RENAL TUMOURS.

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As in the case of tumours of any other organ, these may be divided into innocent and malignant, but with one exception—the papilloma—the innocent tumours are of little interest or importance.

Lipomata of small size may be found under the renal capsule; small fibromata may be seen in the cortex, while the commonest are adenomata, which are often multiple and appear as white nodules in the cortex usually in cases of chronic nephritis.

None of these tumours is of any clinical significance and they are usually only found at post mortem examination.

I. PAPILLOMATA OF THE RENAL PELVIS.

Nature. Like the corresponding growth in the bladder, this is a villous tumour, and microscopically it is innocent, but because it may become malignant, and also because it tends to recur it has to be treated as a malignant tumour; though repeated fulguration of recurrences may be possible in the bladder, it is obviously impossible in the case of the renal pelvis. In comparison with papilloma of the bladder it is a rare disease.

It occurs most commonly in men in the middle period of life, and usually a decade younger than the carcinoma period.

Symptoms. The symptoms are usually a recurrent painless hæmaturia, which tends to get more frequent as the disease progresses. In some cases there may be clot colic and the passage of worm-like ureteric clots. In late cases there may be some aching in the loin due to hydronephrosis, consequent on the blocking of the pelvis or calyces, but it is seldom large enough to produce a palpable tumour.

The diagnosis is made by cystoscopy to find out from which kidney the hæmaturia is coming, followed by pyelography, preferably of the retrograde type. The pyelogram shows a definite filling defect in the pelvis, and the calyces if the disease has involved them, and a moderate degree of hydronephrosis. The filling defect is rather characteristic; it is not a complete distortion such as is got with a solid tumour like a hypernephroma, but has a mottled appearance rather like a sponge, as owing to the tumour being soft and villous some of the opaque medium flows into the many small gaps.

Treatment. One of the prime factors governing the treatment of this condition is the tendency for secondary papillomata to get implanted in the ureter—most commonly at the lower end, where they may sometimes be seen at cystoscopy protruding into the bladder. Consequently the treatment of election is complete nephro-ureterectomy, with the removal of the kidney and the whole of the ureter, including the ureteric orifice in the bladder. If the patient is fit enough this may be

done at one operation, the kidney and upper part of the ureter by the lumbar route and the rest by the abdomen. If the patient is not in a condition to stand the large operation, it is best to remove the kidney and as much of the ureter as possible by the lumbar route, then remove the rest of the ureter three or four weeks later.

As a rule these cases do very well, but it is advisable to submit them to cystoscopy every three months afterwards, in case any papillomata appear in the bladder.

2. MALIGNANT TUMOURS OF THE RENAL PELVIS.

In practice these may be divided into two types—the Papillary Carcinoma and the Squamous-cell Carcinoma. They are both rare.

A. Papillary Carcinoma.

These cases in the beginning may be benign papillomata that have become malignant—especially those in which there is a long history of attacks of hæmaturia—or they may be malignant from the onset. They differ from the innocent variety in that though the surface may be extensive and papillary in nature, the base is usually broad and hard, and infiltrates the pelvis. The villi are not as a rule as luxuriant as in the benign type and are shorter. There is a tendency for the appearance of secondary growths in the ureter and even in the bladder. The symptoms are much the same as in the benign type—namely profuse, intermittent hæmaturia. The hæmaturia is as a rule painless unless associated with clot colic. In a fairly long standing case there may be a dull ache in the loin due to a hydronephrosis as a result of the obstruction to the outflow from the pelvis. In very late cases there may be pain of the girdle type, or down the thigh from the involvement of nerves, showing that the case is quite inoperable.

The kidney is not as a rule palpably enlarged unless the case is of long standing, when the hydronephrotic kidney may be felt; or in a very late case, in which the whole kidney has become invaded by the growth, when a large nodular fixed mass may be palpated.

The **diagnosis** is usually made as in the benign type by cystoscopy, to determine the origin of the hæmaturia, and pyelography which demonstrates the filling defect in the pelvis. The defect usually shows more distortion of the pelvis than the benign type, owing to the base of the tumour being solid, and the infiltration and the sponge-like appearance is only shown on the surface of the growth.

The **treatment** is the same as for the benign type—viz., complete nephro-ureterectomy done in one or two stages.

B. Squamous-cell Carcinoma.

These cases are rare, but probably not so rare as they are thought to be. My colleague, Victor Dix, who has been investigating these cases over a number of years at the London Hospital, found very few among the clinical records; but he found four times the number on looking up the records in the Pathological Institute, where sections of the pelvis of every kidney removed, are cut as a routine.

The reason for this is that about fifty per cent. of these cases are associated with the presence of renal calculi, and in practically all of them chronic infection is present. The cases are operated on and nephrectomy performed for renal calculi or pyonephrosis and the underlying carcinoma is missed. A point of interest is that squamous-cell carcinoma is practically unknown in cases of renal tuberculosis. The typical squamous-cell carcinoma has a broad indurated base with everted edges and the centre may be ulcerated. It may spread through the pelvis wall or involve the ureter, or spread diffusely throughout the pelvis, and in an advanced case the whole kidney may be replaced by growth. The symptoms are more those due to the presence of infection or calculi. Hæmaturia may be present; pyuria is a marked sign, and there may be frequency of micturition and dysuria, due to the secondary cystitis.

Pain is usually a dull ache in the loin as in all cases of chronic infection.

There may be a swelling in the loin and it may be hard and fixed as in many cases of long standing pyonephrosis.

The case is usually diagnosed as one of pyonephrosis, with or without calculi, as seen in an X-ray film. The calculi are usually of the dendritic type.

The **treatment** is nephrectomy, and the diagnosis of carcinoma is usually made after the removal of the kidney.

The ultimate prognosis is bad, most cases recurring within a year.

Secondaries occur in the liver, pleura, spine or long bones.

3. MALIGNANT TUMOURS OF THE RENAL PARENCHYMA.

There are two types of case, the so-called hypernephroma and are carcinoma, of which the former is easily the commonest of all renal tumours.

A. Hypernephroma.

The origin of the hypernephroma, or Grawitz tumour has been a source of discussion among pathologists for a great many years. As the name suggests, Grawitz considered that they arose from adrenal rests situated beneath the cortex of the kidney. They are encapsuled tumours composed of cells arranged more like adrenal cells than renal. But it is now agreed that the tumours are carcinomata—papillary adeno-carcinoma in type.

These tumours may grow to a very large size and are usually yellowish in colour, and in places they may be quite soft, due to areas of hæmorrhagic and fat necrosis. They are sometimes encased in a definite capsule, which may finally burst through, usually into the renal pelvis giving rise to hæmaturia, or they may rupture into the renal vein, metastases thus taking place by the blood stream.

Lymphatic spread may also take place, involving the glands along the aorta. The growth may involve the perinephric fat and become adherent to the posterior abdominal wall or the diaphragm, and will occasionally involve the bowel.

B. Carcinoma.

This variety is comparatively rare, and is a tubular adeno-carcinoma arising in the renal tubules. They appear as large white masses, and are quite solid compared with a hypernephroma. They have no capsule and do not show signs of necrosis.

Symptoms. The symptoms are similar in both hypernephroma and carcinoma. In a classical case the first symptom is an intermittent painless hæmaturia, which may be very profuse, and tends to become more frequent as the case progresses.

Pain is usually absent in the early stages, but there may be attacks of renal colic due to the passage of clots. As a point in diagnosis it is worth noting that in these cases the hæmaturia always precedes the colic, as opposed to a renal calculus, where the hæmaturia follows the colic.

As the tumour enlarges or becomes adherent, there may be a dragging pain in the loin, and sometimes, owing to obstruction to calyces, the kidney may become infected, producing signs of pyonephrosis or pyelitis.

In other cases there may be no symptoms at all, the first sign being the discovery of a tumour in the loin by the patient or his doctor, whom he has consulted for some other complaint.

I have known cases in which the first symptom was a spontaneous fracture due to a secondary deposit in the bone, the primary source only being found on microscopical examination of the bone tumour.

I can remember another patient who came to Hospital with the symptoms of a cerebral tumour, due to involvement of the skull. Very occasionally a varicocele may appear, owing to involvement of the renal vein or pressure on the spermatic vein.

Diagnosis. Abdominal examination may reveal the presence of a nodular hard tumour in the loin. If it is fixed it usually means the case is inoperable.

Except during the attacks of hæmaturia the urine is usually clear, but may contain a cloud of albumin and microscopic red cells.

Cystoscopy will reveal from which side the hæmaturia is coming. An X-ray picture may show an enlarged kidney, irregular in outline. But the chief diagnostic feature is a pyelogram. Intravenous pyelography may not show anything if most of the kidney is involved; but a retrograde pyelogram will show the classical "filling defect" of a growth. Sometimes the whole pelvis is filled with growth, so that none of the opaque medium enters the kidney at all, but stops short at the uretero-pelvic junction. In others there is a definite distortion of the pelvis, which is irregular and only partly filled. In some the calyces at one pole of the kidney may be quite normal, while those at the other pole are obliterated; or the affected calyces may be lengthened and irregular in outline. In a few early cases I have seen a perfectly normal pyelogram, the tumour growing from the kidney, and not involving the pelvis or calyces, the diagnosis only being made at operation or from a pyelogram at a later date.

Treatment. Where there are no contraindications the treatment consists of nephrectomy. Cases are definitely inoperable when metastases are already present; when the tumour is large and fixed to the posterior abdominal wall or involves the bowel; or where the patient is too debilitated or anæmic to stand any operation, or the other kidney is not functioning properly.

If the tumour is of moderate size nephrectomy may be performed by the lumbar route and should include the removal of all perinephric fat, any palpable glands, and ligaturing the renal vessels as near to the big vessels as possible, as the growth may be involving the renal vein. As one famous surgeon once remarked, in these cases the kidney should be removed without ever being seen—that is, completely removed in its perinephric fatty capsules.

In cases where the tumour is large or there are doubts of its operability, it is best to employ the abdominal route, mobilizing the colon and turning it inwards. The advantages of the abdominal method are that you can see if there are secondaries in the liver, glands or the great vessels, or involvement of the colon. One of the chief troubles in this operation is hæmorrhage, as one finds distended vessels in the perinephric fat which are very friable and only cease bleeding when the pedicle is tied, so that it is important to clear and ligature the pedicle as soon as possible—that is often easier by the abdominal route.

If necessary a blood transfusion can be given at the end of the operation, and I usually give the patient a course of deep X-ray therapy after convalescence.

X-ray treatment has not helped in inoperable cases.

Prognosis. It is very hard to be sure of the prognosis in these cases, as I have known cases of large hypernephromata that seemed hardly worth operating on at the time, live for years afterwards; yet in other early cases the patients have come back with metastases within a year or two of operation.

Recurrence usually takes place in the liver, lungs, bones or glands.

4. SARCOMA OF THE RENAL PARENCHYMA.

These tumours occur almost entirely in infants and children up to about five years of age, and in some cases they are bilateral.

They grow rapidly and are invariably fatal. As a rule there are no symptoms—the condition usually being found out by the child's mother feeling a tumour in its abdomen. Hæmaturia does not take place.

The tumour may grow to an enormous size, and the child gradually wastes and dies from the pressure of the growth on the neighbouring structures.

A few cases have been found to be operable, but the patient has usually died as the result of the operation or recurrence has soon taken place.