

of a kidney, its rational treatment in most cases will be the removal of the diseased kidney. The cases that are secondary to disease of a testis, vesicle or prostate must be given general hygienic treatment, as will be the case in *most* instances when both kidneys are involved.

It is usually quite unnecessary to treat the bladder process after a nephrectomy, since it tends to take care of itself. Within a few weeks I have chanced to see or hear from four cases of tuberculous cystitis that I have treated by nephrectomy within the past two years. Two have no bladder symptoms; the third has occasionally to get up once at night, and his urine is at times not quite clear; the fourth, operated upon about a year ago, is improving both as regards the condition of his urine and his discomfort, but still has a moderate cystitis. The showing in the other cases I have done I believe is no worse.

In closing I would call particular attention to the following points. Acute cystitis is most often, but not invariably, the result of an infection that is introduced through the urethra; it rarely needs any local treatment. In most cases it clears up entirely; in some cases, however, either due to the depth to which the bladder has been involved or to something that acts as a predisposing factor, the process becomes chronic.

A chronic cystitis, beside following an acute attack, may begin as a process that is subacute or chronic from its inception.

The determination of the predisposing cause, when there is a definite one, is a most important point in the consideration of cases of chronic cystitis. It will often tell us the prognosis as well as the line of treatment that should be followed. In a considerable proportion of cases the removal of this predisposing cause is enough to bring about recovery; in other cases the cystitis itself will require treatment.

Tuberculous cystitis, in so far as my experience goes, is always a secondary disease. The removal of the predisposing cause, which in most cases is a unilateral kidney tuberculosis, usually brings about recovery.

## TUMORS OF THE BLADDER AND CYSTITIS.\*

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I HAVE not very much to add in regard to tumors of the bladder, but there is one point which has not been touched upon, and that is the diagnosis of tumors of the bladder in the early stages of the disease. I think if one will constantly bear in mind that the principal symptom of tumor of the bladder is hemorrhage, then fewer cases will be allowed to drag along without proper treatment. Hemorrhage from the urinary tract is always a serious thing.

Secondary cancers of the bladder are not so very infrequent in the female. I have seen a number of these cases and the primary growth was in all

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of them in the uterus or in the cervix. The involvement of the bladder is usually by direct continuity and the diagnosis is easily made. Usually death supervenes before the cancer in the bladder has given very much trouble. For a long time the growth may remain underneath the mucous membrane of the bladder, and until it breaks through the bladder symptoms are not marked. In the early stages it presents as a number of nodes projecting up into the bladder, and with a Kelly tube the appearances are quite characteristic. If the patient lives long enough, ulceration occurs and we have a hemorrhagic cystitis with its accompanying suffering. The disease may break into the vagina and cause a fistula, and if this happens the patient's condition is pitiable.

In cancer in women affecting the floor of the bladder the diagnosis is usually easily made. The loss of flesh and strength, the cachexia, the symptoms of cystitis, and particularly the severe vesical hemorrhages suggest the disease, especially if the patient has passed middle life. On vaginal examination, the diagnosis is at once apparent from the characteristic feel of the infiltrated growth. The limits of the tumor can be felt and the difference between the hard mass and the softer untouched tissue surrounding it leave no doubt as to the nature of the disease. The best method of examining women affected with cancer is by all means with the Kelly tube with the patient in the knee-chest position. Hemorrhage does not obscure the field, and the limits of the growth, its size, shape and surface are readily seen at a glance.

One of the chief exciting causes of cystitis when conditions favorable for the development of the disease are present is overdistention of the bladder. The presence of germs in a healthy bladder does not do any harm. This has been proved repeatedly by experiment and observation. Pus may come down from the kidney and may be poured over a bladder for a very long time without causing any inflammation. This is observed in cases of pyelitis following pregnancy, in which there may be pyuria for many months and yet there may be no symptoms of cystitis. The development of cystitis following retention in old prostatics is well known. The bladder mucous membrane is really a delicate kind of a skin and under a microscope the outer layer will be seen to be composed of superimposed layers of epithelium, mainly of the squamous variety. This is a protection against the invasion of germs, and it is usually a very efficient protection. Were this not the case, cystitis would be very much more frequent than it is because the bladder very often contains pathogenic germs even in the relatively normal state of health, germs which come from the kidney and are excreted by these organs, or germs which reach the bladder through the urethra or through the lymphatics. Cystitis cannot take place unless there is a solution of continuity. Among the chief causes of this is overdistention of the bladder, which allows the germs to enter at some place where it is stretched. Catheterization when roughly performed is also

a very frequent cause of cystitis. It is especially apt to be improperly performed in the female. It is such an easy operation, the canal being a straight one, that there is an inclination to underestimate the gentleness with which it should be performed. The instrument is either pushed in too far or else when it is withdrawn the sharp cutting edges of the eyelets tear the membrane by shaving it off at the vesical neck. If a metal instrument is used, the greatest care should be taken not to use it roughly. When it is withdrawn it should be turned and twisted so that there shall be no possibility of its scraping off the epithelium. The best catheter to use in the female is a small soft rubber instrument, and a lubricant is not needed. If the catheter is simply wet with sterile water it will slip in with the greatest ease.

Enough importance has not been placed on the necessity of rest in bed during an attack of acute cystitis. This is especially to be advised during the first week or so of the disease, and if it is done, not only will the suffering be less, but the convalescence will be shorter. The patient is placed under most favorable surroundings, the bodily temperature is kept even, there is an avoidance of draughts and consequently there will be no increased congestion of the bladder. The recumbent position and the freedom from motion tend to the same result.

Injections of antiseptic fluids are of little importance in the treatment of acute cystitis. If there is a good deal of mucus, an injection of salt solution is excellent in order to get it out of the bladder, but antiseptics usually are more irritating than otherwise, and they can do but little good. As for internal medicines, I think that the old remedy, infusion of Buchu, has not been sufficiently tried of late years. It is an old remedy, but it is a very good one. In the female, warm vaginal douches are excellent and give a great deal of relief if there is much irritability.

The distinction between renal and bladder pyuria is usually very easy. The cystoscope at once shows the source of the pus in the severer cases. In the lighter ones it may sometimes be necessary to separate the ureteral urines. A beginning, slow suppuration in the kidney is often evidenced by some change about the ureteral orifice. There is often a streaky appearance about the opening, and the eminence may be larger than its fellow. In the well-advanced cases of the renal pyuria there may be a considerable dilatation of the orifice, which looks under these circumstances like a small hole in the bladder. I have seen in a case of calculus of the kidney a collection of small punctate ulcerations around the corresponding ureteral orifice, and the absence of these small ulcers from other parts of the bladder leads one to inquire whether they were not indicative of the affection. The ulcerations in tuberculosis are almost always seen in the vicinity of the ureteral orifice on the side corresponding to that of the affected kidney. The degree and extent of the ulcerations are often a fair index of the condition of the process in the kidney. In beginning renal

affections before the bladder has become infected the appearances are those of congestion and the blood vessels stand out prominently on the surface. Besides this the membrane has a glazed look and in some instances there are many small elevations looking not unlike sago grains which are swollen lymphatics. Such a bladder may be a little irritable when the pus first begins to come down, but it soon subsides and vesical symptoms are slight and may not even be noticed. These cases are particularly dangerous from the fact that these suppurative renal lesions may be very latent and may not give rise to serious symptoms. In many instances a kidney may be slowly destroyed before the patient is aware of his condition and the only symptoms may be somewhat impaired health, together with indefinite pains in the hypochondriac or lumbar regions which the patient has perhaps thought to be due to lumbago, etc.

In the chronic cystitis accompanying ureteritis, the lesions are not marked, but they are noteworthy. In this disease we almost always find a streaky appearance of the vesical mucous membrane, the streak starting from the ureteral orifice and running down the trigone toward the vesical neck. The orifice itself may be somewhat roughened and granular looking and the eminence is larger than its fellow. The separated urines in such a case will invariably show a slight excess of epithelium on the side affected as compared with the opposite. In these cases of ureteritis a stricture will not uncommonly be found. In these cases the Luys intravesical separator will be found of great value in separating the urines. The instrument is of great accuracy and may be fully relied upon in a bladder which is not unduly ulcerated. If one is in doubt the best method for separating the urines in the female is to put the patient in the knee-chest position and catch the urine with a Kelly tube as it drops from the ureteral orifice.

The capacity of the bladder in chronic cystitis is often much diminished. It is undoubtedly a fact that the capacity is often much less than is supposed, and the only way to find it out is to measure it. This is easily done by injecting as much fluid into the bladder as the patient will stand, and measuring it as it is passed through the catheter. The force of the stream as estimated by the rapidity with which it flows is also some index as to the irritability of the vesical muscles. In acute cystitis likewise the capacity is diminished, but here it is due to spasm of the muscles, while in the chronic forms of the disease the secondary tissue changes are responsible for the diminished capacity. Especially is this the case in tuberculosis of the bladder. In this disease the walls are frequently very much thickened and the bladder may not hold more than a few ounces. The diminished capacity here is due partly to the thickened walls, but more especially to the lack of elasticity of the walls, a result of the disease. In certain hyperemias I have often found the bladder very greatly diminished in capacity, and in some only a few ounces of urine could be held, and it is my belief that many of the cases of

irritability of the bladder are due partly to the fact that the bladder will not hold much urine. Gradual dilatation in these cases is often a great help and sometimes it is curative. In the tubercular forms there is less to expect. I have, however, had two cases of this disease in which a good deal was accomplished by gradual dilatation extending over a period of many months. In one there had been a fistula for five years following a nephrectomy for a tuberculous kidney. After the operation the bladder held only two ounces; it was dilated for several months at intervals of a few days and finally held seven ounces, beyond which point it was impossible to make progress. The patient could hold her water for three or four hours and she was satisfied. The other case was almost precisely similar.

It is my custom in cases of chronic cystitis in which there is not kidney involvement to use gentle treatment at first. These patients are given urotropin and their bladders are washed out with boric acid and occasionally with a weak solution of nitrate of silver. I do not think that enough importance has been given to hygiene and change of climate in these cases. We are apt to lose sight of the fact that favorable surroundings, fresh air and freedom from mental worry are of quite as much, if not of more, importance than medicines and local applications. Many patients will get rid of a chronic cystitis in a very short time if they are sent to a suitable climate where they can live happily.

I believe that instillations are more efficacious in chronic cystitis than simple bladder douches. Instillations are slow injections of small amounts of strong solutions. The best of these is a 1:1,000 or a 1:500 solution of corrosive sublimate. The injection is given very slowly and the patient must lie down for a little while afterwards. At first the treatment is quite painful, but the patient soon becomes accustomed to it. About fifteen or twenty drops may thus be injected every few days.

In the female we may do a great deal of treatment through a Kelly tube. Ulcers particularly are amenable to this form of treatment. The application can be made with the greatest nicety and very strong solutions can be used. The best of these is a 5% or even a 10% solution of nitrate of silver, and in some cases, especially the tubercular ones, the solid nitrate of silver stick may be used.

As for curetting, I do not see how it is possible to thoroughly curette a bladder. I have tried it, but I have never accomplished it thoroughly and to my satisfaction. The membrane slips about in such a way as to make any thorough curetting practically impossible. It is easy, however, to curette an ulcer or a patch of granulations.

Cystotomy is an operation which is perhaps not often enough done. I feel quite sure that if it were resorted to earlier in many cases we would have fewer suppurating kidneys. The first principle in surgery is free drainage and we are expecting the ureteral valves to do a great deal if we expect them permanently to prevent by their

closure an infection from ascending to the kidney in all cases of cystitis. That they do so prevent an infection in the majority of the cases is remarkable and is a splendid illustration of the guards against injury which are constantly at work in the body. If the valve becomes diseased in consequence of the inflammation it will no longer prevent the infection from ascending, and involvement of the upper passages takes place. By a cystotomy all this is prevented. The bladder is thoroughly drained, the inflammation at once begins to subside, and if the patient can be properly controlled the outlook for rapid improvement is good. In the female the operation is a simple one, but the great objection to it is the care which it entails. I think that it will find a useful field in primary vesical tuberculosis, a condition which, although rare, is certainly occasionally seen. If at the same time such a patient is put upon the Guyon treatment of corrosive sublimate instillations, I think the outlook ought to be good. I have had one such case and the patient was cured. I feel sure that this patient would not have had such a good result had this method of treatment not been tried. It is not my meaning that all cases of long-continued cystitis should be treated by this method, but I am more ready now to urge it than I was several years ago. In chronic, simple, non-tubercular, suppurative pyelitis, with cystitis, a cystotomy combined with regular irrigation of the renal pelvis has cured a number of patients. This was Boze-man's treatment, and his earlier cases certainly justified the measure. The greatest caution, however, must be exercised in the selection of the cases. It is a mistaken belief that, in the female at least, a patient cannot be made comfortable who has had a cystotomy performed. With a well-fitting vaginal urinal all the water can be collected as it drops from the fistula and the patient can go anywhere she chooses.

I cannot think that local treatment in tuberculous cystitis is to be rarely done. I believe that it should not be attempted in the early stage of the disease because here we have intense congestion with excessive irritation. But in the later stages when ulcers have formed, local applications through a Kelly tube do a great deal of good. I have repeatedly seen tubercular ulcers heal under this treatment even when there was pus coming down from a tubercular kidney above. The Guyon treatment has, on the whole, given good results in my hands. I have seen several cases much improved by it, and I have referred to one in which the treatment was followed by a cure.

As to treatment of a tubercular bladder after nephrectomy, I do not think we should be too hopeful that the bladder will take care of itself. I had one case in which nephrectomy was done and the bladder did not get entirely well for five years after the operation. During this time, treatment was constantly carried on. A cystotomy was finally required and in the end the patient got well. In still another case in which no treatment was given after a nephrectomy for tuberculosis, I saw the patient six months after

the operation. There was then a very large ulcer at the site of the ureteral orifice on the side from which the kidney was removed. This ulcer got well under applications with the nitrate of silver stick. It is my custom now after nephrectomy for tuberculosis to cauterize the whole bladder with nitrate of silver stick, even those parts apparently unaffected by the disease. The burning is not deep, the germs are destroyed, and the relief given is very great. I have done this a number of times, always with good effect. The urinations are always diminished, sloughs are cast off, leaving a clean surface below. If necessary, further cauterization may be done to localized areas.

### THE VALUE OF HEMOLYSIS IN THE DIAGNOSIS OF CARCINOMA.

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In 1901 Ascoli<sup>1</sup> studied the effects of human serum on the red corpuscles of human individuals. He reported a series of one hundred and fourteen cases. Hemolysis was found in two cases of gastric carcinoma and in many cases of tuberculosis and pneumonia. Since then Kelling<sup>2</sup> has tested the hemolytic reaction of human carcinoma with the corpuscles of sheep, cows and chickens. In 365 malignant cases he obtained 119 positive results (43%); of 300 other cases, 11 positive results (3%). From these results he thinks the reaction, when it occurs, to be practically specific

for malignant disease. Fischel,<sup>3</sup> on the other hand, using the same technic, concludes that the reaction is not specific for malignant disease, as he obtained it in tuberculosis, pernicious anemia and chronic heart disease. Weil,<sup>4</sup> using the serum of dogs with lymphosarcoma, has a series of 200 cases in which he found that the serum of animals with tumors was almost without exception actively hemolytic to the corpuscles of other dogs. Recently Weil<sup>5</sup> has reported a series of cases in which he used human serum and human corpuscles. This series contains 23 cases of malignant disease, 40 cases other than malignant disease and 6 normal cases. He obtained a positive reaction in 40% of the early malignant tumors, in 56% of the late malignant cases, in 33% of benign tumors, in 26% of the cases other than malignant disease, and did not obtain it in his 6 normal cases. From these results he concludes that the reaction is not pathognomonic of malignant disease. Crile,<sup>6</sup> using Weil's method, with human serum and human corpuscles, reports a series of 80 carcinoma cases in which hemolysis was obtained in 82%. Hemolysis was not obtained in benign tumors nor in a series of 125 normal cases.

My technic is the same as Crile's, with the exception that the blood was taken from an ear instead of a vein, as I found that 2 or 3 cm. of blood was enough for all purposes. All serum that showed autolysis was discarded for obvious reasons. Crile states that tuberculosis may be differentiated by this autolytic reaction. My results do not agree with this, as autolysis occurred in normal and carcinoma cases.

TABLE I.

Diagnosis.	Pathological examination.	Remarks.	Patient's serum to normal corpuscles.	Normal serum to patient's corpuscles.
1 Cancer of intestine	Carcinoma	Late (inoperable)	0	+
2 Cancer of rectum	Carcinoma	Late (inoperable)	0	0
3 Cancer of stomach	—	No cancer found at operation	0	0
4 Cancer of jaw	Carcinoma	Late (inoperable)	0	0
5 Cancer of stomach	Carcinoma	—	0	0
6 Cancer of stomach	—	No cancer found at operation	0	0
7 Epithelioma of lip	Epithelioma	Early case	0	+
8 Cancer of tongue	Carcinoma	Recurrent (inoperable)	0	0
9 Cancer of intestine	Carcinoma	Early case	0	+
10 Cancer of cervix	Carcinoma	Late (inoperable)	0	0
11 Cancer of jaw	Carcinoma	Recurrent (inoperable)	0	0
12 Cancer of stomach	Carcinoma	Recurrent (inoperable)	0	+
13 Cancer of jaw	Carcinoma	Early case	0	+
14 Cancer of breast	Carcinoma	Recurrent (inoperable)	0	+
15 Cancer of stomach	Carcinoma	Late (inoperable)	0	0
16 Hydatid cyst of liver	Carcinoma	—	0	0
17 Cancer of tongue	Carcinoma	Late (inoperable)	0	0
18 Cancer of sigmoid	—	Late (inoperable)	0	+
19 Cancer of rectum	Carcinoma	Late (inoperable)	0	0
20 Gallstones	Carcinoma liver	—	0	0
21 Tumor of breast	Carcinoma	Early case	0	+
22 Cancer of breast	Carcinoma	Early case	0	0
23 Epithelioma of lip	Epithelioma	Early case	0	0
24 Cancer of esophagus	—	—	0	0
25 Advanced tuberculosis of lungs	—	—	0	+
26 Tuberculous epididymitis	—	—	0	0
27 Addison's disease	—	—	0	+
28 Tuberculous pleurisy	—	—	0	0
29 Tuberculosis of lungs	—	—	0	0
30 Tuberculous glands of neck	Tuberculosis	—	0	+
31 Tuberculous peritonitis	—	—	0	+
32 Tuberculous pleurisy	—	—	0	0
33 Cardio-renal	—	—	0	0
34 Cardio-renal	—	—	0	0
35 Cardio-renal	—	—	0	0