MEYER (W.)

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THE EARLY DIAGNOSIS OF TUBERCULOSIS OF THE KIDNEY.

BY

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IN speaking of primary renal tuberculosis I do not, of course, consider the acute invasion of multiple miliary tubercles as it appears in the course of general miliary tuberculosis. What I intend to discuss is the chronic form of tubercular inflammation which primarily affects one kidney alone.

Let me first emphasize the clinical facts which, although still opposed by a few authors, seem to be well established, viz., that this form of tubercular inflammation is always at first unilateral and descends from the one kidney into the bladder (infecting on its way the ureter), and involves in the beginning one side of that organ only; and that considerable time always elapses before the prostate, with the rest of the genital system and the other kidney, becomes affected. In many instances of commencing renal tuberculosis this one organ alone seems to be attacked by the deleterious inroads of the bacillus Kochii, while the lungs, intestinal tract, bones, and joints are absolutely healthy.

[1] Read before the Medical Society of the State of New York at its ninetieth annual meeting, January 29, 1896.

Thus it is evident that if we succeed in recognizing and removing the primary local manifestations of a most deadly general disease, it should be considered a triumph of surgical diagnostics and therapy.

With reference to the etiology, the question naturally first presents itself, How does it occur that a solitary tuberculosis develops in one kidney, or, more strictly speaking, in one of the papillæ of the kidney where the primary focus is always found? The answer is, by embolism. Just as we explain the primary tuberculous inflammation, say, of one of the condyles of the femur or of the tibia by assuming an arrest in a terminal branch of the nutrient artery of the respective bone of one or more tubercle bacilli, so the appearance of a primary renal tuberculosis must also be based on that generally admitted pathological fact, namely, that tubercle bacilli are carried with the blood into the different organs. At one time the bacilli enter the right, at another time the left, kidney.

Many may think that in order to have a kidney infected by the entrance of tubercle bacilli a latent tuberculous deposit must exist somewhere in the patient's body; but this is by no means necessary. We all know that every one of us is exposed to the great danger of inhaling—oftener of swallowing—tubercle bacilli. Unluckily this is still a fact, in spite of continuously improved prophylactic and hygienic measures. If the bacilli be swallowed, infection of the intestinal tract does not follow as a necessary consequence. The in-

fecting micro-organism may be absorbed with the chyle and thus enter the general circulation.

Infection by embolism can take place in any part of the body. No doubt it is a rather rare occurrence to have the bacilli carried into one of the kidneys alone, yet it does occur and certainly oftener than has been heretofore accepted by the profession at large. In the majority of cases Koch's bacillus will settle and find a fertile soil in which to grow and multiply—in the kidneys of those individuals only who inherit the tendency to tuberculosis. A healthy organism—by virtue of the vital energy of each cell-body—will successfully oppose the deleterious inroads of the germ, and it is discharged with the natural excretions.

I wish to mention, in passing, the so-called "ascending" tuberculous inflammation as another etiological explanation of tuberculosis of the genito-urinary system. That the prostate and epididymis in rare instances may be primarily invaded by tubercle bacilli which circulate with the blood also must be admitted; but we have not only the right to suspect, nay, since Schuchardt's[1] most interesting observations, we have in our hands proof of the assumption that tubercle bacilli quite frequently enter the urethra with the gonococci, and may thus primarily infect the prostate or epididymis. By a similar route the female bladder also is subject to the same infection. On the other hand, the prostate or epididymis previously attacked by gonorrhœa in one of

[1] *Archiv f. klin. Chirurgie*, Vol. 44, 2; and *Centralbl. f. Chirurgie*, 1892, No. 47.

tuberculous parentage will often be the so-called "*locus minoris resistentiæ*" to tubercle bacilli carried by the blood. It is a matter of fact that gonorrhœa very frequently precedes primary tuberculosis of the prostate or epididymis.

As soon as the tubercle bacillus has gained a foothold in one of the kidneys destruction begins. A tubercle is formed quietly, without local or general manifestations; slowly it undergoes cheesy degeneration and destroys the renal papilla in which it had developed. Up to this time the individual does not feel or exhibit morbid symptoms. Polyuria may occur, but its true significance is seldom recognized early. Finally the cold abscess with its cheesy masses is evacuated into the pelvis of the kidney, and the urine suddenly becomes turbid and mixed with blood. The cheesy masses, passing down the ureter, will produce symptoms of renal colic. If now the physician makes a careful chemical, microscopical, and bacteriological analysis of the urine, the disease *can* be correctly diagnosed at once, but in the majority of cases one is more likely to think of a renal stone as a causative factor than of primary tuberculosis, and very naturally, too, as the trouble generally occurs in patients between the twentieth and fortieth year. Often the urine is very thoroughly examined, but the staining of portions of the sediment for tubercle bacilli is omitted, or the specimens are stained, but the bacilli are not recognized and the correct diagnosis is not reached. The hematuria, which varies in degree, lasts several days and slowly ceases; the pains

also decrease in severity; the urine after a while appears clear and macroscopically normal. The attack is now considered over and the patient discharged.

If, at this stage of the disease, cystoscopy is practiced, a picture is sometimes seen which establishes with absolute certainty the diagnosis of primary descending tuberculosis of the urinary system, even if so far no tubercle bacilli have been detected.

As far as I am able to find in literature, the following observation has not yet been described. On viewing the interior of the bladder the cystoscopist perceives an absolutely healthy surface of the vesical mucous membrane and one perfectly normal ureteral opening. The mouth of the other ureter, however, is injected, and a number of circumscribed, clearly defined, inflamed areas of the mucous membrane can be seen between it and the slightly hyperemic trigonum, leaving the interposed tissue unchanged in appearance, and thus one recognizes with marvelous and astonishing clearness the enemy's steps in a hitherto uninvaded field. I could not compare this picture better than to liken it to footprints in the freshly fallen snow. No other disease of bladder or kidney with which I am acquainted presents a similar cystoscopic appearance.[1] Should the microscope fail after repeated observations to confirm a diagnosis made by the cystoscope, it would be well to inoculate a rabbit by injecting some of the

[1] In these examinations I place great reliance in Nitze's instrument, and use no other.

sediment into his pleural or peritoneal cavity, or the diagnostic value of Koch's tuberculin might be tried. In a case at Czerny's Clinic, at Heidelberg, the diagnosis was made by this means, tubercle bacilli appearing in the urine only after repeated injections of tuberculin. On account of the injurious effects of these injections upon the general health of the patient, this method is not to be recommended.

It is scarcely possible that the cystoscopic picture described above could result from any other than a tuberculous irritation. Ordinary pus, not carrying specific micro-organisms, which passes the ureter and bladder after perforation, say, of an abscess containing a small renal calculus, cannot leave similar traces. It is not injurious to the epithelial layers of the vesical mucous membrane; and should slowly growing renal tumor rupture into the pelvis of the kidney, simple hematuria would ensue, but no large amount of pus and cheesy deposits would be found.

In many cases, of course, the picture will not be as clear and pathognomonic as described above. I have seen it so far in two cases only. Especially will it be indistinct where, by previous catheterism, sounding, or irrigation, infection has been carried into the bladder—an occurrence which is very frequently met.

In view of this reasoning, the primary use of the cystoscope cannot be too strongly insisted upon.

Up to a short time ago no means of positive diagnosis in such cases was available, but luckily

new, ingenious methods of examination and improved cystoscopic instruments brought forward recently have at last fulfilled a dream that for years has occupied the mind of every medical man interested in this class of diseases. I refer to the catheterization of the ureters, which permits of the bloodless, separate collection and analysis of the secretion of each kidney. In the female sex Kelly's excellent, well-known method should be preferred to others, on account of its absolute asepsis. Here the bladder is filled with air and the catheter introduced into each ureter with the patient in either the knee-chest or recumbent posture. In the male, Casper's new ureter-cystoscope also enables us to insert the tip of a small catheter into the mouth of each ureter under direct guidance of our eyes, and to push it up toward the pelvis of the kidney as far as desired. I have practiced both methods and cannot praise them too highly. Casper's ureter-cystoscope has been in my possession for the last four months, and in three female and five male patients I succeeded easily in catheterizing both ureters and draining off each kidney separately.[1]

One ought to take great care in these cases—besides proceeding aseptically—not to introduce the catheter too far toward or into the pelvis of the kidney, so as to avoid artificial infection of a healthy organ. If the urine of each kidney has

[1] I would refer those who are interested in this subject to an article of mine read before the Section in Surgery of the New York Academy of Medicine, November 11, 1895, which will soon appear in the New York *Medical Journal*, entitled "Catheterization of the Ureters in the Male and Female with the help of Casper's Ureter-cystoscope."

been collected, careful analysis of the same will, in many cases, be an invaluable help in establishing a correct diagnosis.

Thus you have seen that at present we have quite a number of reliable means which, if properly applied, enable us to diagnosticate the primary tuberculosis of one kidney, even in its very beginning, in the majority of cases. The great influence of such scientific progress upon our therapeutic procedures is evident. Only extirpation of the diseased kidney will save the patient's life and save him years of more or less severe illness. In view of the sad prognosis of the trouble in question, this operation seems to me to be clearly indicated. To trust in a spontaneous cure of the disease under a general symptomatic *régime* would be by far too hazardous. The possibility of such a spontaneous cure must, of course, be admitted, but it certainly is a very rare exception and so far not upheld by clinical facts.

On the other hand, by extirpation of the kidney, done as soon as possible, the trouble is not palliated, but actually cured. This point cannot be too strongly emphasized.

If patients, and, as I have frequently experienced, the family physician also, will not consent to such a radical treatment at this early stage of the slow but deadly disease, and prefer to temporize, the removal of the diseased organ, even at a later stage of the trouble, may still effect a cure. The important point is not to wait until a tuberculous inflammation of the genital sphere is added to the descending tuberculosis of the uropoietic system—

a course which will happen with almost absolute certainty in the male—not to wait until the other kidney is similarly attacked by an ascending process. The operation *then* will only improve, never cure. It should be remembered that infection of the prostate generally sets in early.

Therefore, in cases of the sudden appearance of the above mentioned symptoms, too much stress cannot be laid upon the necessity of establishing a strictly defined diagnosis as soon as possible, and of carrying out that treatment which alone is the logical sequence of the same, to wit, *early extirpation of the primarily diseased kidney.*

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