation. Has lost 31 pounds. Abdomen shows rather hard, somewhat irregular, immobile, slightly tender mass in the mid-line and lower abdomen. Apparently not connected with any viscera. Palpable per rectum.

Urine:- Shows occasional pus cell. Hb 80 per cent RBC 4.66 WBC 6000. Wassermann negative. X-ray of colon "Negative. Mass extrinsic."

January 2, 1921 patient developed bronchopneumonia and died on January 4th. Post-mortem examination revealed a retroperitoneal lymphosarcoma with metastasis to the great omentum and mesenteric lymph nodes, left pleural effusion, pulmonary thrombosis, congestion, and edema.

Case 28. Dr. C. O. S. (291541). Male. Oct. 1, 1919. Age 48.

CC. Mass lower right abdominal quadrant.

HPI. About September 1, 1919 first noticed a mass in left hypochondrium, about the size of a fist, firm, smooth, freely movable, and of oval shape. Noted considerable growth in past week, and mass moved to left lower quadrant. For the past five days has had a temperature ranging from 99 to 102, and a dull

aching pain in the back, and an uneasy sensation in lower abdomen. Some sensation of fullness about one hour after meals. No urinary symptoms.

PE. Solid, freely movable, tender, grooved mass in left mid and upper abdomen. Bowel covers upper part of tumor. Mass apparently not cystic.

Wassermann negative. Hb 65 per cent. RBC 4.6. WBC 28,000.

X-ray of kidneys, ureters, and bladder negative. Colon x-ray shows a spastic transverse colon.

Cystoscopic report: "Extra-renal tumor."

Urine:- Showed a few pus cells.

Operation October 13, 1919. (E. S. J.) Operative diagnosis: Two retroperitoneal tumors, left side,--partly gangrenous. Operative findings: The mass was very edematous and came out in parts and was more than 30 cm. long and 15 to 20 cm. wide; probably was what caused the high leukocyte count. Three clamps on vessels at upper pole.

Pathological report: Myxo-fibro-lipoma with some fairly cellular areas. Small tumor has area of necrosis in center. Large tumor has several such areas.

Patient made an uneventful recovery and resumed his practice in one month after operation. Felt well and gained weight. Six weeks ago felt a mass under left costal margin; this has grown gradually. No pain or tenderness or other symptoms.

Returned to Clinic on August 9, 1921. At this time there was a palpable mass about 6 to 8 cm. in diameter below the left costal margin in the mid-axillary line.

Operation August 15, 1921. (E. S. J.) Recurrent left-sided retroperitoneal tumor-edematous and had appearance of sarcoma. Tumor about 20 cm. in diameter, situated just below the pole of the left kidney. Tumor shelled out--slight oozing in the pocket which was controlled with iodoform gauze pack. There were separate edematous fatty nodules around the tumor which were removed as much as

possible. Patient should have x-ray and radium.

Pathological report: Sarcomatous myxo-lipo-fibroma.

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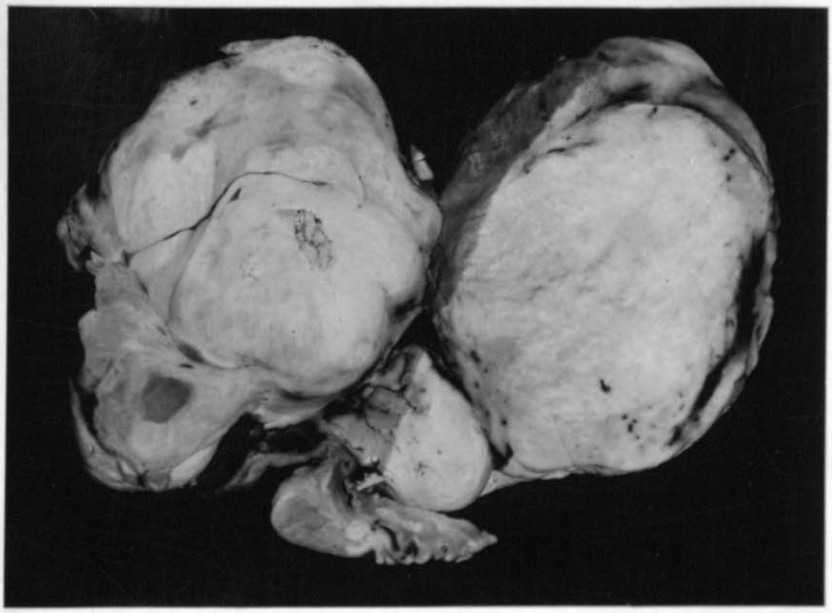

Figure 1. (36910). Cross section of fibro-sarcoma removed. Recurrence eleven months later.

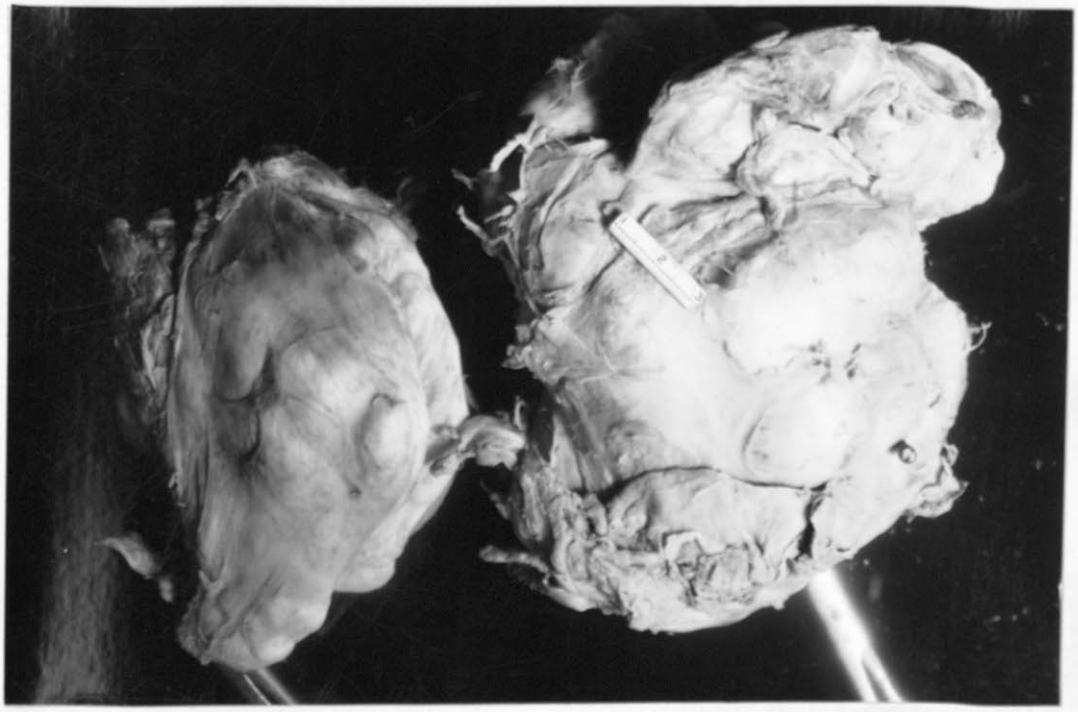

Figure 2. (187820). Case 12. Fibro-sarcoma. This patient had multiple metastases in the lungs.

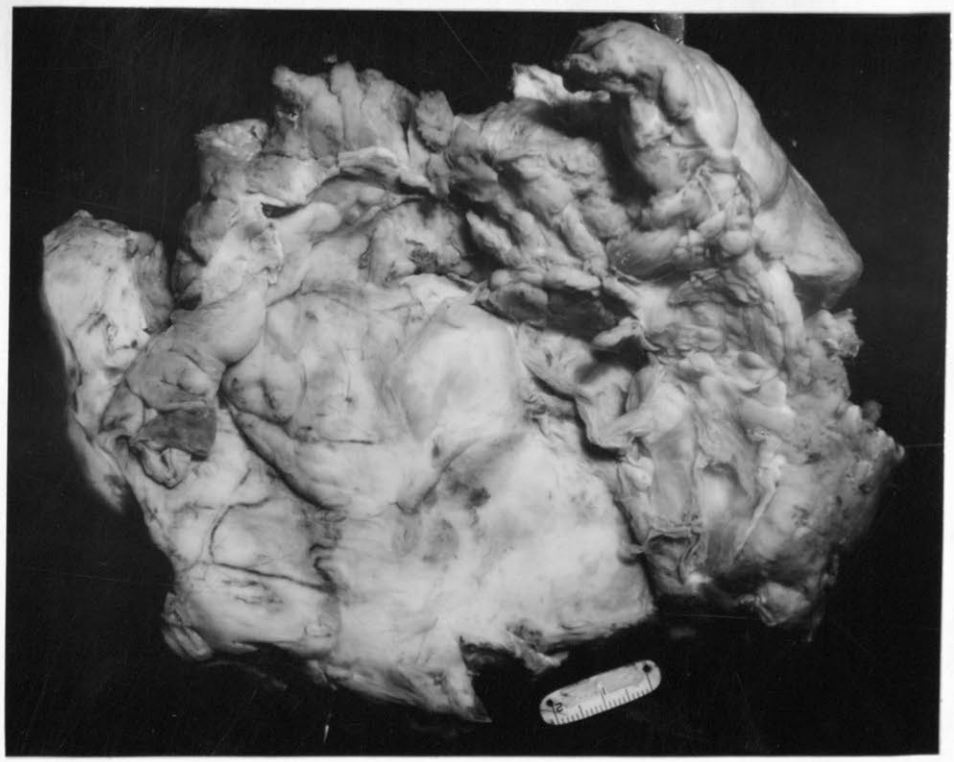

Figure 3. (229340). Case 17. Myxosarcoma removed weighing 3900 grammes.

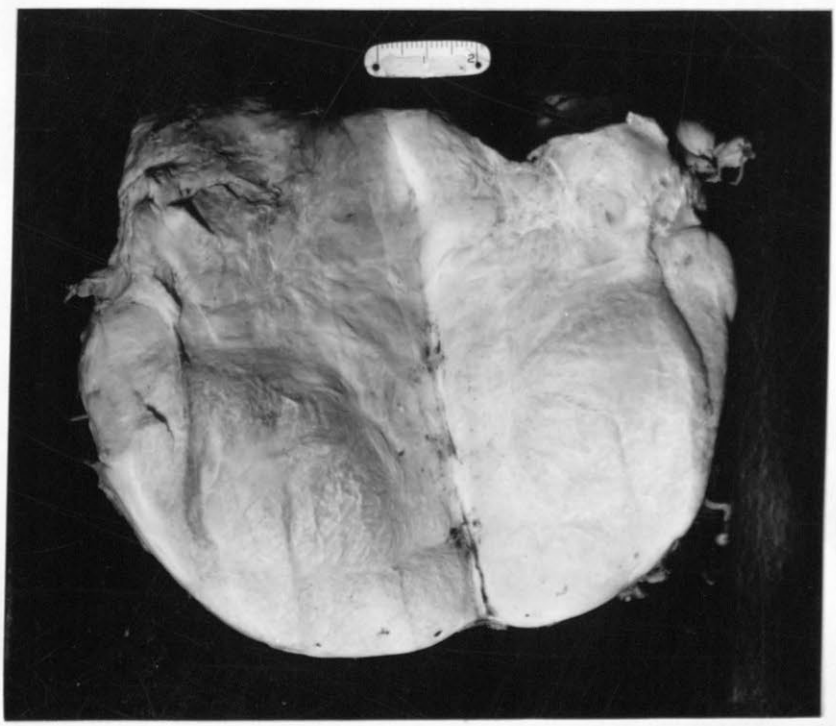

Figure 4. (250614). Case 20. Fibrosarcoma. Weight $13\frac{3}{4}$ pounds. Recurrence twenty months after removal.

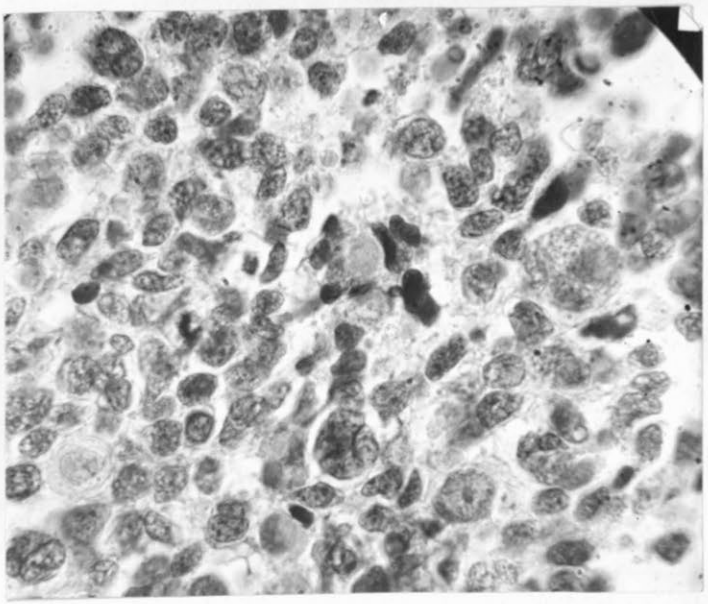

Figure 5. (69466). Photomicrograph. Case 3. Giant cell sarcoma. (x500)

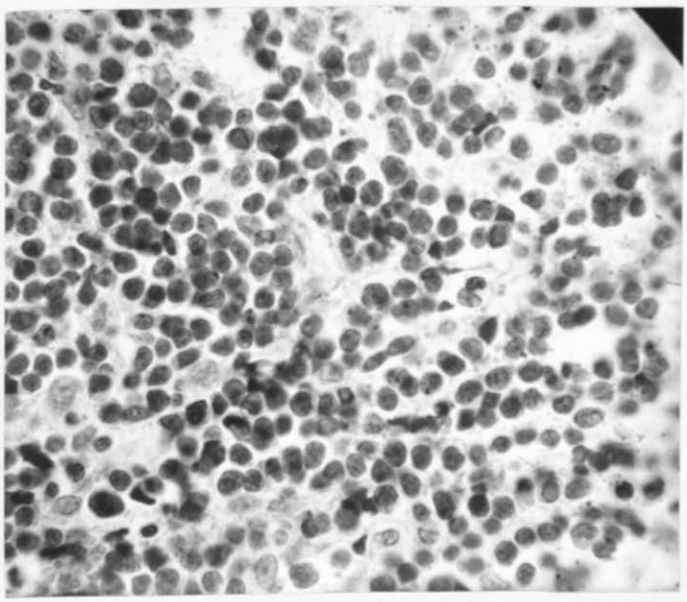

Figure 6. (129170). Photomicrograph. Case 7. Lymphosarcoma. (x 500).

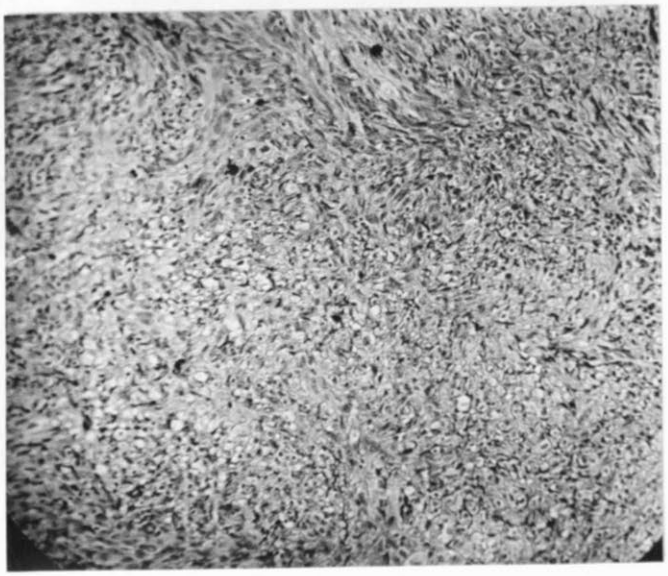

Figure 7. (194292). Case 13. Mixed round and spindle-cell sarcoma. Photomicrograph. (x 100).

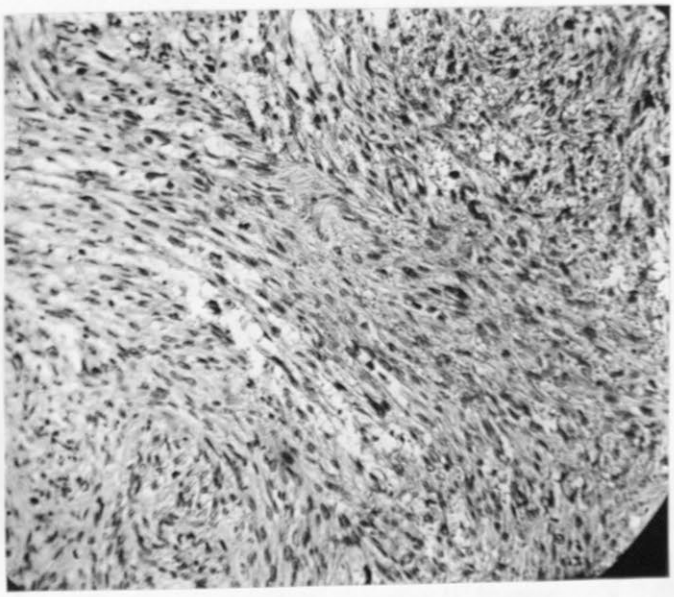

Figure 8. (201215). Case 15. Spindle-cell sarcoma. Photomicrograph. (x 100).

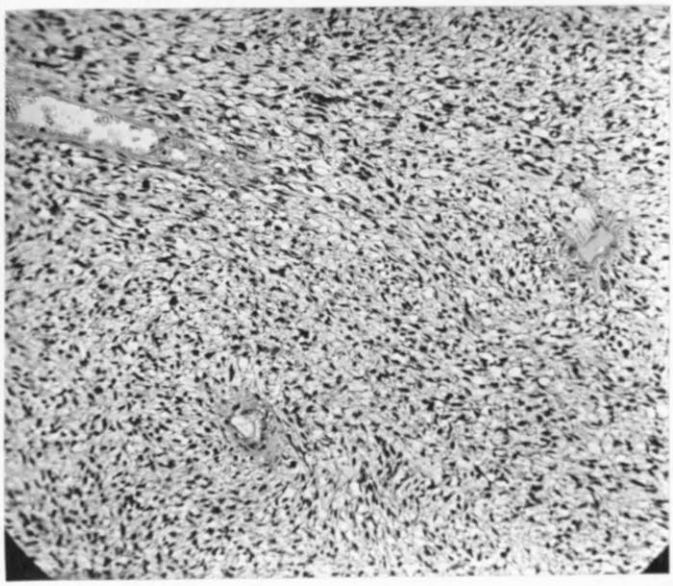

Figure 9. (229340). Case 17. Myxosarcoma. Photomicrograph. (x 100).

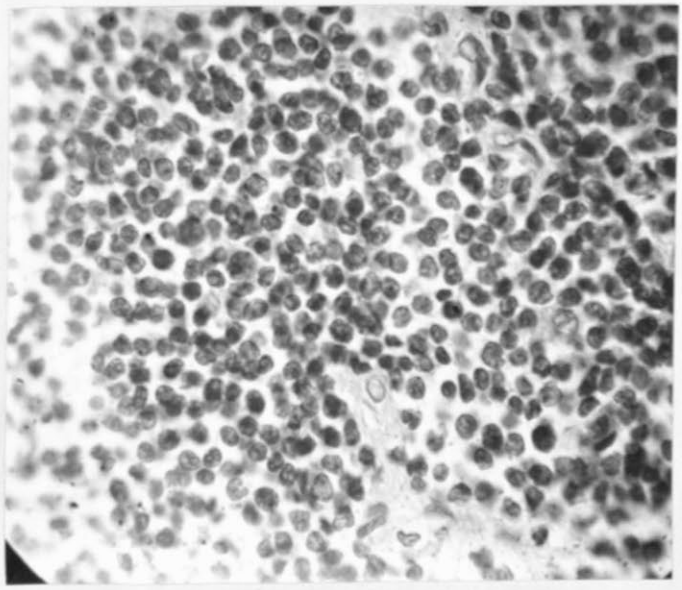

Figure 10. (246653). Case 19. Lymphosarcoma. Photomicrograph. (x 500).

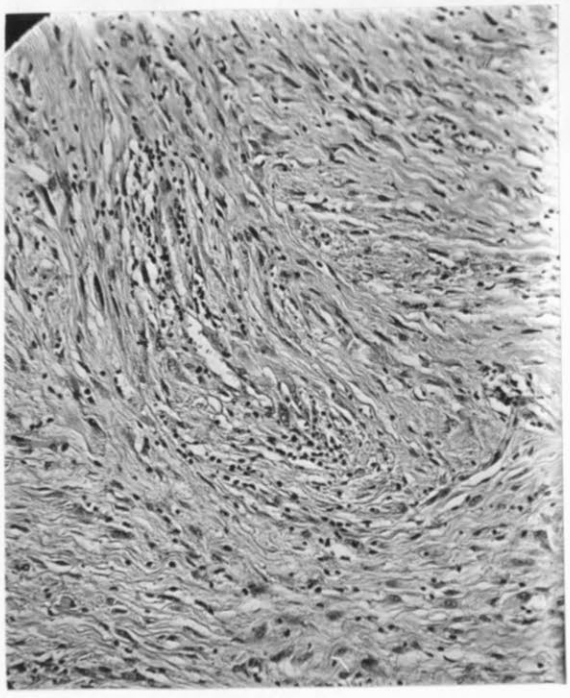

Figure 11. (250614). Case 20. Fibrosarcoma. Photomicrograph. (x 100).

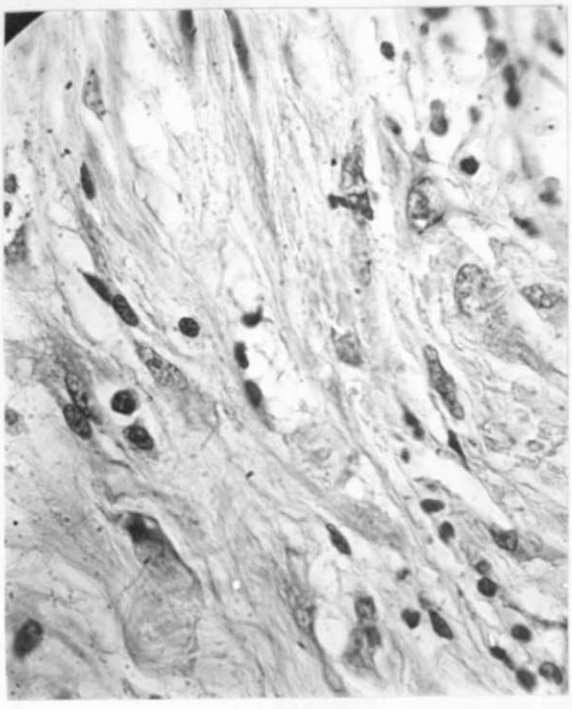

Figure 11. (250614). Case 20. Fibrosarcoma. Photomicrograph. (x 500).

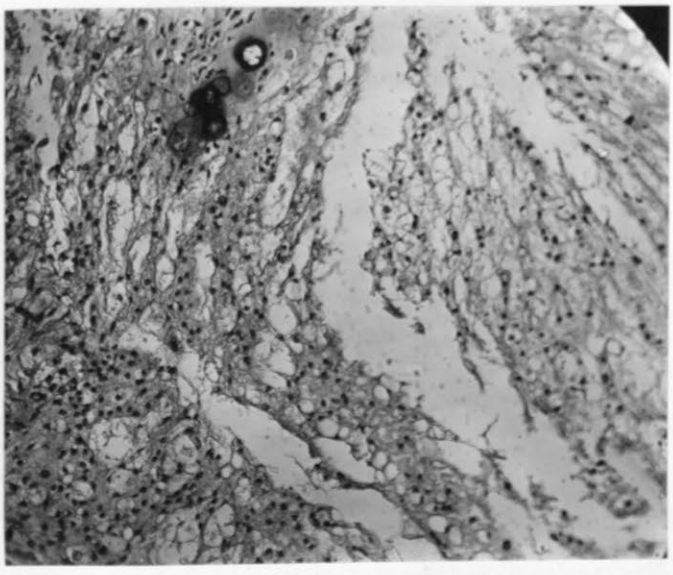

Figure 12. (295043). Case 23. Myxo-osteo-chondro-sarcoma showing stellate cells and area of cartilage. Photomicrograph. (x 100).

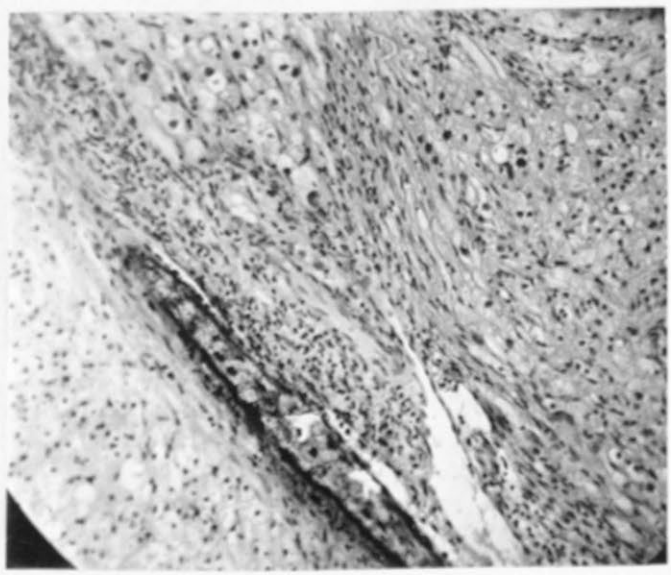

Figure 13. (295043). Case 23. Same as Figure 12. Showing area of bone formation.