

pounds. In one of Abbé's cases the tumour weighed $7\frac{1}{2}$ pounds and the child 15 pounds. In Mackenzie's case the tumour weighed 22 pounds, the child 39 pounds.

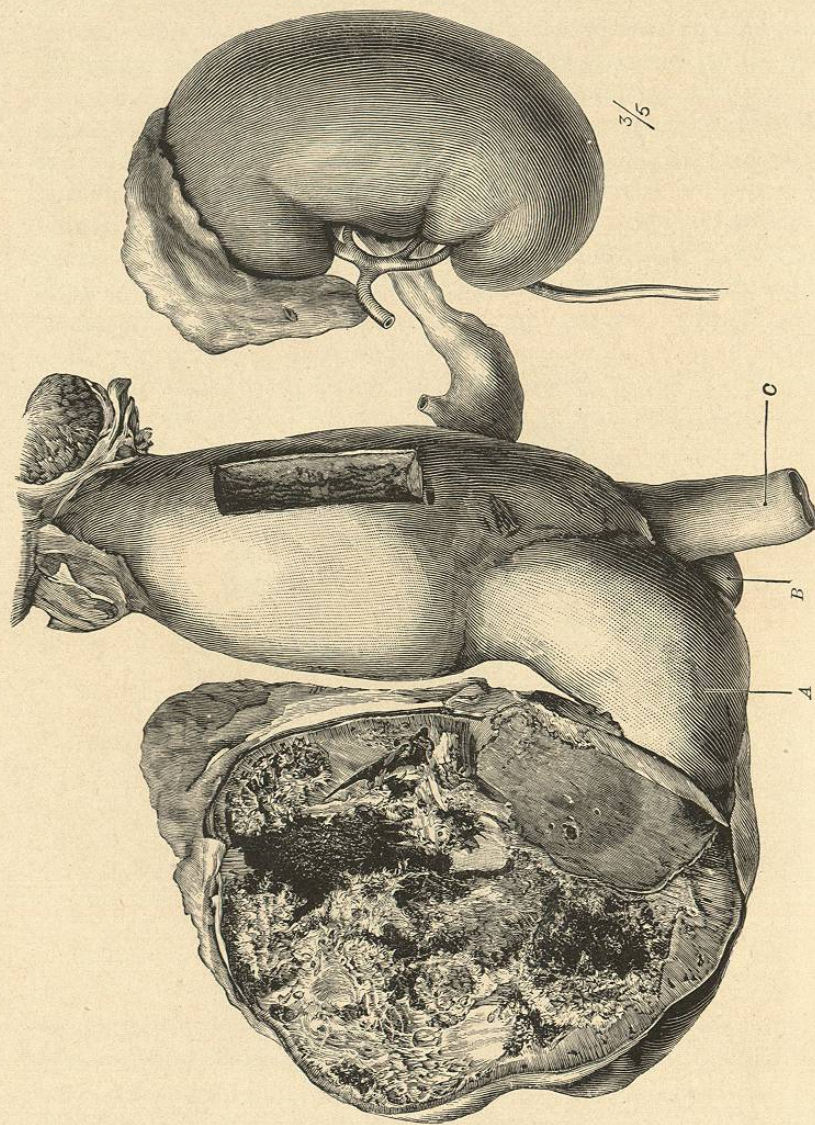


FIG. 152.—SARCOMA OF KIDNEY INVADING THE VENA CAVA (MORRIS).
A, sarcomatous renal vein; B, sarcomatous gland; C, vena cava.

Extension of the Disease.—Primary malignant disease of the kidney may extend directly through the capsule, along the renal vein (Fig. 152), through the lymphatics, down the ureter, or by metastasis. Extension through the capsule or down the ureter is

most exceptional. In a certain percentage of cases the renal vein is involved by the disease. Thus Israel encountered this complication 7 times in 43 operations. As may be imagined, involvement of the wall of the vein or its occlusion by clots forms one of the greatest operative complications, for the vein may be torn by manipulations of the kidney, clamps may tear through it and ligatures may slip from it; while the disturbance of the vessels incident to the various stages of the operation may break off a large clot and instantly kill the patient from cardiac or pulmonary embolism. All of these accidents have been encountered. Extension along the lymph channels is singularly slow, although it occurs in the majority of cases; but circulatory metastases are common. The occurrence of metastases cannot be foreseen, nor can their probability at any stage of the disease be denied. Israel cites several cases in which metastatic tumours gave the first evidence of the primary renal disease. In other cases, however, the renal tumour may grow to an enormous size without any metastasis or other extension.

Symptoms.—In childhood the symptom that overshadows all others is the lumbar tumour. Generally speaking, the only symptoms of a renal growth in childhood is the appearance of a rapidly growing lateral abdominal tumour associated with progressive cachexia. Early hematuria, so characteristic of this disease in the adult, is but rare in children, the striking condition being the wasting away of the child coincident with the enormously rapid growth of the abdominal tumour. *The characteristics of the renal tumour,* whether occurring in childhood or in adult life, are the following: At first the growth retains the rounded shape of the kidney itself, so that a small tumour, whether growing in the upper pole and pushing the kidney downward or itself protruding from the lower pole, is difficult to distinguish from a movable kidney, for adhesions to the surrounding tissue are unusual, and the tumour is readily mistaken for the lower end of a normal kidney and slips up and down between the examining fingers in a similar manner. As it grows larger the tumour still retains its rounded outline, so that, although so large as no longer to be mistaken for a normal kidney, it may still be distinguished from a tumour of the spleen or of the liver by the fact that at no place do its rounded sides present the sharp edges usually to be detected in a growth arising from one of the two latter organs.

The position of the renal growth or enlargement, be it hydro-nephrosis, pyonephrosis, or tumour, is quite characteristic. As it enlarges it first projects laterally, effacing the natural curve of the loin, although there is never any marked protrusion of the growth

directly backward unless from edema and circulatory disturbance in the parietes. As the tumour grows it extends forward into the outer segment of the umbilical region, and finally it may come to occupy the whole half of the abdomen, extending down into the false pelvis and up into the epigastrium. In a few instances a renal tumour has been known even to encroach upon the opposite half of the belly. Given a tumour so large as to be visible, the characteristics that mark its renal origin are its rounded outline and its mobility with respiration, which latter, though not so great as the mobility of a hepatic or a splenic tumour, is more marked than that of a pelvic growth. Another characteristic usually to be determined is the presence of the large intestine in front of the tumour. It is a rule—not without numerous exceptions—that as the kidney enlarges it pushes the colon forward between it and the anterior abdominal wall. If the abdominal wall is thin and relaxed, the position of the colon when empty can be determined by rolling it beneath the fingers, while percussion reveals a resonant note over the large intestine inflated either by its own gases or by carbonic-acid gas injected by the surgeon.¹ The characteristic line of resonant large intestine running upward in front of the tumour is found in the majority of renal tumours, never in splenic tumours, and only rarely in tumours of pelvic or hepatic origin; while, on the other hand, tumours growing from any organ other than the kidney habitually have a line of resonance behind instead of in front of them. The surface of the renal growth may be smooth or irregular, hard or elastic, yet the rounded outline without any edge is usually maintained.

In children the disease runs a rapid course, and, according to Kelynaek, the expectation of life lies between eight months and two years from the time the diagnosis is made.

In Adults.—In adults the course of the disease is usually slower than in the child and the development of the symptoms distinctly different.

Hematuria.—The first symptom usually is hematuria. The hematuria of renal tumour has the characteristics of being spontaneous, profuse, and uninfluenced by exercise or jolting. It is often preceded by or associated with pain when by its very profuseness it obstructs the ureter with clots. These clots are passed with more or less soreness or actual renal colic, and when passed they

¹ This injection of carbonic-acid gas may be readily made through a long rectal tube by means of an inverted siphon of any carbonated water. The only necessary precaution is to allow the escape of gas into the tube very slowly and regularly.

are often to be found in the voided urine as elongated narrow bits roughly moulded to the shape of the ureter. It is characteristic of this bleeding, as of every other hemorrhage from the kidney, that the blood is habitually intimately mixed with the urine, so that at no time during the hemorrhage is any blood passed without urine in it or any urine without blood. However, Israel relates a few exceptional instances in which this intermingling did not occur. The same author reports 66 cases, most of them in adults, of which 61 had hemorrhages at one time or another during the disease, while 70% of them noticed a hematuria as the initial symptom. He notes, however, that the bleeding may occur before the tumour has attained palpable dimensions; or it may not be noticed at all until the tumour has attained such a size as to produce a distinct fulness in the loin. While the blood from a renal tumour has not always the characteristics of spontaneity and profuseness these suggestive attributes are usually noted.

Tumour.—The second striking symptom of renal growth in the adult is the presence of tumour. Morris states that tumour is the first symptom in 23% of cases in the adult. Yet if the kidney region is carefully examined by ballottement and by deep bimanual pressure the presence of a tumour can be discovered in a far larger proportion of cases. Thus Israel was able to recognise the enlargement in 62 out of 68 cases; and he especially notes that in 5 of these the growth was extremely small, and could be distinguished only by palpation at the moment when the abdominal wall is relaxed immediately after full inspiration.

Varicocele.—The importance of varicocele as a symptom of renal tumour has been somewhat overestimated on account of the insistence of Legueu that the spermatic vein dilates only when the renal vein becomes compressed by enlarged glands. If this were the case, the presence of an acute varicocele due to tumour of the kidney would be an absolute contra-indication to operation; but several cases cited by Heresco, Israel, and Morris show that acute varicocele may occur without any involvement of vein or glands. Be this as it may, the characteristics of the acute renal varicocele are that it appears suddenly on the right or the left side, dependent upon the situation of the renal tumour, and occurs at a time of life when primary varicocele is never encountered.

Pain.—Pain is not a notable symptom of renal tumour, except in connection with bleeding; yet when a sharp hemorrhage occurs from the kidney in 50% of the cases there will be a sufficiently distinct localized pain or colic to identify the organ from which the bleeding proceeds.

Other Symptoms.—Cancerous cachexia makes its appearance as the disease progresses. Uremia and jaundice, ascites, or anasarca may occur, but they are not often prominent symptoms until the disease is far advanced. *Urinary examination* is only negatively important. The absence of any pus from the urine is particularly suggestive of cancerous hemorrhage. The *disorders of micturition*, so common with other surgical diseases of the kidney, do not seem to occur with tumour, a fact which lends weight to the supposition that they are due rather to involvement of the pelvis and the ureter than to disease of the kidney proper.

It has been observed that generalization of the disease occurs especially late in the rapidly growing sarcomata of childhood.

Diagnosis.—The existence of a malignant growth in the kidney is not suspected unless there is hematuria or tumour in the loin. *When there is tumour* one must first be sure that the tumour is renal in origin. The characteristics of a renal growth which have been detailed above usually are adequate to solve this difficulty. Exceptionally the tumour is so small that it is mistaken for the lower end of a slightly movable kidney, or so large that it has formed connections with the liver or spleen which so modify its shape and position as to mislead the surgeon. In the latter case the tumour is usually inoperable, while in the former the youth or advanced age of the patient will speak against the diagnosis of nephroptosis. A malignant tumour on the posterior wall of the colon is often especially difficult to distinguish from a renal growth. However, such a tumour is never associated with hematuria, and usually causes digestive disturbances.

Having determined that the enlargement belongs to the kidney, the nature of the growth may be inferred from the absence of inflammation. Except in those rare instances of renal growth complicated by stone or by perinephritis, the patient has absolutely clear urine, and shows no signs of urinary septicemia. These facts rule out pyonephrosis and stone. In a few cases gummatous enlargement of the kidney has been mistaken for tumour and thus an unnecessary nephrectomy has been performed. The clinical evidences of syphilitic disease of the kidneys are, however, not sufficiently distinctive to permit of generalization. When the tumour is small and the patient gives a syphilitic history it is proper to put him through a short and sharp course of iodids and mercurial injections in order by this therapeutic test to eliminate the possibility of syphilis.

Another and larger class of renal tumours is that in which *hematuria is the most marked symptom*. When hematuria occurs before the tenth year suspicion naturally points to tumour; when it occurs

between the tenth and the thirty-fifth year the probabilities favour tubercle; while later than this the presumption again refers to tumour. At any age such a hemorrhage may be due to stone, whether vesical or renal; but the associated symptoms, and especially the examination by searcher and X-ray, should distinctly determine this point. Given a hematuria, its renal origin may be determined by the nature of the bleeding (p. 623), by the fact that vesical instrumentation has no effect upon the hemorrhage, and by cystoscopic examination, which will usually demonstrate the flow of blood from one or the other ureter. Renal blood has usually a darker colour than vesical blood.

The side from which the hemorrhage comes is determined by renal colic—if there is any—by the presence of tumour, or, in the absence of these, by the use of the cystoscope, the segregator, and the ureteral catheter. Having determined that there is renal hemorrhage from one kidney, the absence of pus from the urine narrows down the diagnosis to tubercle, cancer, and the so-called idiopathic hematuria, although, exceptionally, stone may enter into consideration. The age of the patient and the size of the tumour will often make the existence of neoplasm morally certain. In doubtful cases investigation of the urine for the tubercle bacillus, the X-ray, and all the aids that physical examination and history afford, should be employed to arrive at a definite conclusion. But in a certain number of instances it will be found impossible to achieve this without an exploratory operation, which is always a proper and usually a safe procedure. The only special preliminary precaution required is that the presence and integrity of the other kidney be insured and that the patient's permission be obtained for removal of the kidney if this seems called for by the conditions described.

Prognosis.—The prognosis of malignant tumours of the kidney is always absolutely bad unless the kidney is removed. In the infant the expectation of life is usually but a few months, always less than two years. In the adult a tumour progresses more slowly, and the expectation of life varies from two to five years. Death usually results from cachexia, hemorrhage, or uremia.

Treatment.—*The treatment of tumour of the kidney is wholly operative*. Unless the whole growth and the whole kidney be removed it is useless to employ any measures other than the desperate alternative of narcotics. Until within the last decade the immediate mortality of nephrectomy for cancer has been so great as to be almost deterrent. Thus Guillet collected the operations up to 1889, and found a mortality of from 60% to 70%. The statistics of Rovsing and Küster, published in 1895, showed that the operative mortality

had fallen to 25%, while more recent figures show even better results. Thus Heresco¹ collected 165 nephrectomies for tumour performed since 1890 with only 32 deaths within a month of the operation—a mortality just under 20%; while Israel lost 9 cases out of 43, a mortality of 20.9%. The statistics of individual operators show the same improvement. Morris lost 2 cases, and has since operated 10 times without a death. Tuffier's mortality has fallen from 65% to 5%. Czerny lost 7 of his first 9 cases, and since then has operated 9 times successfully. The late results of this operation have not kept pace with the decrease in operative mortality. Thus of the 89 survivors in Heresco's table, 62 were followed, and of these 22 died of recurrence within three and a half years, 4 of intercurrent disease, while 36 were known to survive from two months to seven years after the operation. Israel records 29 cases operated upon three years before, of whom 7 died as the result of operation or of intercurrent disease. Of the remaining 22, 14 died of recurrence and 8 (36%) remained cured after more than three years, the longest records extending to ten, twelve, and fourteen years. Yet of Morris's 8 cases all died of recurrence except 1, who was well three months after nephrectomy. Until statistics grow larger they will not yield any accurate results. Yet it is obvious that with increasing accuracy of diagnosis operations will in future be performed earlier in the disease, and the successful extirpation of cancerous kidneys will be more frequent.

Contra-indications.—The only absolute contra-indication to operation is extension of the disease along the renal vein, along the lymphatics, or by metastasis of other organs. The opposite kidney can almost always be depended upon, unless there is diabetes (Israel). Chronic myocarditis has been the cause of the majority of the operative deaths. Five of Israel's 8 deaths resulted from heart failure, while 13 of the 39 deaths reported by Heresco were due to the same cause. Other causes of death are embolism, hemorrhage primarily from rupture of the renal vein or the cava, and secondarily from slipping of ligatures or clamps on a diseased vessel.

¹ Thèse de Paris, 1899.

CHAPTER XLIII

IDIOPATHIC RENAL HEMATURIA AND NEPHRALGIA

IDIOPATHIC OR ESSENTIAL RENAL HEMATURIA

WHEN a hemorrhage occurs in the kidneys its outward sign is hematuria. The only condition in which a serious hemorrhage can occur without hematuria is rupture of the kidney, when, as has already been remarked, the blood effused into the lumbar recess or into the perirenal cavity is of far more importance than the relatively small amount that escapes down the ureter. Apart from this condition, renal hemorrhage is expressed by hematuria. The characteristics of renal hematuria have been described in the preceding chapter, for the hematuria that occurs with tumour of the kidney is at once the most important and the most profuse spontaneous hemorrhage from that organ. Bleeding is also a common symptom of renal stone and renal tuberculosis; and when the kidney bleeds, one of these three conditions—stone, tubercle, or tumour—is usually suspected. But there are a great many other diseases, a few of them surgical in their aspects and most of them medical, in which renal hemorrhage—even profuse renal hemorrhage—may occur. To such profuse hemorrhage from an obscure cause has been given the name of essential or idiopathic renal hematuria.

Etiology.—The causes to which this essential renal hematuria has been attributed may be classified as follows:

1. Hematuria, scurvy, purpura.
2. Drug-poisoning (turpentine, cantharides, etc.).
3. Parasites (e. g., distoma, hematobium—Sondern¹).
4. Acute or chronic febrile diseases (scarlet fever, malaria).
5. Surgical diseases (hydronephrosis, renal mobility).
6. The passage of urinary crystals.
7. Angioneurosis.
8. Chronic nephritis.

It is not necessary to consider all these conditions in detail. Distoma, for instance, is practically never heard of in these latitudes.

¹ Medical News, 1897.