RENAL DECAPSULATION FOR CHRONIC PARENCHYMATOUS NEPHRITIS.*

BY
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In the early years of the present century this subject was "in the air," as a result of the writings of Edebohls of New York. At that time I was able to observe the results of stripping the capsule of the kidney in several cases of chronic nephritis. For some reason or other the results were not promising, and when one came to consider Edebohls's book, many of the cases quoted in the book did not appear to fit in with the conception of chronic nephritis as usually understood in England. At that time, therefore, I came to the conclusion that there was very little promise in stripping the kidneys for chronic nephritis.

In 1916 I had my attention called to this subject by the fact that I was called in to see the children of two doctors suffering from chronic nephritis. The doctors urged me to strip the kidneys. Not having had favourable experience of this measure I could not accede to this request, but I began to look up the recent literature again, and noted that favourable cases had been reported from time to time. I asked some of my medical colleagues to allow me to try the operation once more upon patients at the London Hospital. As a result, Dr. Lewis Smith and Dr. Hadley sent me the first case I report below. He had been ill for a very long time, was completely waterlogged, and medical treatment seemed to offer him no further hope. Soon after the operation I went away in the army and lost sight of the patient. He turned up in 1919 quite restored to health and able to do a full day's work.

I was so impressed with this that I asked Dr. Hadley to send me some more cases; the last three I report below. The results were that one appears already to be well, another improved for a time but relapsed, and shortly afterwards died of tuberculosis of the lungs and uraemia. The fourth lost all his signs and symptoms for a short time, but has since relapsed.

I think these results, taken in conjunction with Sir Thomas Horder's cases, justify an appeal to the profession to reconsider this subject, as it is clear that some cases of chronic nephritis are greatly benefited and may even be cured by the comparatively harmless process of stripping the capsules of both kidneys.

When we have a sufficient number of cases for review I think we shall be able to pick out a type case in which the result is likely to be beneficial. At present it does not seem possible to state which case the operation is going to benefit and which not. Sir Thomas Horder suggests that it is the case without cardio-vascular change that will benefit from the operation, but I do not yet feel convinced of that. Two of my patients had a high blood pressure and two a low blood pressure, and yet the result was quite good in one of the patients with high blood pressure. Of course, in this case, the raised blood pressure may only have been a temporary phenomenon, and it may be that no permanent changes had taken place in the heart or in the blood vessels. Still, I feel that there is something more we have got to find out to enable us to distinguish the type of case suitable for the operation. One favourable case had polyuria, and one had oliguria.

EFFECT OF DECAPSULATION.

How does stripping the capsule have a beneficial action? I cannot believe that it has anything to do with the relief of tension, because when one strips the capsule in these cases the kidney does not seem to be under any tension—that is to say, it does not expand; nor does the capsule appear to be capable of a great resistance to tension. We know how easily the capsule can stretch in cases of acute pyelonephritis. In such cases the kidney will suddenly swell up to two or three times its normal size, and return to the normal size again in a fortnight or less, so that the capsule must be easily distensible. I do not think it can be due to a permanent increase in the blood supply of the

kidney, because the favourable changes seem to appear within a few hours, or at most within a few days.

Personally I believe that by removing the capsule of the kidney we unblock the lymphatics and set up another route for the lymph to flow out of the kidney. The lymphatics of the kidney run up from the ureter under the capsule through the kidney, where they receive the lymph of the kidney substance, and then to the glands in the vascular pedicle of the kidney. The capsule seems to act as a membrane to shut off lymph from the perinephric fatty tissue. Possibly in these cases of chronic nephritis the lymphatics become blocked either by excess of lymph or by fibrinous deposit, and the nephritic poison cannot be drained away from the kidney substance. I have noticed that directly after stripping off the capsule of these kidneys, clear lymph seems to flow out from the kidney sponge almost at once—the kidney seems to ooze lymph. This lymph may then be picked up by the tissue spaces of the perinephric fat and be absorbed by another route.

Technique of Operation.

As regards the details of the operation, I always operate on the kidney with the patient in the face-down position, as recommended by Edebohls. In this position the patient breathes much better, and it is possible to expose both kidneys without moving the patient. There is no need whatever to bring the kidneys up to the surface; I simply cut down to the surface of the kidney, make a snick in the capsule and strip it off with the fingers, and leave it all bunched together round the hilum. I put in a tube for twenty-four hours. In this way I did both kidneys in twenty-three minutes in one patient and twenty-two minutes in another patient. I think it is of advantage to operate as quickly as possible, as one does not want to expose the patient for a long period to an additional kidney poison, such as ether or chloroform. One of the patients was so dyspnoeic that he could not lie down at all. The anaesthetic was administered sitting up, and when he was "under" he was placed in the face-down position and we found his breathing was good enough to proceed. The same evening the patient could lie down in bed and within a few days his dyspnoea had entirely disappeared.

SUMMARY OF CASES.

I give a summary of the four cases in which I have tried this procedure. I hoped to have operated on some more cases before I reported them, but I thought that this was a favourable opportunity to bring forward the work I had already done, in the hopes of encouraging further research on this subject.

CASE I.

Male, aged 14 years. Admitted, June 9th, 1915, to the London Hospital, under the care of Drs. Hadley and Lewis Smith. Has never had scarlet fever. Sudden onset of present illness a few days previously. Complaints of severe headaches and vomits intermittently. General oedema, extreme pallor; oliguria very pronounced, as little as 6 ounces of urine passed in twenty-four hours. Urine: Solid with albumin; specific gravity 1045; casts; no blood. Systolic blood pressure 120 mm. of mercury.

Shortly after admission had fever lasting a week, highest temperature 103° F. After ten weeks in bed on the usual medical treatment he showed evidence of improvement, and went out with very slight oedema of legs and a trace of albumin in the urine.

Relapsed March, 1916, after a chill. Readmitted June 8th, 1916. General oedema and pallor. Urine: Oliguria—8 to 12 oz. a day; solid with albumin. Systolic blood pressure remained at 115 to 120 mm. of mercury. Up to September 27th no improvement at all on usual treatment. No real dyspnoea.

September 28th: Operation under open ether. The right kidney stripped *in situ*. The kidney appeared moderately enlarged, paler than normal; it bled too freely, and was friable. The capsule stripped easily. No evidence of fibrosis. A rubber drain left in for a few days. October 25th: Left kidney stripped. November 1st: Urine $\frac{1}{2}$ albumin. November 14th: Urine $\frac{1}{2}$ albumin. Left hospital improved but by no means cured.

Seen again on May 1st, 1919. Appears to be in perfect health. Able to do a full day's work. Urine: Specific gravity 1010; a trace of albumin. No oedema, no pallor. Blood pressure normal.

When seen again on November 13th, 1919, was perfectly well.

CASE II.

Male, aged 27 years. Admitted to the London Hospital under the care of Dr. Hadley March 4th, 1920. Eight months previously attended Brompton Hospital for tuberculosis of the lungs; discharged improved in October, 1919. November, 1919, submucous resection of nasal septum performed. December, 1919, general oedema and pallor.

On admission general oedema and ascites, dyspnoea, anaemia, and pallor; no fever; frequent vomiting. Urine: Albumin $\frac{1}{2}$ to $\frac{3}{4}$; casts; blood; polyuria, 70 to 90 oz. a day; specific gravity 1011, urea 1.1 per cent. Optic discs blurred. Systolic blood pressure 175 to 180 mm. of mercury. The apex beat was in the nipple line in the fifth space.

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April 4th, 1920: Getting rapidly worse; orthopnoea; oedema of lungs; cannot lie down at all, and has to be nursed in a chair. On April 12th I persuaded Dr. Whyte, a resident, to administer ether to the patient in the upright position. As soon as the patient was "under" he was placed on his face over an air-bag, in which position he was able to breathe sufficiently well for me to proceed with the operation. I stripped both kidneys in twenty-four minutes from the first cut to the last stitch. There was advanced oedema of the perirenal fat. The capsule was thin and friable, and very adherent to the kidney substance, and stripped badly. There was no shock, and the same night the patient was able to sleep quietly lying on his back, propped up by pillows. In a few days the oedema had much diminished and the dyspnoea had disappeared. The improvement was only maintained for a few weeks, and then the symptoms returned again, though the dyspnoea did not become so bad.

He went to the infirmary, where he died of phthisis and uraemia on September 6th, 1920. There was no *post-mortem* examination.

CASE III.

Male, aged 18 years. Admitted to the London Hospital under the care of Dr. Hadley, June, 1920, with a history of six months' general oedema and pallor, and headaches.

On admission, general oedema, pallor. Urine: Albumin $\frac{1}{2}$; casts; polyuria, as much as 90 oz. in twenty-four hours. Systolic blood pressure 170 to 180 mm. of mercury.

Operation July 22nd, 1920. Dr. Whyte administered open ether. I stripped the right kidney in thirteen minutes, the left in nine minutes. Capsule stripped easily. Kidneys enlarged, pale and mottled and fatty. No oedema of perirenal fat. Lymph oozed out of kidney on stripping. Portion removed for section.

The patient improved at once. In October, 1920, he was able to go about and looked upon himself as well. There is, however, still a little albuminuria, and the legs swell very slightly at times.

CASE IV.

Male, aged 20 years. Admitted to the London Hospital July, 1920, under Dr. Hadley, with a history of general oedema since six weeks before admission.

On admission, general oedema, pallor not marked; no vomiting; no fever; no headache. Urine: Solid with albumin; specific gravity 1020-1025; oliguria, 18 to 32 oz. in twenty-four hours. Systolic blood pressure 130 mm. of mercury. No improvement after five weeks' medical treatment.

Operation on July 22nd, 1920. Dr. Probyn Williams administered ether. Each kidney stripped in eleven minutes. Fluid poured out of perirenal fat. Capsule thickened, stripped badly, and tore pieces of kidney out. Marked fibrosis. Kidneys not enlarged; capsule pale because of the oedema of capsule itself; the cortex appeared to show areas of fatty degenerations, but was not diffusely and completely degenerated as in the other cases.

Three weeks later the oedema had disappeared, the urine had increased to normal amount, and the albumin had diminished. The patient was getting up in September, but then got chilled when sitting about the ward, and relapsed.

RECONSTRUCTIVE ANEURYSMORRHAPHY IN THE THIRD PART OF THE AXILLARY ARTERY.

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A MAN, aged 25, wounded in March, 1918, was, after three months in hospital and *dépôt*, returned to his unit. He was demobilized in 1919, and resumed his occupation as a baker. At that period he had, at most, occasional aching in the axilla. In February, 1920, he noticed a swelling in the armpit which increased slowly in size; it was accompanied by a feeling of heaviness in the left upper limb after use. After a short time he began to experience pain radiating down to the index and middle fingers and to lose power in the index. After six months' delay he was admitted to the Manor House Hospital.

It was seen that the patient had sustained a through-and-through bullet wound of the left axilla. A fine scar above the lower margin of the pectoralis major one inch and a half from its insertion indicated the entry, and a slightly larger one a little outside the inferior angle of the scapula the exit. In the line of the artery was an aneurysm the size of a large walnut, its upper third lying under cover of the anterior axillary fold. The expansion was forcible, but not great in extent; the tumour could not be emptied by pressure owing to the pain referred to the index. There was no venous hum. The adjacent tissues were not thickened—the tumour was quite discrete—very little inflammation or effusion had evidently accom-

panied the wound. There was slightly impaired sensation of the ends of the index and middle fingers; flexion of the index was very weak. The peripheral circulation of the limb did not differ from that on the other side.

Operation.

Open ether was administered by Dr. Bookey, and Mr. A. E. Woodall, F.R.C.S. (resident surgeon), assisted.

The arm was fully abducted, and an incision four inches long was made in the line of the artery, its centre over the aneurysm, and its upper end curving inwards towards the chest wall. The deep fascia was divided to the full extent of the wound, and the axillary artery was exposed one inch above the upper limit of the aneurysm; the minimum amount of dissection was done to permit the application of a Crile's artery clamp at this spot. The vessel was then treated similarly below the sac; the two

clamps lay above the anterior circumflex and the profunda artery respectively. The aneurysm was next defined by sharp dissection. Only at the lower and inner part was there any difficulty; elsewhere the tumour required only a few touches of the knife to free it. When the vein had been separated at the lower and inner part it was seen that the inner head of the median was bound to the aneurysm by dense fibrous tissue; when this was divided, however, the nerve showed no break of continuity. The sac was then defined up to its point of origin from the artery, to which it was moderately adherent up to its neck, and then opened by a longitudinal incision. At once it became apparent that the collaterals needed control. The branches arising between the clamps were quickly defined by blunt dissection, the flow from the sac being checked by pressure, and a clamp placed to include them; very slight pressure secured complete haemostasis. The

opening from the artery was oval ($\frac{1}{4}$ in. by $\frac{1}{2}$ in.); at the junction of vessel and sac there was a ring of almost cartilaginous density, as became evident later on an attempt to pass the needle at this spot. The sac, which was free from clot, had the thickness of blotting paper; its interior looked smooth and shiny everywhere. Two branches had been clamped—the posterior circumflex just above the level of the opening, and the anterior at its lowest level, each at a part of the artery opposite to the opening into the aneurysm. A test was made to determine the relative importance of these in the collateral circulation. With the posterior vessel clamped the flow from the anterior was the feeblest possible trickle. That from the posterior was considerable, steady, and in quantity about equal to that from a radial vein.

It was estimated that to suture the edges of the opening, allowing for a fair depth of apposition of the intima, would diminish the diameter of the vessel, compared with the part above, to about two-thirds, which seemed adequate. The sac was therefore cut away, leaving only a thin rim round the neck. The whole area was kept moist by normal saline. With a non-cutting fine needle a continuous suture was introduced, beginning above and finishing below the opening, passing through the arterial wall immediately adjoining the thick ring; the stitching was mattress in type, every other stitch returned slightly to give a locking effect. The material was very fine silk.

The clamp on the collaterals was then released and fairly free oozing occurred, the fineness of the silk having prevented any but the slightest tension in approximation. The clamp was again tightened and a stronger silk suture was introduced, the needle traversing the artery wall on either side and returning similarly through the rim of sac, thus embracing the hard ring and securing apposition of