of giving reliable results even in a limited material. It is the method of the practitioner, and without it no rational therapy could have been developed. For even the largest coarse statistics, which answer merely the question of the course of a disease with and without treatment, fail and are deceptive when the conditions are at all complicated. For a decision on surface therapeutic action (such, for instance, as the effect of opening an abscess) the method of coarse statistics may indeed be used, but is as a rule entirely superfluous, because the method of fine statistics which we have indicated—that is to say, the observation of a series of cases treated according to the method in question—answers such questions at sight, and therefore much more quickly and with less trouble. To convince the reader by such a method of fine statistics there is no need to publish tables; it is not only sufficient, but imperative, to do what Dr. Batty Shaw has left undone—to give detailed and critically stated accounts of cases, out of which the reader can himself work out the fine statistics, exactly as he is in the habit of doing in his own practice. The difficulty of obtaining any firm basis for a therapeutic judgement from such published cases is that these often do not correspond to the standards which any critical reader imposes on himself, and that the standards vary largely according to the medical culture of the author.

On this is based the statement which I have often applied especially to the tuberculin question—that therapeutic conviction, in contrast to almost all other human knowledge, can hardly be transmitted, but is almost exclusively attainable by personal observation. In medicine that alone stands on a firm basis which has been clearly seen and experienced personally.

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SOME OBSERVATIONS ON TUBERCULOSIS OF THE KIDNEY,

WITH ILLUSTRATIVE CASES.*

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ALTHOUGH the pathology of tuberculosis of the kidney is now fairly well understood, the subject is still a difficult one, as it is only by careful cystoscopic and bacteriological examination that satisfactory results can be obtained. In straightforward cases it is comparatively easy to come to an accurate diagnosis; but others are met with in which the symptoms and cystoscopic appearances are so indefinite that it is a matter of extreme difficulty to determine accurately the condition of the kidneys.

While tubercle of the kidney is not a purely primary disease, and there is always some other focus of tubercle in the body, in the bulk of cases this initial lesion is trivial, and the renal infection is by far the most serious condition. If it can be eradicated the patients are usually able themselves to overcome the initial focus.

It has been shown that at a very early stage of renal infection changes are manifest round the mouth of the corresponding ureter, and that before long definite deposits of tubercle are to be seen there. Gradually other parts of the bladder become infected, until finally there may be widespread tuberculous ulceration. The early changes round the mouth of the ureter are very characteristic of renal tubercle, and it is generally held that they are a certain sign of disease of the kidney; and, conversely, that if the mouth of the ureter is healthy the corresponding kidney is also healthy. This is obviously an observation the truth of which is of very great importance, but I will refer later to some exceptions to this rule.

It has also been shown pretty conclusively that if a tuberculous kidney is removed the tuberculous disease of the bladder will gradually heal, although it may be a considerable time before this occurs.

Tuberculous disease of the kidney is probably unilateral in the bulk of cases at the commencement, and may remain so up to a comparatively late date. On the other hand, a few cases occur in which the infection can be shown to be bilateral at what appears to be an early stage of the disease.

SYMPTOMS.

It is very important to recognize that the early and sometimes even the later symptoms are often entirely referred to the bladder. Probably the commonest initial symptom is frequency of micturition associated with a certain degree of pyuria. Frequency continuing with absolutely no pyuria is almost certainly due to some other cause. The frequency is soon associated with pain before, after, or during micturition. Haemorrhage occasionally occurs as an initial symptom, and may be the first thing to attract the patient's attention. These symptoms may continue, now better, now worse, over a very long period without any renal pain, tenderness, or rigidity, even although the disease has commenced in the kidney and is gradually progressing.

Several cases have been met with in which both kidneys were affected, as shown by ureteral catheterization, though the symptoms were entirely referable to the bladder, and there was nothing in the kidney regions to indicate disease. The following case is quoted as an illustration:

CASE I.

A man, aged 27, gave a history of severe frequency and pain, with occasional haemorrhage, extending over three or four years. He was only able to hold water about half an hour, and was wasted and obviously very ill. He stated that he never remembered having any pain in the renal regions, and on examination nothing could be detected beyond possibly a slight fullness in the left lumbar region. A cystoscopic examination of the bladder was made under chloroform with some difficulty, owing to its small capacity. The whole bladder was covered by a white caseous-looking deposit, and it was not possible to make out any landmarks. Tubercle bacilli could not be found in the urine. Ten days later he died suddenly.

At the post-mortem examination it was found that the bladder was completely covered by caseous tubercle. The right kidney was of very small size and converted into two or three cavities. The kidney substance was quite gone and the ureter only a fibrous cord. The left kidney was enlarged, but fixed high up under the ribs, which probably explained it not being more definitely palpable. Its pelvis was dilated and lined by caseous tubercle, and there was only a thin rind of kidney substance remaining.

I quote this case as an extreme example to show that even in advanced cases there may be no direct renal symptoms, and that their absence is no indication that the kidneys are not affected. A certain number of cases give rise to renal pain and tumour formation, but they are much less liable to cause difficulty in diagnosis. Suter¹ found that, out of 60 cases, 53 came on account of bladder symptoms alone, and Braach² gives the proportion as 85 per cent.

The next case is an ordinary straightforward instance of tuberculosis of the kidney.

CASE II.

A boy, aged 14, had a history of frequency of micturition of six months' duration. There was some pyuria and tubercle bacilli in the urine, but no renal pain, and nothing to be detected in the lumbar regions. On cystoscopic examination the bladder was found to be of good capacity, but definite tuberculous deposits were seen round the mouth of the right ureter. The left ureter appeared quite normal, and the rest of the bladder was healthy.

The right kidney was removed and found to contain a broken-down caseous area which had irrupted into the pelvis. The patient made a good recovery, and eighteen months later was perfectly well in every way. Unfortunately he has since been lost sight of.

This is the type of case most frequently recorded, and many of the writers give the impression that a diseased ureter mouth on one side and a healthy one on the other is invariable, and that unless that is found the case is unsuitable for operation. As Braach² and Thomson Walker³ have pointed out, considerable variation in the appearance of the ureters occurs, and it may be impossible to locate the diseased side by inspection alone. The following case is illustrative of this:

CASE III.

A man, aged 21, with a history of frequency of micturition for nine months, accompanied by severe attacks of pain. There was no renal pain, tenderness, or rigidity, but there was marked pyuria, and tubercle bacilli and a coliform organism were present.

* Read before the Glasgow Medico-Chirurgical Society.

The cystoscopic examination was made under chloroform on account of pain. The bladder as a whole was red and congested, and the prostate bulged into it markedly, especially on the left side. The right ureter looked swollen and thickened, and there were ulcerated areas round it. The left ureter could not be seen. There were some tuberculous deposits on the superior surface. The right ureter could not be catheterized.

He was put on tuberculin, urinary antiseptics, and went to the country. His symptoms improved to a considerable extent, and he was again examined with the cystoscope some months later, when very much the same appearances were found, except that the left ureter could now be seen. While not normal, it looked the healthier of the two.

Eighteen months later he developed pyelitis of his left kidney. Remembering the diseased appearance of his right ureter, one felt afraid that both kidneys were now affected. He had lost weight considerably, and was looking very ill. On cystoscopic examination, the bladder as a whole appeared improved and the prostate much smaller. The left ureter was markedly oedematous and affected. The right was swollen and had still several ulcerated areas round it. I was now able to catheterize it, and got a normal-looking urine of good specific gravity, containing a normal percentage of urea and no pus or tubercle bacilli.

I consequently removed his left kidney, which was very extensively diseased, and he made a very good recovery. Four weeks after operation he was holding his water for four hours. Now, close on two years later, he is absolutely well. His urine is normal, no tubercle bacilli are to be found, and he can hold his urine five to six hours.

This case illustrates the fact that, although a ureteric orifice in a tuberculous bladder may appear thickened and the mucous membrane round it inflamed and even ulcerated, yet the corresponding kidney is not necessarily tuberculous, and the appearance may be entirely due to septic infection of the bladder. If this fact be not kept in mind cases may be rejected which might have done well by operation; the value of ureteral catheterization in these cases is self-evident. The rapidity with which the frequency of micturition improved in this case is striking.

The next case illustrates how an infection by *Bacillus coli* may be superadded to and mask a tuberculous condition.

CASE IV.

A woman, aged 21, had been under treatment for *B. coli* infection for fully a year before being seen. She suffered from severe frequency of micturition, but had no renal pain. *B. coli* was present in the urine, but no tubercle bacilli found. Cystoscopic examination showed the left ureter to be markedly diseased and drawn out of position, in the manner Fenwick⁴ has described, and pus could be seen coming from it. The right appeared fairly healthy, and catheterization gave a good collection of urine of good specific gravity, containing a normal amount of urea, but with *B. coli* and some pus present. The left ureter, felt per vaginam, was markedly thickened. I exposed the left kidney and opened it, but it was so extensively diseased that I removed it. It was found on examination to be tuberculous. The patient made a good recovery, and is now, a year later, in much better health, but she is still troubled with frequency of micturition to a certain extent.

The next case is interesting on account of its cystoscopic appearances.

CASE V.

A man, aged 22, with a history of frequency of six months' duration, and recently of some pain in the left renal region. The left kidney could not be palpated, but there was some rigidity on that side. Tubercle bacilli were present in the urine. On cystoscopic examination a patch of tuberculous deposit was seen close to the right ureter, but the mouth itself appeared healthy. The left ureter showed almost no departure from the normal except slight hyperaemia. Catheterization of it gave pale urine of low specific gravity, containing large numbers of tubercle bacilli. The right gave concentrated urine of good specific gravity with normal urea content, and no tubercle bacilli were found.

I exposed the left kidney, which externally looked quite normal, but its ureter was greatly thickened. The kidney and 3 in. of the ureter were accordingly removed, and when the kidney was split open it was seen to be markedly tuberculous. The patient made a good recovery. He is now, nine months later, progressing favourably; he has gained 2 st. in weight, and the frequency of micturition is gradually diminishing.

In this case the ureter on the affected side showed so little departure from the normal that without catheterization it would have been almost impossible to say the kidney was affected.

It is possible to catheterize most cases, if not at the first attempt, then at a later one after treatment of the bladder. Recently I had a case in which it was found quite impossible on account of oedematous folds and granulations at the base of the bladder which could not be got rid of. I finally performed nephrectomy on the left side, removing a markedly tuberculous kidney. Here I relied on the

thickening of the left ureter felt per vaginam, the appearance in the bladder and the result of an indigo-carline injection. The patient made a good recovery from the operation, but it is too soon yet to say anything very definite.

I would like to refer to the case of a woman which I recorded in 1910⁵ who came with pus and tubercle bacilli in the urine and an enlarged right kidney. It was found to be her only functioning kidney, the other having probably been destroyed. She was put on tuberculin and is now, four years later, practically free from symptoms and feeling very well.

DIAGNOSIS.

It is important not to be misled by absence of renal pain as this may never occur. In any patient with frequency and pyuria which does not clear up or tends to recur the urine ought to be carefully searched for organisms and the bladder examined with the cystoscope. While in many cases the cystoscopic appearances are fairly typical, the appearance of the ureters may be very indefinite. The mouth of the ureter may appear swollen and even ulcerated, and yet the corresponding kidney may be healthy, and on the other hand it may only show slight hyperaemia and the kidney may be markedly diseased.

If one ureter is frankly tuberculous I catheterize the other one only, but if the condition seems doubtful I catheterize both. Thickening of the ureter felt per vaginam or rectum, as pointed out by Fenwick,⁶ is invariably a sign of a diseased kidney.

The catheterized urines should be carefully examined for pus, bacilli, and the percentage of urea. The specific gravity has been found normal or high in healthy urines and distinctly low where the kidney was extensively affected, and in the absence of more accurate tests this may be useful, but more information is required as to its practical value.

TREATMENT.

Wilbolz⁷ reports the study of 316 cases of renal tubercle treated in Switzerland by means other than surgical. Of this number, 70 per cent. died within five years and only 10 per cent. were alive more than five years after the commencement of the disease. In only 5 per cent. had all symptoms ceased after five years, and only one case was well in every respect. Surgical treatment, while not always giving a good result, can claim a much larger number of absolute cures. Braach⁸ records that of 203 cases in which nephrectomy was done at the Mayos' Clinic, the operative mortality was 2.9 per cent. Omitting recent cases and those that could not be traced, 142 remained to be considered. Of these, 93, or 69 per cent., were perfectly well or greatly improved more than a year after operation, and 18, or 13 per cent., had experienced little or no improvement in the vesical symptoms. Most of these latter were cases in which the infection had been present for two years or more before operation.

If one is satisfied that the disease is in the kidney, and that the other one is healthy, then I am sure the only satisfactory treatment is nephrectomy, and the earlier it is done the more satisfactory is the result likely to be.

As regards the actual operation, I have always performed lumbar nephrectomy, and have not removed more than 2 to 3 in. of the ureter. In dividing the ureter I inject with pure carbolic, as advised by Mayo, ligature in two places and cut between; the stump is then dropped into the wound. In two cases a sinus persisted for two months and then gradually closed.

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AMONG the subjects to be discussed at the International Dairy Congress at Bern (June 8th to 10th) are the milk supply of large towns, the utilization of dairy by-products, inspection of milk, and the question whether systematic breeding of cows with a view to the largest production of milk is detrimental to their health. Much of the work of the Congress will be concerned with cheese. Particulars can be obtained from the Secretary of the British Dairy Farmers' Association, 28, Russell Square, London, W.C.