MALIGNANT TUMOURS OF THE KIDNEY AND TESTIS

BY

F. HECTOR SCOTSON, M.B., B.S., F.R.C.S.

HONORARY SURGEON, MANCHESTER VICTORIA MEMORIAL JEWISH
HOSPITAL; SURGICAL OFFICER TO OUT-PATIENTS,
MANCHESTER ROYAL INFIRMARY

(With Special Plate)

Malignant tumours of the kidney and testis are among the most interesting of all growths, both from a pathological and from a clinical point of view. Their importance lies in the marked degree of malignancy they show. In this communication I wish to draw attention to their pathology, and to record a case of an early hypernephroma of the kidney and of a seminoma of the testis.

Pathology of Malignant Disease of Kidney with Report of a Hypernephroma

The term "hypernephroma" (or Grawitz's tumour) implies an origin from the adrenal, but this conception is far from proved, and it is best to regard these tumours as renal carcinomas. The tumour has a well-marked tendency to invade and obstruct the renal pelvis, and so may produce a deformity which can be detected in a pyelogram. Microscopically their chief characteristics are their yellow colour, variegated appearance, and the frequent areas of haemorrhage. The cells are seen to be of large size, and the cytoplasm clear or slightly granular, due to the presence of lipid granules. The cells may be arranged in rows or may have an alveolar arrangement. Stroma is scanty but the blood vessels large.

The other type of malignant growth is the embryoma (or Wilm's tumour). This tumour, which appears generally between the first and third years of childhood, is at times bilateral. It is soft in consistency and of grey or yellow colour: on section it is uniform in appearance. Microscopically the appearance may resemble a sarcoma or a mixed tumour.

According to Boyd¹ all malignant growths of the kidney can be placed in one or other of the above groups, but other observers maintain that there is a renal carcinoma in addition to the true hypernephroma. Graham Simpson,² in recording three such cases, emphasizes the fact that such tumours replace rather than displace kidney tissue, so that, clinically, there is an absence of any marked enlargement of the affected kidney. In addition, the renal carcinoma is the more malignant neoplasm, in all his cases producing secondary deposits in, and destruction of, some of the bodies of the lumbar vertebrae.

CASE REPORT

A. B., aged 43, was operated on in 1917 for a right subphrenic abscess, which continued to drain for twelve weeks. He stated that since then he had always had pain in his back when he lifted anything heavy, but this was not more marked on one side than on the other. He said that the trouble had increased during the last two years. On September 15th, 1933, he was admitted to the Manchester Victoria Memorial Jewish Hospital on account of a severe attack of renal colic on the right side. Microscopical examination of the urine revealed the presence of red blood cells, although there was no macroscopic evidence of blood. An x-ray of the urinary tract did not reveal any evidence of stone. After the injection of intravenous uroselectan a further x-ray revealed a normal appearance of the pelvis of the left kidney, but on the right side, instead of a uniform density as on the left side, the upper part of the shadow was extremely dense and somewhat enlarged.

Cystoscopy showed that the bladder and ureteric orifices were normal. Indigo-carmin, injected intravenously, was excreted by both kidneys in the average time and with equal force, the efflux from the right kidney appearing to be as

deeply coloured as that from the left. Using 12½ per cent. sodium iodide through the ureteric catheter, a pyelogram was made of the pelvis of the right kidney. The resulting pyelogram was identical in appearance to that presented by the intravenous uroselectan. The interpretation of the pyelogram was not clear, but it was suggested that such an appearance might be due to a stone which was not radio-opaque, or to a small growth obstructing the pelvis of the kidney. It was therefore decided to explore the affected kidney.

On October 4th, through a lumbar incision, the right kidney was exposed. Externally, no evidence of disease was found, and so a small incision was made into the convex margin of the kidney in order to explore it digitally, but this did not reveal anything abnormal. Bearing in mind the possibility of a small growth in the kidney, this organ was then excised. This turned out to be a difficult operation on account of the dense adhesions present, resulting from the former perinephritic abscess. Convalescence was uneventful, and the patient returned to his work as an engineer in two months' time.

Pathological Specimen.—On cutting the kidney longitudinally from the outer to the inner border, a small tumour was revealed. Macroscopically and microscopically this had the appearance of a hypernephroma. This growth obstructed the upper part of the pelvis, producing a dilated and thickened upper compartment, which explained the appearance presented by the pyelogram, due to the large collection of radio-opaque material which would collect in it.

The special points of interest in the case are the very small size of the growth and the unusual appearance presented by the pyelogram. The photographs (reproduced on the Plate) show: Fig. 1, the specimen removed; Fig. 2, microphotograph of tumour showing typical appearance of the hypernephroma.

Pathology of Malignant Disease of Testis with Report of a Seminoma

The modern conception of tumours of the testis is a simple one when compared to the old complicated classification. They are now generally placed in one of two groups: first, the germinal cell tumour, or seminoma,¹ and secondly, the teratoma. The seminoma seems to arise from the cells lining the seminiferous tubules. The tumour appears in middle life, and is of comparatively slow growth. On section the tumour is seen to be solid, fleshy, and homogeneous, often traversed by fibrous septa, which cause a lobulated appearance. The microscopical appearance varies, the cells being of either large size, with clear protoplasm, or small size, containing a darkly staining nucleus, giving rise to a picture like that of lymphosarcoma. A tubular arrangement may be apparent in the slow-growing tumours, or else a diffuse arrangement.

A teratoma probably arises from the primitive germinal cells, which, being totipotent, produce structures derived from all three primitive layers. It presents, as a rule, a markedly cystic appearance, but parts or the whole of the tumour may be solid. Microscopically, derivations of all three germinal layers may be seen in varying proportions.

CASE REPORT

T. W., aged 57, complained of a painless swelling of the right testis, starting six months previously. There had been a gradual increase in size of the affected testis since the onset. There was no history of gonorrhoea, tuberculosis, or other infection. Examination showed that the body of the right testicle was enlarged to about four times its ordinary size, and, in addition, the globus major of the epididymis was markedly bigger than normal. The organ was not tender. Rectal examination did not reveal any abnormality of the prostate gland or vesiculae seminales. A provisional diagnosis of tuberculous epididymitis was made, and, as the disease seemed entirely confined to the one testis, operation was advised.

When the testis was exposed the body seemed very hard, and neoplasm was then suspected; the whole testis was therefore excised, together with the spermatic cord, as far as the internal abdominal ring. On cutting the testis longitudinally a neoplasm infiltrating the body and also appearing in the epididymis was seen. The lumbar lymphatic glands were not

excised, but, as soon as the operation wound was healed, these were treated with x rays. Unfortunately this patient has been lost sight of, and has not continued to attend for the x -ray treatment or replied to recent communications.

Pathological Specimen.—The report, made by Dr. William Susman, stated that the microscopical appearance was typical of a seminoma. The growth was somewhat necrotic and very cellular, with scanty stroma. The cells were large and spheroidal, showing no conspicuous amount of mitotic division. Judging by the microscopical appearance the pathologist considered the growth to be undoubtedly malignant, but there

was nothing to indicate whether or not it was rapidly growing.

The photographs (reproduced on the Plate) show: Fig. 3, the affected testis divided longitudinally; and Fig. 4, microphotograph of the neoplasm.

My thanks are due to Dr. S. Kelly, who called me into consultation respecting the case of hypernephroma; to Dr. H. Morris, for the x -ray reports; and to Mr. J. B. Macalpine, who kindly gave advice on the interpretation of these.

REFERENCES

- ¹ Boyd: *Surgical Pathology*, third edition, pp. 409 and 456.
² Simpson: *Brit. Journ. Surg.*, 1934, xxi, 388.

GIANT RENAL CALCULUS

BY

WILLIAM EVERETT, M.B., F.R.C.S.Ed.

HONORARY SURGEON, ROYAL HANTS COUNTY HOSPITAL, WINCHESTER

(With Special Plate)

It is unusual to observe giant renal calculi, so that the case here recorded would merit a report. The largest renal calculus in the museum of the Royal College of Surgeons of England was successfully removed from a male at operation by Mr. Hurry Fenwick in 1912, and weighed 1 lb. 9½ oz. The largest in the museum of the Royal College of Surgeons of Edinburgh weighs 1 lb. 9 oz., and was successfully removed, also from a male.

Marmaduke Shields reports the removal of a stone 1 lb. 0½ oz. in weight from a male aged 39. He states that there is an enormous stone weighing 2 lb. 0¼ oz. in the museum of St. Bartholomew's Hospital, which was removed from a man aged 38. Thomson - Walker mentions that LeDenti reported a stone weighing over 3 lb., but whether this was removed at operation or necropsy is not stated. Kreutzmann reports the removal of a stone weighing 650 grams (*circ.* 1 lb. 7 oz.), and under a careful review of the literature states that the largest single stone removed at operation was reported by Mylvaganam, and weighed 3 lb. Kreutzmann quotes eight cases of unusually large renal calculi, the smallest stone weighing 339 grams (*circ.* 12 oz.), occurring in the only female in the series. Waterworth, in 1932, reported a stone weighing 2.42 lb. associated with carcinoma of the same kidney.

Clinical Case Record

A woman, aged 59, was admitted to the Royal Hants County Hospital, Winchester, on November 1st, 1933, complaining of a mass in the right side of the abdomen, accompanied by pain.

History of Illness

The date of the onset was given as in November, 1929. At that time the patient went to a doctor complaining of

an aching pain in the back accompanied by scalding micturition, and the passing of blood-stained urine. She was treated by her doctor, and the pain and urinary disturbance passed off, and for twelve months thereafter there was no complaint. In November, 1932, however, the aching pain in the right loin and right hypochondrium recurred occasionally, and was worse after a day's hard work. When examined upon admission to hospital there was no complaint of any urinary disturbance, but the patient stated that she had lost her appetite and had been losing weight during the last twelve months. The pain had never been of an acute character, and she was always able to continue with her household duties. She had had no colic or rigors. She had borne eleven children, and her pregnancies had been uncomplicated.

Physical Examination

On admission to hospital the patient was an ill-nourished, spare woman. Her extremities were cold and blue; her pulse was 100, and was small and of very low tension; her respiration was 20, and her temperature 97°. Her condition was one of advancing uraemia. There was marked oral sepsis and dental caries, and the tongue was dry and glazed. Examination of the heart and lungs failed to reveal any evidence of disease. Blood pressure was 100/50. On inspection, the abdomen showed a large bulging mass in the right side extending from the right iliac fossa up underneath the right costal margin. The medial margin of the tumour crossed the mid-line in the epigastrium for about an inch, and the mass could be seen to move upon respiration when the patient was recumbent. On palpation the large mass was found to be slightly nodular, and two hard projections could be felt in the right iliac fossa. The whole tumour was tender, but tenderness was most acute over the projections at its lower end.

The specific gravity of the urine was 1020; it contained no sugar, but blood, albumin, and pus were present. The amount recorded during the day varied from 16 to 36 ounces. Many white and red blood cells were present. The blood urica equalled 355 mg. per 100 c.cm. nine days before death.

X-ray examination revealed on the right side a large, branched calculus with an ovoid central portion filling the pelvis. The left kidney also contained multiple calculi. Examination of the renal function with uroselectan showed no urine coming from the left kidney, and demonstrated a small amount in the right pelvic ureter after thirty-five minutes.

Operative treatment was out of the question, and the patient died on the sixteenth day after admission to hospital,

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FIG. 1.—Hypernephroma: specimen after removal.

FIG. 2.—Section showing typical appearance of hypernephroma.

FIG. 3.—Seminoma. Testis divided longitudinally.

FIG. 4.—Section of seminoma.