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A Contribution to the Study of Some Forms of Albuminuria associated with Kidney Tension and their Treatment

BY

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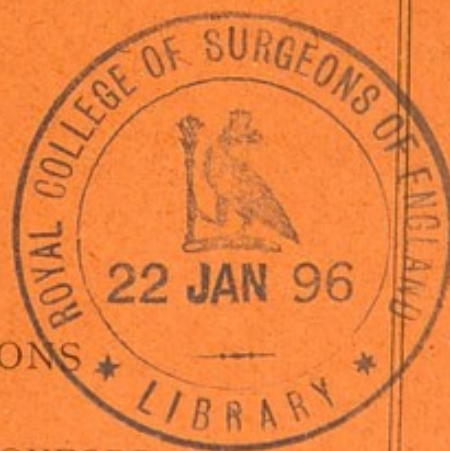
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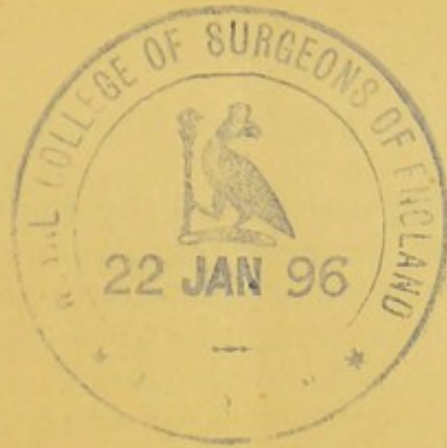
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A CONTRIBUTION
TO THE
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By REGINALD HARRISON, F.R.C.S.ENG.

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I THINK the assertion may be made that if certain organs of the body occupied other positions than those where nature has placed them a variety of morbid conditions to which they are respectively liable would now receive somewhat different treatment from that which has hitherto been adopted. This is a consideration which naturally presents itself to us with greater force at the present time, when by the aid of antiseptic surgery all parts of the body are being brought within reach of surgical exploration and treatment with a degree of certainty and safety far beyond what the most sanguine could ever have anticipated. The most recent advances of this kind are illustrated by what has been done in the case of the brain and spinal cord.

Of other complex organs probably the eye furnishes us with the best example of what surgery is able to accomplish in removing obstacles and impediments to vision and in combating the disastrous effects of intra-ocular tension and the degenerations arising therefrom. For these advances are we not in a measure indebted to the accessi-

bility of this organ both so far as relates to inspection and treatment?

Amongst other organs of the body the kidneys furnish us with examples of the most complex and delicate forms of structural development, as we might expect, considering the elaborate kind of excretion in which they are engaged. Like the eyes they are double organs, with sympathies existing between them by which impressions and actions are reflected from the one to the other. Relief afforded to one kidney, for instance, usually assists the other, whilst when the excretory power on one side is suspended or arrested the opposite organ speedily takes up the whole of this work. The surgery of the kidney, even in its present stage, may be regarded as one of the most important advances of the present century. What has been done for renal stone, growth, distensions with pus and urine, abnormal mobility, and other painful affections of this part is sufficient to indicate this. Nor is it at all likely that we have here reached limits which cannot be extended with advantage. I allude more particularly to the effects of tension arising out of excessive excretory efforts on the part of these organs and resulting in congestion and inflammation, which, in some instances, are probably more disastrous and far-reaching in their local consequences than those surgical conditions of the kidney which have been briefly noted.

I have referred to the eye as illustrating what surgery has accomplished in reference to tension and certain ill-effects arising out of it. Here one of the most disastrous effects of pressure is seen in that condition to which the term "glaucoma" is applied. The recognition of the true pathology of this affection and the adoption of mechanical treatment by iridectomy or an allied operation for its relief at once resulted in the saving of a vast number of eyes which previously to this discovery would have been lost.

I purpose considering in this paper some points connected with tension of the kidney relative to albuminuria and its treatment by surgical means. In the first place I would draw attention very briefly to the structural arrangement of the kidney. It may be said to be a highly organised gland surrounded by a thin, though fibrous, capsule, and divided up into departments or sections by barriers of a similar tissue. It is capable of distension to

almost any degree by a gradual force acting from within, as, for instance, the retrograde pressure proceeding from strictures which oppose the escape of its excretion, but from the nature of its structural constituents is incapable of adapting itself to sudden emergencies of this kind. Before proceeding to notice some results which have followed certain operations I have practised upon the kidney, and the deductions which these seemed to warrant, there are two questions I should like to raise. In the first place, is there evidence to warrant a conclusion that the exudation of albumin by the kidneys is the result of structural damage directly occasioned, as might occur as the result of nephritis or renal congestion? And in the second place, are the degenerative changes subsequently noticed in the chronic forms of these affections consequent upon the damage thus inflicted on the organ?

Possibly my surgical experience has led me to exaggerate the disastrous effects of tension on the tissues of the body, though for the most part it has been gained in regions which may be said to be less highly organised and less delicate than the excreting apparatus of the kidney. It certainly seems somewhat remarkable at the present day that so many different views exist, or have been put forward, explanatory of the process by which albumin exudes so as to form a variable part of the urinary excretion. These various theories I shall not attempt to discuss in detail or to reconcile. That albumin is frequently found in the urine under conditions necessitating high vascular tension, and where the excretory strain on the organ is considerable, as in the acute form of scarlatinal nephritis, cannot, I think, be denied. Referring to the latter point, Sir T. Grainger Stewart observes:¹ "Albuminuria is very often due to changes of an inflammatory character in the epithelium of the tubules and in the stroma of the organ, and in a very large proportion of the cases in which it occurs in practice it is dependent upon this cause." That the changes which take place as a consequence of nephritis by the substitution of a lower for a higher excretory tissue, as we see in the cirrhotic forms of Bright's disease, are due to the damage the organs received in the active and initial stage of

¹ Lectures on Albuminuria, 1888.

congestion seems by no means improbable. Sir Thomas Watson, in his Lectures, observed that "the stress or congestion which befalls the kidney in cases of febrile anasarca may set on foot a morbid process that long works silently and unobserved, but at last declares its operation by symptoms." We may perhaps argue that by the organisation of the products of inflammation and congestion, and by the repairs the latter may render necessary, an explanation may be found for some of the structural changes observed in connection with certain chronic forms of nephritis. Nor can the fact be entirely discarded in connection with this subject that the medicinal treatment of albuminuria, so far as relates to the altered state of the urine, cannot be regarded as entirely satisfactory or progressive. Commenting upon this point, Sir T. Grainger Stewart observes: "Sir William Roberts and Professor Rosenstein have come to the same general conclusion as Dr. Saundby as regards the inefficacy of drugs in diminishing albuminuria, and I have satisfied myself by a long series of careful observations that we have no right to credit any drug with the power of directly diminishing the discharge of albumin."

I will now proceed to the more practical part of the subject. This, though of a somewhat fragmentary character, presents points of interest which seem worthy of consideration, if not of further application.

Since the introduction of the more general adoption of direct exploration of the kidney through an incision from the loin or otherwise a certain proportion of cases have been met with where it failed to reveal any obvious cause for the symptom or symptoms which led to the adoption of the proceeding. It has, however, been frequently noticed that such cases were often completely and permanently cured by what was done. Amongst others Professor Annandale was one of the first to draw attention to this fact. A few examples of this kind, occurring at varying intervals during a somewhat lengthened experience of my own, have led me to believe that there may be other explanations for this than those hitherto offered. I regret that only scanty notes were kept at the time of some of my cases, arising from the fact that, in the absence of what was sought for, the existing conditions were insufficiently appreciated, whilst the results appeared either unexplainable or were referred to local states, such as the accidental fixation of a loose kid-

ney, the division of a disordered nerve, or the moral effects of an operation. Further, I have frequently drawn attention at the time of exploration to the varying states as to tension the kidney presented in different individuals. In one case it would resemble that of a ripe plum, whilst in another the organ was flaccid and unresisting on pressure with the finger. Yet these differences were not always explainable.

In the early days of renal surgery I cut down on the kidney from the loin in a youth, age 18, expecting to find a suppuration either within or around the organ. The patient was suspected to have had scarlet fever three weeks before this was done and had since suffered from intense lumbar pain. He had had a slight rash, some desquamation, a sore throat, and albuminous urine with casts. I undertook the operation with some hesitation and limited my incision so as just to enable me to put my finger on the kidney. It felt so tense that I extended my incision and opened it with confidence, expecting to find matter. This was not the case, and I closed the wound with the feeling that I had made an error in diagnosis. There was a full discharge of blood and urine from the wound for some days. The latter was lightly plugged with lint and in the course of ten days or so healed soundly. After the incision was made the excretion of urine became far more abundant, and the albumin gradually and completely disappeared.

In 1887 I operated upon a man, aged 50 years, who by nature of his occupation spent a large amount of his time underground. Occasionally he suffered from hæmaturia in conjunction with colicky pains about the groins, and I came to the conclusion that he was suffering from renal calculus. As, however, the symptoms were neither urgent nor confined to one kidney the consideration of operation was postponed. In the course of a few months after I first saw him, and whilst he was continuing his work underground, the urine became largely and constantly albuminous and there was some pain referred to the right loin. I took him into the Royal Infirmary at Liverpool, where I was residing, and explored the right kidney. The organ was found to be enlarged and tense. An incision of an inch in length was made through the cortex, and the pelvis was explored with the finger, but after careful examination no stone could be found. There was a considerable dis-

charge of blood and urine, which continued for a fortnight or so, a drainage-tube being retained in the wound ; on the withdrawal of the latter healing followed, and the urine became quite normal. I heard some time afterwards that the patient remained in excellent health and was able to resume his ordinary occupation.

The only other case I shall refer to is one that came under my observation in 1893. It was that of a woman, age 44 years, who had suffered from slight hæmaturia at times for a year previously ; occasionally the urine was albuminous. Shortly after I saw her she had a severe attack of influenza, which was followed by an aggravation of her renal symptoms. She complained of pain on pressure over the left kidney, and the albumin not only increased in quantity but was constantly present in the urine. As she believed she had passed a small calculus some months previously, I thought it a proper case for exploration, and this was accordingly made. The late Mr. Durham saw the patient in consultation with me. The left kidney was found to be swollen and very tense. It was opened and explored with the finger, but no calculus could be discovered. There was a free drain of urine with some blood, which continued for about a fortnight, when the wound closed. The patient is now quite well and the urine normal.

Looking at the three cases I have briefly related, I believe that the first was scarlatinal nephritis, the second nephritis from exposure to cold and damp, and the last subacute nephritis following most probably upon influenza. Amongst other features each case was characterised by the presence of albumin in the urine, which I am inclined to attribute to inflammation or its immediate effects. We do not, I think, sufficiently recognise the intense degree of vascular and tubular infarction that attends some grades of nephritis. Some years ago I saw a girl, aged 7 years, who was suffering from scarlet fever of a malignant type. Almost complete suppression of urine was the leading feature in the case, and death took place in four days from the commencement of the illness. At the necropsy the kidneys were found to be so highly congested that I was not surprised at their being unable to excrete. I remember the passing impression arising in my mind that an incision into them appeared to be the only means that might have been effectual in restoring their function. In a recent paper

on "Scarlatinal Nephritis and its Varieties," Dr. Meadows Turner² remarks :—"Out of the 5,109 cases fifty-five died with nephritis either alone or complicated with other lesions. This number includes those who presented some symptoms during life, as well as some others in whom *post-mortem* extensive disorganisation of the kidney was found, though during life there were no sufficient symptoms for diagnosing such a complication."

That inflammation attended with exudation, but not necessarily with suppuration, is sufficient to destroy the functional power of an organ is evidenced in the case of the testes, where ability to procreate is sometimes lost by synchronous or successive attacks of epididymitis on the two sides. The late Mr. Henry Smith, in connection with this subject, not only showed that the progress of this disease might be curtailed and pain removed, but that the function of the organ might be preserved by a limited division of the investing tunic. In this way, he urged, the disastrous effects of tension on the organ might be averted. I have frequently availed myself of this practice with advantage.

A few words may be added as to the nature of the operation which might be appropriate in cases of suspected kidney tension and as to the time and occasion of its application. It may be briefly stated as being that usually adopted for the exploration of the kidney with the finger by means of a small transverse lumbar incision. The surgeon will then be able to judge from the feel of the organ as to whether it is desirable to open it. If the indications are not clear the wound on being closed by sutures usually heals by first intention. At all events, no risk is incurred. In the second place, the operation should, of course, be reserved for cases where there is evidence that the recuperative power of kidneys suffering from nephritis is overweighted. Where after an attack of this kind the albumin is not disappearing from the urine, and there is a prospect, unless some relief is found, of permanently damaged kidneys resulting, then a trial of this expedient may be undertaken without adding to the gravity of the circumstances. In what time all traces of a nephritis, either acute or subacute, should have disappeared from

² "Guy's Hospital Reports," 1894.

the urine before the surgeon is called in is rather a point for the physician to determine. That many cases of nephritis with high tension and subsequent structural deterioration must necessarily be attended with cardiac hypertrophy or enlarged powers of circulation is at once obvious. Diminished capacity to excrete can only be compensated for by increase in the rapidity of the blood current. In the restoration of function we have the only safeguard against the development of this complication.

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