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Rhabdomyosarcoma of the Uterus.

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RHABDOMYOSARCOMA appears to be a very rare neoplasm in the uterus or else it has been overlooked in this country, for, apart from a brief report of one of our own, we are unable to find any previously recorded case in Great Britain.

Cases have been described by German writers; one by Colomiatti⁴ in Italy, and one in America by Robertson²⁰, who gave a table of 14 cases collected from the literature. Three of them, however, were not certainly rhabdomyosarcomata. We have collected 15 undoubted cases and 3 probable ones, and have added 2 recent cases of our own. One of the latter has already been briefly recorded by one of us (W. B. B.²). Our two new cases will first be described.

CASE I.

Clinical history. Mrs. McN., æt. 62, 2-para. The patient had always enjoyed good health except for frequent attacks of asthma. The menopause had occurred 10 years before. Since January 1911, that was for about 4 months, she had complained of a bloody vaginal discharge, which at times was profuse. After the discharge had continued for 3 months she passed *per vaginam* a mass of tissue of the same size and shape as an orange, and it was thought to be a disorganized fibromyoma. The vaginal discharge then diminished temporarily, but subsequently became profuse again; this led her to consult Dr. T. B. Grimsdale.

Clinical examination. The general condition of the patient was found to be fairly good. There was neither marked anæmia nor loss of flesh. The uterus was found to be much enlarged.

Operative procedures (by Dr. Grimsdale). (1) On April 10 1911. The cervix was dilated and some growth removed from the uterine cavity; (2) on April 26 1911 the uterus and appendages were removed by the abdominal route.

Progress of the case. The patient recovered from the operations; but 6 months later developed bronchitis with increasing dulness over the right side of the chest. She died in a few days from the lesions in the lungs. Dr. J. R. Logan, her physician, had made a diagnosis of pulmonary metastases. No post-mortem examination was made.

Pathological Description of the Specimen.

Macroscopical. The uterus was enlarged to the same size as that found at the 12th week of pregnancy. The tumour arose from the posterior wall of the corpus uteri and did not invade the cervix (Fig. 1). There was a small growth in the right ovary about the size of a bean.

Microscopical. The specimen had been fixed in alcohol. In the first instance portions of the growth—(a) removed at the first operation, and (b) removed at the second operation—were sent to the Clinical Research Society, which reported on the two specimens respectively as follows:—

(a) "There is no doubt that this is a malignant growth . . . and the most reasonable diagnosis is a spheroidal-celled carcinoma. We think, however, it may be of endothelial origin."

(b) "This uterine growth has the structure of a sarcoma composed largely of spindle-cells, but enclosing some swollen, very long cells with clearly defined nuclei whose nature is doubtful. Some of them we believe to represent muscle cells in process of absorption or possibly in a transition state to form cells of the growth. It is all complicated by a small-celled tissue reaction. It is a puzzling growth, and, although its main characters are sarcomatous, it is not impossible that it had an endothelial origin. There is also a growth in one ovary which microscopically is a columnar-celled carcinoma, and therefore apparently unconnected with the uterine tumour."

One of us (E. E. G.) subsequently examined the sections and recognized that the growth was a rhabdomyosarcoma.

Sections from two portions only were available. The first was from the tissue removed at the first operation, and the second from the growth removed with the uterus at the second operation. The sections were stained by van Gieson's method, and with hæmatoxylin and eosin.

The appearance of the growth was most striking; it consisted chiefly of large irregularly oval or round cells with rounded nuclei embedded in an extensive stroma of short spindle cells (Fig. 2). The irregularly round and oval cells were found to be muscle cells cut transversely. Their average diameter was about 30μ , though some were only 15μ . These cells for the most part were isolated from one another by the cells of the stroma, but some lay adjacent to each other in small groups. The nuclei measured about 13μ ; they were usually vesicular with scanty and diffuse chromatin; in some the



Fig. 1. Case 1. Uterus and tumour.

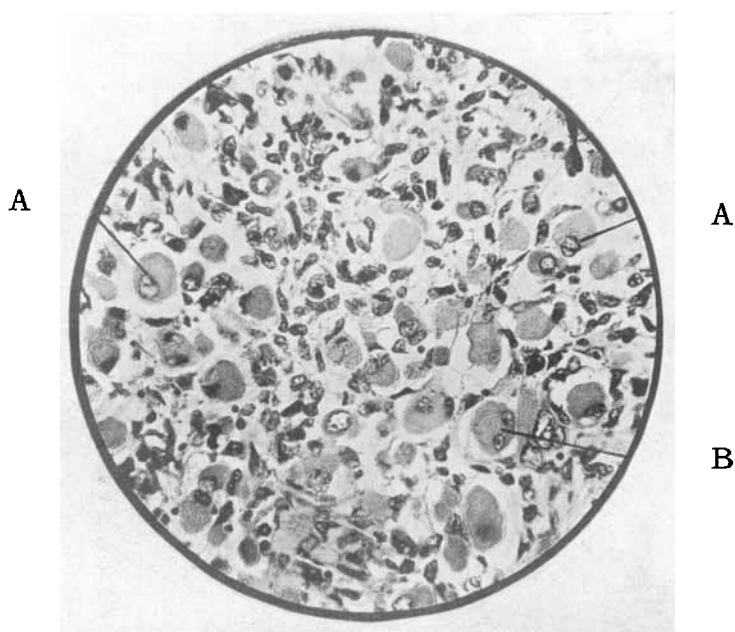


Fig. 2. Case 1. Tumour showing embryonic muscle fibres cut transversely—lying in a stroma of short spindle cells. Note: Fibrillation of cytoplasm, also cells with excentric nuclei (A). $\times 200$.

A

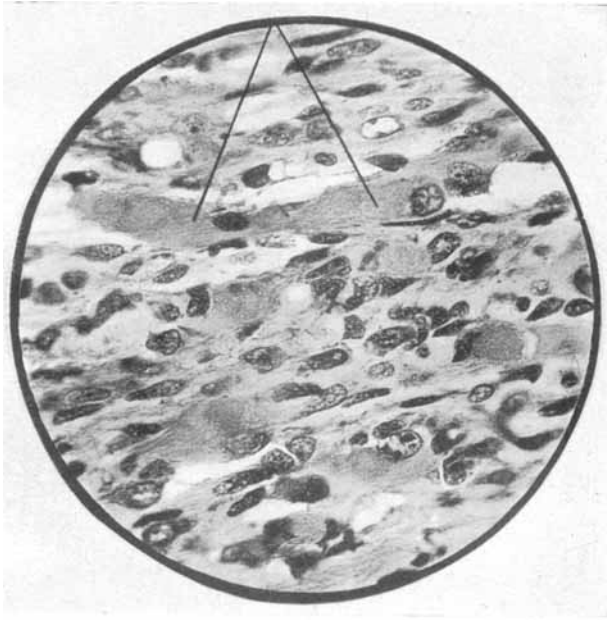


Fig. 3. Case 1. Tumour showing large, broad, embryonic muscle fibre with two nuclei (A), and a mass of sarcomatous tissue. $\times 350$.

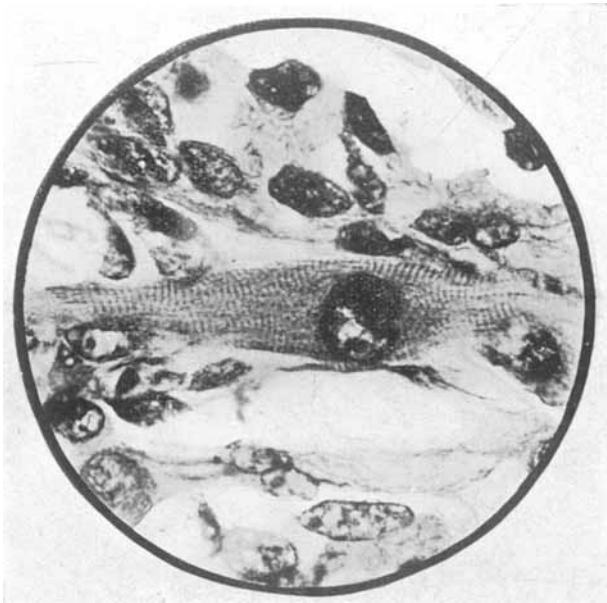


Fig. 4. Case 1. Tumour showing embryonic striped muscle fibre with transverse striations. $\times 850$.

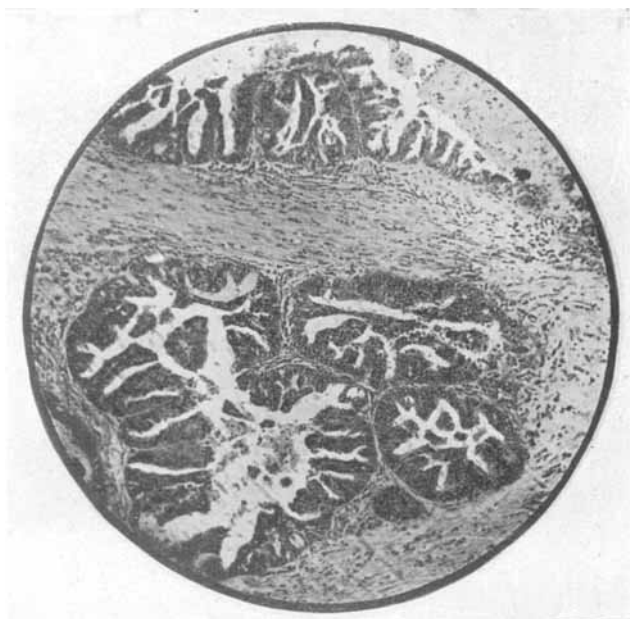


Fig. 5. Case 1. Adenocarcinomatous growth in right ovary. $\times 100$.



Fig. 6. Case 2. Uterus with growth in the interior, and the expelled polyp below.

nucleolus was visible. The nuclei were usually not in the centre of the cell but excentric, (Fig. 2 A). Sometimes they were even situated on the periphery of the cells, in which case they were smaller and more oval and the chromatin was condensed. The position, shape, and appearance of these peripheral nuclei approximated to that found in normal striped muscle cells. The nuclei were usually single, but occasionally two or even three were present in one cell (Fig. 2 B).

A few of the muscle fibres were cut longitudinally and appeared as oblong protoplasmic bands with extremities either blunt or tapering. The maximum length of these fibres was 125μ , and the maximum diameter 23μ (Fig. 3). Some were multinucleated.

The cell cytoplasm stained like muscle with van Gieson's method. It was faintly fibrillated in the cells cut transversely (Fig. 2), while those cut longitudinally showed longitudinal fibrillation, and a few true transverse striations (Fig. 4). Occasionally small vacuoles were present.

The stroma in a general way resembled that of a sarcoma of oat-shaped or short spindle cells. The cell cytoplasm was scanty and indistinct, and the nuclei were irregularly oval and rich in chromatin. The average length of the nuclei was 7μ . Many of them were, however, only 5μ in diameter, and probably these represented not the nuclei of the round sarcoma cells but the nuclei of the oval sarcoma cells cut transversely. Here and there true fibrous tissue cells with long spindle-shaped nuclei were seen scattered about, and probably derived from the spindle-celled fibrous tissue of the host, which had persisted.

Blood-vessels were scarce, and their walls were fairly well developed. There was a certain amount of round-celled infiltration of inflammatory origin, especially in the piece removed at the first operation. Large multinucleated cells, myxomatous tissue, cartilage and uterine gland tissue so frequently found in these tumours were absent. The small growth in the ovary was a columnar-celled carcinoma (Fig. 5).

CASE II.

Clinical history. Miss C., æt. 75 (approx.), 0-para. This patient was a spinster between 70 and 80 years of age. It was impossible to get the exact date of her birth. The menopause, she said, had occurred more than 20 years previously. The patient had had a slight blood-stained discharge since July 1911. On September 15 of the same year a large piece of growth was expelled *per vaginam* with profuse hæmorrhage. The patient's medical attendant (Dr. S. Wilkinson) sent this to one of us (W. B. B.), who on histological examination found that it was a mixed-celled sarcoma with striped muscle fibres, and advised operation.

General condition. The patient was fairly well nourished, but was slightly anæmic.

Examination per abdomen. There was resonance in the flanks. A central indefinite swelling could be felt over the symphysis pubis.

Examination per vaginam. A purulent discharge, which was blood-stained, could be seen issuing from the cervix. On bimanual examination the uterus was found to be greatly enlarged, to bulge forwards and to be rather fixed on the right side.

Operative procedures (by W. Blair Bell). (1) On October 2 1912. Complete abdominal hysterectomy, with vaginal clamps, and salpingo-oöphorectomy were carried out. The right tube and ovary were buried in adhesions and attached to the small intestine. This ovary was calcareous, and as there was no evidence of growth in the neighbourhood the bowel was not resected. (2) On December 28 enterostomy was performed under local anæsthesia for intestinal obstruction produced by the abdominal recurrences. This operation was very difficult as the abdomen was full of growth which had to be cut through before the bowel could be reached.

Progress of the case. The patient made a smooth and rapid recovery after the first operation and returned home; but a few weeks later it was evident that there was recurrence in the vagina and in the abdomen. The latter eventually produced intestinal obstruction, as already mentioned. The patient died from exhaustion ten days after the second operation.

Pathological Description of the Specimen.

Macroscopical. The uterus was opened sagittally after being fixed. The whole wall was stretched round a large polypoid growth in the interior. This growth was attached by a pedicle to the posterior wall of the uterus, and completely filled the dilated cavity. In the muscle wall of the uterus there were several small fibromyomata. The portion of growth which had been previously expelled was considerably larger than that remaining in the uterus (Fig. 6).

Microscopical. Sections were made from the portion of growth which was expelled, from the growth after removal of the uterus, and from the recurrences in the abdomen and vagina. The sections were stained by van Gieson's method, and with hæmatoxylin and eosin. The growth expelled from the uterus and the recurrences were fixed and hardened in a mixture of formol 100 cc., spirit 300 cc., acetic acid 10 cc., and water 1,000 cc. The uterus was fixed and hardened by Kaiserling's method. Sections through the mass expelled showed that the tumour was for the most part a very atypical mixed-celled sarcoma (Fig. 7). It was mainly composed of small round cells about 10μ and short spindle cells about 20μ in length, with scanty cytoplasm and relatively large vesicular nuclei.

Two other types of cell formed most conspicuous features,

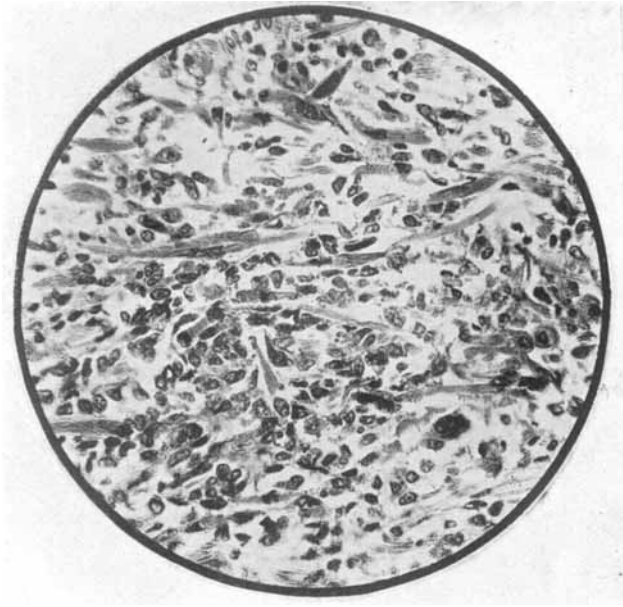


Fig. 7. Case 2. Expelled polyp showing large spindle cells—some with longitudinal fibrillation—and small round and small spindle cells. $\times 200$.

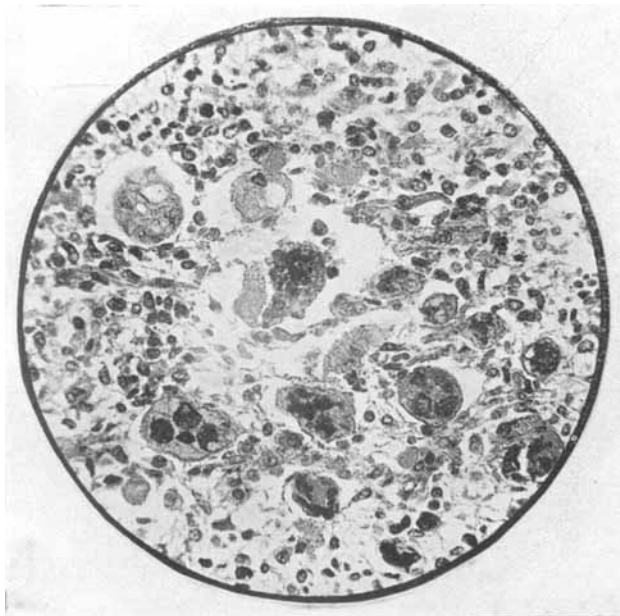


Fig. 8. Case 2. Expelled polyp showing a group of multinucleated cells (sarcoblasts), and small round and small spindle cells. $\times 200$.

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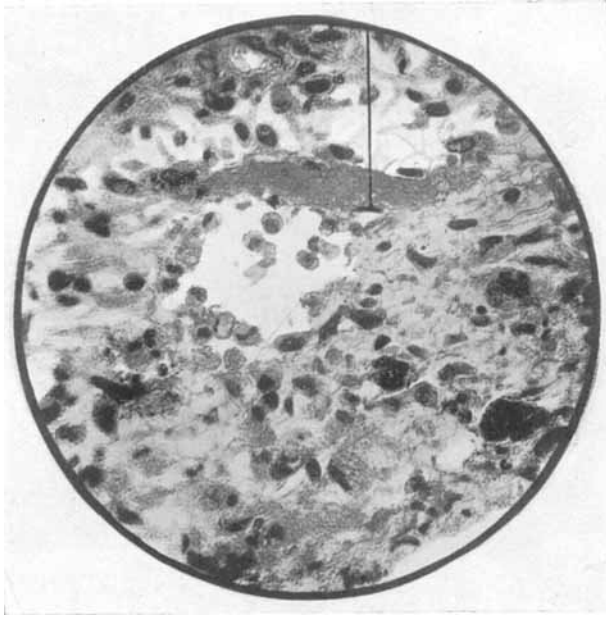


Fig. 9. Case 2. Expelled polyp showing large broad, embryonic muscle fibre. Note : Flattened nucleus on edge of fibre (A). $\times 350$.



Fig. 10. Case 2. Expelled polyp showing embryonic striped muscle fibre with transverse striation. $\times 850$.

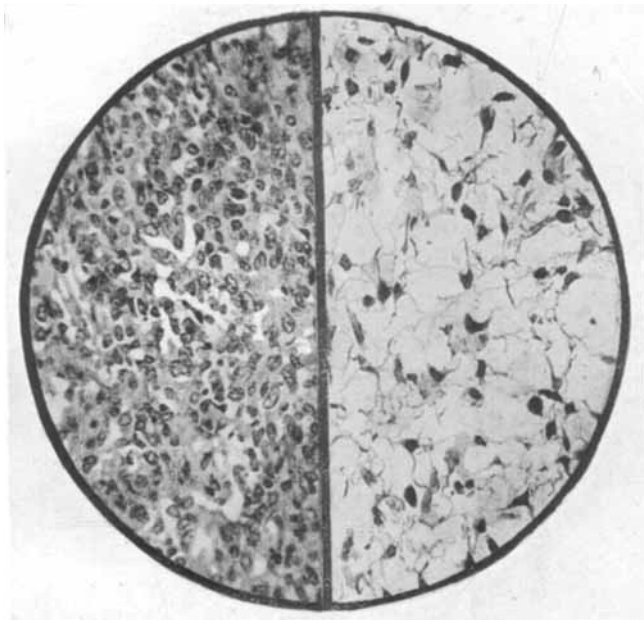


Fig. 11.

Fig. 12.

Fig. 11. Case 2. Growth removed with uterus showing an ordinary small round and small spindle celled sarcoma. $\times 200$.

Fig. 12. Case 2. Vaginal recurrence showing myxomatous tissue. $\times 200$.

namely, long tapering spindle cells and large multinucleated cells. The long spindle cells were fairly numerous and often occurred in small groups. They measured about $100\mu \times 12\mu$. Occasionally they were very large, more oblong and less tapered at the extremities, measuring up to 150μ long and 25μ broad (Figs. 7 and 9). The cytoplasm was longitudinally fibrillated in all these cells and in some of the larger cells there was true transverse striation (Fig. 10). The multinucleated giant cells were fairly numerous (Fig. 8). Their average size was about 40μ with a maximum of 80μ . The nuclei occupied the greater portion of the cell. They were very irregular, atypical and in some pluripolar mitosis had evidently occurred; hyperchromatosis and pyknosis were frequent. The large spindle cells and the multinucleated cells stained like muscle with van Gieson's method.

In places the tumour cells were loosely packed, apparently owing to oedema; and in some portions of the growth the cells were branched and there was a fibrillated ground substance characteristic of myxoma. Blood-vessels with thin walls were numerous, and the stroma was infiltrated with blood. A few large, isolated, dilated, regular gland acini lined by a single layer of rather atypical epithelium were scattered here and there.

Sections through the growth removed with the uterus had the usual appearance of a sarcoma of short spindle and round cells, the nuclei being exceedingly prominent and the cytoplasm relatively scanty (Fig. 11). Very few multinucleated and large spindle cells were present, and no transversely striated muscle fibres were found. Sections through the vaginal recurrence removed post mortem consisted almost entirely of pure myxosarcoma, and scarcely a single large spindle cell was found (Fig. 12). The recurrence from the abdomen was a mixed-celled sarcoma with many large multinucleated cells, but no striated muscle.

The general appearance of the growth removed from the uterus and the recurrences were so like that of an ordinary pure sarcoma that the true nature of the tumour would almost certainly have been overlooked had an examination not been made in the first instance of the polypoid mass which had been expelled. It is important to note that no cartilage was found in any of the sections.

OTHER CASES OF RHABDOMYOSARCOMA.

In the following table 17 cases of undoubted rhabdomyosarcoma of the uterus have been collected together, and the principal details in connexion with them recorded. We have been unable to find any other cases in the literature.

In Table II three cases, in each of which the tumour of the uterus was probably rhabdomyosarcomatous in nature, but in which the description was incomplete or inconclusive, are placed together.

CASES OF UNDOUBTED RHABDOMYO-

Reported by	Age	Preg- nancies	Site, Character and Progress of Primary Tumour. Treatment	Recurrences or Metastases
1. Weber, 1867. (24)	45	9	Small, soft, reddish polyp on anterior cervical lip. Recurred several times after operation. Finally invaded body of uterus.	Local recurrence.
2. Anderson-Edmansson, 1870. (1)	50	0	Arose from corpus uteri. Tumour large, soft, and nodular. Hysterectomy.	?
3. Kunert, 1874. (10)	35	0	Soft, red polypi on cervix. Amputation of cervix. Later nodules appeared in pelvic connective tissue, and these were removed.	Vaginal wall, pelvis and pleura.
4. Bystroumoff & Eckert, 1874. (3)	?	?	Small pedunculated tumour projecting from uterine wall.	None.
5. Colomiatti, 1882. (4)	50	?	Tumour probably arose from corpus uteri. Size of full term foetus.	Three local recurrences. Probably secondary growths in lungs.
6. Müller, 1887. (12)	24	0	In cervix, size of hen's egg. Excision of cervix.	Left broad ligament and vagina.
7. Pernice, 1888. (17)	17	0	Arose from cervix uteri; amputation. Later invaded the body of uterus.	Abdominal.
8. Richter, 1892. (19)	2 $\frac{1}{4}$		Arose from cervix uteri. Two operations for recurrences.	Local recurrence.
9. Pick, 1894. (18)	2 $\frac{1}{2}$		Soft, polypoid growth from posterior wall of cervix. Growth rapid.	Extension into uterus.
10. von Franqué, 1899. (5)	49	11	Large, soft growth. Size of man's head. Arose from posterior uterine wall. Operation.	None.
11. Peham, 1903. (15)	18	0	Polypoid mass from cervix. Size of two fists.	On pelvic peritoneum.
12. Låwen, 1906. (11)	60		Arose from posterior uterine wall. Hysterectomy.	Abdominal.
13. Spuler, 1906. (22)	?	?	Cervical polyp. Hysterectomy.	?
14. Hunziker, 1907. (8)	58	2	Arose from anterior uterine wall. Surface nodular.	Pelvic, involving rectum and bladder.
15. Robertson, 1908. (20)	69	2	Probably primary in uterus. Pinkish, soft, lobulated and vascular. No operation.	None.
16. Bell, W. Blair, 1912. (2)	75	0	Arose from corpus uteri. Polypoid mass passed per vaginam. Hysterectomy.	Abdominal and vaginal.
17. Grimsdale, T. B., and Glynn, E. E. (Unpublished), 1912.	62	2	Arose from corpus uteri. Polypoid growth passed per vaginam. Hysterectomy.	Lung (Clinical evidence only).

SARCOMA OF THE UTERUS.—Table I.

Termination	Microscopical Findings
Perforation of uterus. General peritonitis. Death 9 months after operation.	Long spindle cells. Smooth muscle. Striated muscle cells resembling embryonic striated muscle.
Death from hæmorrhage.	Small mononucleated and large multinucleated cells. Cystic glands. Typical striated muscle.
Death from thrombosis of iliac vein 6 weeks after operation.	Large, round cells. Striated muscle.
?	Small spindle cells. Large multinucleated cells. Striated muscle.
Death from 'pleurisy.'	Large round cells. Striated muscle.
Death from purulent peritonitis 1 year after operation.	Primary growth was a round and spindle celled sarcoma with broad bands of striped spindle cells. Metastases : myxosarcoma with cartilage. No striped spindle cells.
Death from pneumonia 1½ years after operation.	Soft œdematous and myxomatous connective tissue. Young striated muscle. Hyaline cartilage. Glandular elements. No striped muscle in metastases.
Death after 2 years.	Round cells. Myxomatous tissue. Striated spindle cells.
Death from cachexia 6 months after first symptom.	Large round cells. Striated muscle.
Death 1 week after operation.	Sarcoma of spindle cells. Striated muscle. Cystic glands.
Cachexia.	Sarcoma with embryonic striped muscle. Cartilage and true myxomatous tissue.
Perforation of uterus. General peritonitis. Death 2½ years after first symptom, and about 1 year after operation.	Sarcoma of spindle cells. Smooth and striated muscle. Large multinucleated cells. Proliferating glandular elements.
?	Sarcoma of round and spindle cells. Many well-developed striped muscle cells. Some elastic tissue, and fat.
Death from cachexia 6 months after first symptom.	Sarcoma of round and spindle cells. Myxomatous tissue. Cartilage. Smooth and striated muscle. Glandular elements.
Death 8 months after first symptom from renal calculus and pyelonephritis.	Sarcoma of spindle cells. Large multinucleated cells. Striated muscle. Myxomatous tissue.
Death 6 months after first symptom and 3 after operation. Recurrence in vagina and abdomen.	Sarcoma of small round and small spindle cells. Very many giant cells, some embryonic muscle cells, a few being striated. Myxomatous tissue. A few glandular elements. Recurrence closely resembled pure myxosarcoma.
Death from pulmonary lesions 10 months after first symptom and 6 after operation.	Sarcoma of small round and small spindle cells. Very many embryonic muscle cells, a few being striated.

CASES OF PROBABLE RHABDOMYOSARCOMA OF THE UTERUS.

Table II.

Reported by	Age	Preg- nancies	Site, Character and Progress of Primary Tumour. Treatment	Recurrences or Metastases	Termination	Microscopical Findings
Volger, M. (23) 1898.	66	3	A pedunculated tumour of the corpus uteri. Size of a child's head,	Infiltration of bladder and intestine.	?	Sarcoma of round spindle and giant cells. Myxomatous tissue. Smooth muscle, and some fibres similar to young striped muscle, but no striation seen.
Penkert, 1905. (16)	62	12	Arose from the anterior uterine wall. Pedun- culated.	?	?	Sarcoma of spindle cells. Myxomatous tissue. Cartilage. Giant cells. Uterine cells (a) with cystic dilatation, (b) with adenomatous, and (c) with commencing adenocarcinomatous degen- eration. Smooth muscle, some of which closely resembled cross striped embryonic muscle, but the cross striations could not be demonstrated with certainty. There was also present car- cinomatous tissue and endotheliomatous-like tissue. The carcinomatous cells, as distinct from the adenocarcinomatous cells, were poly- morphic with irregular round or oval nuclei and were embedded in a stroma partly sarcomatous.
Kehrer, 1906. (9)	38	5	Lobulated tumour from right wall of cervix. Hysterectomy.	None.	Intestinal obstruction from adhesions be- tween stump of ad- nexa and intestine.	Sarcoma of round and spindle cells. Cartilage. A little bone. Myxomatous tissue. Smooth muscle. Some large cells which resembled striped muscle cells in a rhabdomyoma of the kidney described by the author. On examin- ing these large cells with an oil immersion lens longitudinal striation was obviously present, but transverse striation could not be demonstrated with certainty.

Tables I and II are modelled on a similar plan to that of Robertson²⁰, but certain corrections and additions have been made. Robertson's table contained 14 cases of supposed rhabdomyosarcoma. We have omitted three of these from our Table I, namely, those of Penkert,¹⁶ Kehrer,⁹ and Gebhard.⁶ The first two have been transferred to our second table because striated muscle was not definitely present. Gebhard's case has been omitted altogether, for the tumour was a very mixed one and contained fat, cartilage, uterine gland tissue, endothelial cells (some being arranged in "cell nests similar to those found in epithelioma"), spindle-celled sarcomatous tissue and smooth muscle cells; but Gebhard expressly states that striped muscle was *absent*.

We have added five cases to Robertson's table, namely, those of Müller,¹² Peham,¹⁵ Spuler,²² Blair Bell,² and Grimsdale and Glynn. With regard to Penkert's case, it is highly probable that the "polymorphic carcinomatous cells with the irregular nuclei embedded in a stroma partly sarcomatous" were really large muscle cells cut transversely, as in our Case I.

Häger⁷ has described a pedunculated malignant tumour of the uterus in a woman of 44, which contained spindle cells and some multinucleated cells; Volger²³ regards this as possibly a rhabdomyosarcoma.

Orth¹⁴ also, in his text-book, gives a microscopic picture of a polypoid sarcoma of the uterus containing some striped muscle fibres, but the pathological description is very imperfect and all clinical details are absent.

All the cases in the Tables I and II have been verified except that of Richter¹⁹ and that of Anderson-Edmansson¹ which we cannot find in Referat-Virch. Hirsch. Jahresbericht 1, for 1869 or 1870.

GENERAL PATHOLOGICAL DESCRIPTION OF UTERINE RHABDOMYOSARCOMATA.

It is clear from what has been said that the structure of uterine rhabdomyosarcoma is very complex. In the first place, the transversely striated muscle cells are very few and form only a small portion of the tumour. The term *rhabdomyosarcoma* is used for the same reason as the term 'myeloid' sarcoma, simply to indicate the presence of a very characteristic type of cell.

In addition to muscle cells in various stages of development there are also present small spindle and small round cells, which sometimes, as in our Case I, form a stroma for the larger muscle cells. Other elements frequently found are:—

1. Multinucleated cells or sarcoblasts. Noted in five cases, namely, 2, 4, 12, 15 and 16.

2. Myxomatous tissue. Noted in seven cases, namely, 6, 7, 8, 11, 14, 15 and 16.

3. Cartilage. Noted in five cases, namely, 4, 6, 7, 11 and 14.

4. Gland tissue. Noted in six cases, namely, 2, 7, 10, 12, 14 and 16.

These neoplasms come under the category of mesodermal mixed tumours and probably arise from displacements of embryonic mesodermal tissue from the lumbar region during early foetal life.

In this connexion it is of some interest that Nehrkorn¹³ described a rhabdomyomatous (not rhabdomyosarcomatous condition) of the posterior wall of an otherwise normal uterus; and Shattock²¹ has recently published three cases of rhabdomyoma of the urinary bladder.

The persistence of the actual embryonic round-celled tissue may give rise to some of the small round cells so frequently present. Wilms, according to Kehrer, believes that all the heterologous tissue found in rhabdomyosarcomata develop from these primitive embryonic round cells.

The glandular elements occurring in some of the cases are, according to Lâwen,¹¹ possibly derived from the Müllerian ducts. It seems much more probable to us, however, that they are persisting uterine glands, and they may under certain circumstances undergo collateral hyperplasia, or even as Kehrer states, carcinomatous degeneration.

A histological comparison of the growths in our two cases shows that Case II is undoubtedly the more malignant. This is in accord with the clinical history, for the patient lived only 6 months after the first symptoms, whereas the other patient lived 10 months. It is interesting to note that striped muscle was absent not only in the metastases of our Case II, but also in Cases VI and VII (Table I).

The small columnar celled carcinoma in the right ovary in Case I had most probably no connexion with the uterine tumour, though in the absence of a post-mortem examination we are unable to be certain.

GENERAL CLINICAL DESCRIPTION.

Etiology. Rhabdomyosarcoma of the uterus may occur at any age, the limits recorded being $2\frac{1}{4}$ years of age and 75 (approx.) years. Of the 14 patients over 20 years of age, 8 had had children—46 children between them. Four above this age had had no children, but probably some of these, as in our Case II, had not been married. It is impossible, therefore, to ascribe to childbearing or the opposite any influence in regard to the appearance of the disease.

Symptoms. Hæmorrhage and a foul discharge are the chief symptoms of this, as of any other malignant disease of the uterus. The hæmorrhage may be profuse for two reasons: firstly, the growth is very friable and rapidly breaks down; and secondly, it is practically always polypoid in character. When, therefore, the growth

projects into the body of the uterus, as is recorded in many of the cases, hæmorrhage is liable to be severe. When it projects into the vagina and arises from the cervix, the growth becomes septic, ulcerates superficially and gives rise to a foul discharge, and in some cases to serious bleeding. It is interesting to note that in both our cases large portions of growth were expelled *per vaginam*. In Fig. 6 the expelled portion is shown below the picture of the uterus with the remaining portion of the growth contained in the uterine cavity. The uterus had evidently contracted down on this retained portion. There may be marked anæmia, cachexia and debility when the disease is advanced.

Physical signs. If the growth be in the body of the uterus the signs are simply those of tumour formation in that organ. The uterus is enlarged, usually regular in shape, owing to the fact that the growth is generally polypoid and projects into the uterine cavity. If the growth arises from or be extruded through the cervical canal, a friable, breaking-down septic growth is found projecting into the upper part of the vagina.

Diagnosis. Clinically the disease must be distinguished from breaking-down fibromyoma from carcinoma and pure sarcoma, but correct diagnosis is only possible after histological examination. The fact that, as far as we are aware, no cases of rhabdomyosarcoma of the uterus have been reported in this country may be due to errors in microscopical diagnosis, the growths being described as mixed-celled or spindle-celled sarcoma, and their true nature overlooked.

The microscopical diagnosis is not easy: firstly, because the number of transversely striated muscle cells is so small, especially in the more atypical tumours—indeed, they may be completely absent in the metastases; and, secondly, because the transverse striation, even if present, is difficult to demonstrate.

The following appearances suggest that transversely striated fibres will be found if looked for:—

1. The sarcoma is of a *mixed-celled* variety, especially if multinucleated cells are present.
2. The sarcoma contains very large spindle cells or oblong protoplasmic bands, especially if the nuclei are excentric.*
3. The staining reaction with van Gieson of the large spindle cells or multinucleated cells is characteristic of muscle.

The transversely striated fibres are best seen with an oil immersion particularly an apochromatic using at the same time a partly-closed diaphragm. They may also be demonstrated with polarized light.

* Of course if the large spindle cells are cut transversely they will appear as large round cells as in our Case 1.

Prognosis. The prognosis is exceedingly grave. Rhabdomyosarcoma of the uterus appears to rival chorion-epithelioma in its malignancy, rapid growth and in the speed with which it leads to a fatal issue.

In the recorded cases there appear to have been 14 deaths within a few months of the first symptoms. The longest period of time any of these cases survived was one year after operation and $2\frac{1}{2}$ years after the first symptoms. A few of these deaths, however, appear to have occurred as the result of operative procedures.

In four of the patients the termination is not described; while in the remaining two death occurred in one case from 'pneumonia' $1\frac{1}{2}$ years after operation, and in another from intestinal obstruction following operation. There may have been metastases in the lungs in the first of these two cases, and local recurrence in the abdomen with intestinal obstruction in the other, as occurred in the second of our cases.

We are very much indebted to Dr. Grimsdale for his kind permission to publish Case I.

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