indicated by Dr. Knapp, and that the size and location of the tumor proved to be exactly what was predicted before the operation.

After removal the tumor was found to weigh 357 grammes and measured 7 by 4 and 3 centimetres. (Figs. 2, 3, 4.) On section, extensive white, cheesy centers were found surrounded by a thin, irregular layer of firm, yellowish-brown, slightly translucent tissue. The central cheesy portion of the layer nodule presented a suggestion of a concentric arrangement of layers. Under the microscope, fibrous tissue, with many giant cells, epithelioid cells, and an extensive round-celled infiltration.

Dr. Henry F. Sears, assistant pathologist to the hospital, reports as follows:

"Microscopically the growth was seen to consist of finely granular detritus, surrounded by a layer of connective tissue, in which were seen many giant cells, with epithelioid cells, and round-cell infiltration.

"On staining sections, from a portion of the growth hardened in alcohol, by Koch's method, the presence of the bacilli of tubercles was seen, thus confirming the diagnosis of tuberculosis." (Fig. 5.)

(A to be continued.)

A CASE OF SUPPRESSION OF URINE FOR TWELVE DAYS, FROM COMPRESSION OF BOTH URETERS: AUTOPSY.

BY JOHN W. FAHLOW, M.D.,
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Mrs. B., thirty-five years old, consulted me October 24, 1887. Her previous health had been good. She had had two children, the youngest three and one-half years old, and had miscarried two years later, apparently from taking ergot and other drugs. As a result of this she was obliged to remain in bed a number of days on account of severe pain, but was soon in presumably good health. In June, 1887, she went West, and, as the result of exposure at the time of a severe storm, she had backache and more or less nausea. She returned home in August, but the nausea continued together with occasional swelling of the face. No special pain was felt anywhere.

Although her menstruation appeared regularly the nausea caused her to think that she might be pregnant. I found the uterus in good position, movable, not tender or enlarged. A feeling of resistance was noticed in the left side of the abdomen, on pressing deep toward the pelvis, presumably in the broad ligament. A slight resistance was also felt on the right in a similar position. Behind the uterus, in Douglas's pouch, several firm, projecting nodules were felt, seemingly having no particular connection with the uterus. I wrote in my record-book, "Not pregnant; is this simply inflammatory or is it malignant disease, or both together? to examine urine."

She became worse the next day and sent for another physician, who examined her urine and found it very pale, specific gravity about 1000, no albumen, and no mucus; and on the 29th the color was pale, acid reaction, specific gravity 1010, quantity in twenty-four hours several quarts, a good proportion of albumen, epithelial cells and degenerated granular matter, some pus and a few hyaline and granular casts. He made a diagnosis of Bright's disease. The vomiting continued; there was some oedema of face and a very severe cough.

Not being relieved she called a homœopathic physician; but her condition did not improve, and a small amount of albumen was usually found in the urine. Toward the latter part of November she went four days and nights without passing water, her general condition being about as before. The urine started again and continued in large amounts till December 15th, when it stopped again. The nausea and vomiting became rather more marked, and there was some oedema of face and neck.

I saw her again December 23rd, two months after I first saw her, and found her in bed. Face and eyelids rather oedematous, but no oedema elsewhere. Skin dry, pupils normal, nothing abnormal in heart or lungs. Pulse 80 and good. No evidence of hypertrophy of left ventricle. Abdomen tympanitic. No ascites and no tumor felt. Some tenderness in left iliac region; per vaginam, uterus movable and not enlarged. An irregular, hard mass was felt in Douglas's pouch, extending toward the left, less marked toward the right. Per rectum this mass was more plainly felt and was tender. No urine in bladder. Constant vomiting, even of milk and lime water. No stool for fourteen days and no urine for eight days.

I tried by various manipulations and putting the patient in different positions to see if I could lift up the hard mass and thus remove the probable obstruction to the urine, but without success. I ordered pil. cathart. gr. 1-10 every hour till bowels moved. I put her in a hot bath, but she felt faint and could stay only a few minutes. Blankets and hot bottles caused her to sweat profusely, and she had a number of loose stools in the night.

She seemed relieved of some of her distress, and there remained but little oedema of the face. Temperature 37.5. The next day, December 24th, she was able to retain milk and lime water. There was tenderness in both iliac regions. December 25, she passed a sleepless night. No urine or stool. Dr. A. T. Cabot saw the patient with me and we agreed that the growth in Douglas's pouch was probably malignant, and whether so or not, it was probably blocking up both ureters near their junction with the bladder. We decided to continue symptomatic treatment, and if urine started up again, and the case progressed favorably, to consider the question of operation to relieve the obstruction, without, however, much hope of success. The vomitus examined by Dr. Goddett showed no albumen or urea. The patient sat up in a chair and spent a fairly comfortable Christmas day, although she had passed no urine for ten days.

December 26. Fasted a sleepless night. No urine. One stool. No oedema. Fairly comfortable during the day. Feet cold, necessitating hot bottle. In the afternoon, at my suggestion, she took the knee-chest position and passed a little more than a teaspoonful of urine, the first since December 15th. This contained a little of the albumen, epithelium from the bladder, some clumps of round cells, and a very few hyaline and epithelial casts.

December 27. Had a very poor night; but little
sleep and felt quite faint. This morning passed urine twice, about 3 oz. in all. Says she felt some pain and then something seemed to give way and urine came suddenly. Clear. Sp. gr. 1010. Albumen as before, no casts. Did not feel relieved, skin dry. Hot bottles. Passed nearly one and a half pints of urine during the day. She was much more distressed, and vomited.

December 28. Rested well during the night, but at 3 a.m. had a general convulsion, again at 9, 10, and 11 and at frequent intervals till 7 a.m. the next morning, thirty in all. These convulsions did not differ at all from ordinary uremic or puerperal convulsions, and there was coma between. She passed over two quarts of urine in the twelve hours just preceding the convulsions, and during the day large quantities of urine were passed involuntarily.


January 2. Drinks two quarts of milk and passed the same amount of urine. Sp. gr. 1010. Urea 14.35 gns. per litre, or 28.70 gns. in twenty-four hours.

January 4. The right kidney can be felt, smooth and not much, if any, enlarged, movable and rather tender. The left kidney could not be made out. Backache relieved by hot douche.

January 8. Sitting up. Two quarts of urine daily as before.

January 9. No urine since 4 p.m. yesterday. Urea then 10.24 gms. for 20 c.c. urine. Some puffiness under eyes, and nausea; one stool. Pain in right side, and right kidney feels larger, nothing on left side. Per vaginam, hard mass seems large and firm. Pilocarpin gr. 1-6 subcutaneously had very little effect.


January 12. Several loose dejections. Menstruation several days overdue.


January 17. Had a better night, but twitched some. One and a half quarts urine in twenty-four hours, same character as before, except that there were no morbid pulses. Fell by night and needed to be fanned. Very bad dreams when she tries to sleep.

January 18. Had a fair night, but had a convulsion toward morning. Later in the day seemed much better. Passed two and a half quarts of urine during the evening and night, and one quart in the day. Severe pain in hepatic region when she tries to move. Dr. E. S. Wood had examined several specimens of urine, but never found anything but what I have already referred to, but in yesterday’s urine there were many aggregations of large cells which seemed suggestive of malignant disease.

January 19. Fair night. One and a half quarts urine. No nausea. No headache. In yesterday’s urine many epithelial cells and nests of epithelium, onion-like bodies, and some papillae covered with epithelium. After this, nothing special was found except an occasional cast.


January 22. Very bad night. Vomited much. Headache. Respiration very difficult. Thinks flatus escapes from vagina. No fistula found in vagina or cervix. and tampon in vagina for several hours shows no trace of feces. Pulse very weak.

January 23. Very nervous and delirious at times. Stomach much distressed and vomits often.

January 25. Uleceration of lips and gums. Legs restless. Requires stimulants for her faintness. Great pain in left iliac region. Right broad ligament very hard and firm, as is also left side of pelvis. Nodes in Douglas’ pouch much less marked.

January 26. A little better. Urine as before.

January 29. No urine since yesterday morning. Chill at 10 a.m. and others during the day.

January 30. No urine. Very weak and restless. Left kidney can be felt, movable and tender and somewhat enlarged. No redema.

Died from exhaustion at 8 p.m.

Autopsy by Dr. W. W. Gannett twenty-two hours after death:—

Both ureters near their entrance into the bladder were embedded in a dense fibrous structure which reduced their calibre so that a very small probe barely passed. This tissue extended to either side into the broad ligaments. The ureters were moderately dilated above the structure, as were also the pelvis of the kidneys. These latter were pale, but showed no special pathological change. The bladder, vagina, and rectum were not connected at all with the growth of the ureters.

From a diagnostic and pathological standpoint, such a case is very interesting. Instances in which anuria has lasted as long as, and even longer than, in my case, from a number of different causes, are sufficiently numerous, so that we must consider several possibilities. Dr. E. P. Fowler, of New York, in his book on suppression of urine, has tabulated 93 cases prior to 1881, and I have the records of 32 others. By far the most frequent cause is the blocking of the ureters by calculi. Fowler collected 31 cases in which this was the cause, or in exactly one-third of his 93 cases. And as in 26 of his cases no cause is stated, it follows that of the 68 cases where the cause is stated, 31, or nearly one-half, were due to calculi of my own cases, 16 were due to calculi. Fowler has 7 cases due to seirrhosis excluding the ureters near the bladder. I have only
two examples of that. Eight of Fowler's cases were due to mercurial poisoning, 1 to cystic degeneration of the kidneys, 2 to obstruction of the renal artery, 1 to absence of one kidney with previous diminution of the other. I have been able to find no instance of the blockage of the ureter, and the fact that there had already been a period of suppression of four days without special symptoms, made it evident that there was no serious disease of the kidneys.

Provided no vaginal or rectal examination was made, as is generally the case in ordinary diseases of the kidneys, could this compression of the ureters have been diagnosed before suppression set in, or was the diagnosis of chronic interstitial nephritis a justifiable one?

Nausea, vomiting, slight edema of the face, and the kind of urine already referred to, were the only symptoms. The only diagnostic point wanting to establish a probable structural disease of the kidney was hypertrophy of the left ventricle and its attending increased arterial pressure. In a woman with large breasts this hypertrophy is often hard to make out with certainty, and the tension of the arteries, although often characteristic, is not always so. Considering the variety of compression of the ureters from causes other than calculi it seems to me that before suppression set in the most probable diagnosis was chronic interstitial nephritis, provided, as I say, no rectal or vaginal examination was made. But, as soon as suppression without uranemia set in, this diagnosis would have to be given up, for the uranemia would indicate either diminished pressure from above or obstruction below, and if the kidneys were sufficiently discharged to account for the diminished pressure from above, death would ensue within a few hours or a day or two of the suppression.

My patient had no history of gout, gravel, or renal colic or calculus, and the former suppression was accompanied by pain, nausea, vomiting, and some edema for a number of months, and these, together with the absence from the urine of any pieces of stone, made it highly improbable that there was a calculus in the ureter.

The right kidney could be felt, and was movable, smooth, and not much enlarged, making it improbable that a neoplasia of the right kidney or ureter was causing the uranemia, the left kidney being absent, rudimentary, or disorganized from previous disease, and there was no history of previous disease.

Still, cases of absence of one kidney can give rise to symptoms resembling those of my patient, and these are hard to diagnose. In the cases of absence of one kidney which I have collected, the uranemia was due to the blocking of the other ureter with a calculus. It is possible for a constriction of one ureter by cancer or other growth, or a cicatrix, to cause uranemia when the other kidney is absent, but I have found no instance on record; and as in my case it was possible to feel this hard mass in a position where it could compress both ureters, it was more natural to suppose that such was the case, rather than to think that the right kidney only was present because it would feel that very distinctly and could not feel the left one; and as it turned out I was able to feel the left one a few days before death. It was evident that there was no marked degree of hydronephrosis. Where the obstruction takes place slowly the ureters and pelvis
sometimes become very much dilated and the hydronephrosis can be felt as a large fluctuating tumor; but in sudden occlusion the pelvis and ureters are usually not much dilated. Robert says that temporary suppression for some days, followed by a copious flow of urine, is characteristic of hydronephrosis. Although in my case and in some others with more pronounced symptoms there was no particular hydronephrosis. I was fortunate in having a thin patient who had been crowded, so that I should probably have been able to feel a large, fluctuating kidney. Hadler records a case where a large tumor in the right iliac region in a case of suppression was supposed to be a hydronephrosis and it was aspirated. The fluid obtained was not urine, and the autopsy showed no hydronephrosis, but the kidney and capsule were as large as a man's head. The very edematous capsule had been aspirated, but the needle did not reach the kidney.

Rectal examination is of the utmost importance in all cases of suppression. In certain cases calculi become impacted near the entrance of the ureter into the bladder, and can be felt per rectum. Cullingworth reports a case in which a hard mass was felt on each side of the uterus ante-mortem, which the autopsy proved to be a calculus in each ureter near the bladder.

I should say, then, that when I saw the patient in December, after anuria for eight days, I was right in saying that the mass felt per rectum was constricting both ureters near their entrance into the bladder, that both kidneys were in a fairly normal condition structurally, and that there was no considerable amount of hydronephrosis.

With regard to catheterization of the ureters as an aid to diagnosis, the parts were distorted in my patient so that the usual landmarks were wanting. Even had they been present it would have been impossible to pass the catheter into the diminished calibre of the ureters.

As to the nature of the mass in Douglas's pouch, the situation is not a common one for malignant disease unless it is connected with the uterus, vagina, or rectum, and it apparently had no connection with these organs. It is a frequent seat of inflammatory processes, and although there was no particular history of pelvic pain I considered that inflammation might be a factor in the case, whereas the growth and changes in the mass were more the history of a new growth.

In experiments on dogs, where the ureters are tied, the pressure in the ureter rises till it reaches the pressure of the secretion. When the manometer shows a pressure of 60 mm., secretion stops, or if it continues it is absorbed. The urine which flows away after the ligatures have been removed is always pale, of low specific gravity, and contains but little albumin. This is just the kind of urine which we find clinically where the ureters are occluded. The secretion of urine is also influenced by the force of the heart's action: the stronger the heart the more the urine, and the less the action of the heart the less urine and more albumen. This is notably the case in diseases accompanied with colic, where, such as cholera, and typhus fever, the urine diminishes in quantity for several days. Diminishing the supply of blood through the renal artery has the same effect, namely, diminishing the amount of urine and urea. The influence of the nervous system is seen in cases of hysteria where anuria may exist for a long time, perhaps from spasm of the vessels of the glomeruli.

A most striking feature in all these cases is the entire absence or very late appearance of uraemic symptoms. The lack of pressure of the urine stops the secretion of the urine, and with it seems to hinder or retard the metamorphosis of tissue, and consequently urea is not formed as in normal conditions. Charcot says that the small amount of urea and the absence of uraemia are due to the showing or enfeeblement of denutrition; that it is like a fire covered with ashes: the processes of combustion are checked. It reminds one of a condition of hibernation. What urea is formed can be gotten rid of by vomiting, by the saliva, the skin, and the intestine; on the skin the urea sometimes forms large, white scales, like frost.

The length of time a person can live without passing water seems surprising; periods of eight, ten, and twelve days being not uncommon. Roberts says the duration of life in complete obstructive suppression appears to range from nine to eleven days, and that the passage of a few ounces of dilute urine does not seem to extend the time of survivorship beyond a few hours. In Fowler's list of ninety-three cases are five of eleven days, six of thirteen, three of fifteen, three of twenty-one, two of twenty-five, two of twenty-eight, one (mesals) of fifty-one, and one of sixty days, cause not known. In my list there are three of eleven days, two of twelve, one of thirteen, one each of sixteen, eighteen, nineteen, twenty-three and thirty-five days. Out of one hundred and twenty-five cases collected, seven were hysterical, leaving one hundred and eighteen. Of these ninety died and twenty-eight recovered; or, 76% died and 24% recovered.

With regard to treatment very little of value can be said. Hot baths are generally used and are often of benefit, but in certain cases seem to do more harm than good. Schwenger says, from experience in one instance, the turgescence of the skin and removal of water after hot baths and pilocarpin caused hyperventilation. Thinning of the periphery and aema of the internal organs and increased concentration of the urea. His patient, who was in very good condition on the eighth day of anuria, was thus treated, and the bath was immediately followed by coma, and death on the following day. My patient felt very faint in a bath even when she was well enough to walk. Pilocarpin seems to be of but little value, but cloths and packings being better.

Blood-letting has been tried, but in one of my cases it was followed by coma and had to be stopped.

If the vomiting is a means of eliminating the urea, if it is checked by medicine the urea must find some other channel of exit. In a case reported by Aufrecht, morphine was given to stop the vomiting in a boy with anuria after diptheria, and with no bad effect. Sedgwick says opium can be given in these cases of suppression, as all processes of metamorphosis are in abeyance. Ice, lime water, and soda water are generally necessary for the thirst and dry mouth.

With regard to the bowels it is probably useful...
to have several watery stools occasionally, but very active purgation might bring about a state of collapse. Diuretics seem to me to be entirely useless and often might be harmful. The way to increase the secreting pressure through the kidneys is through the heart or circulation. Such patients often feel faint, and a little stimulant helps this and increases the heart's action. Relequant recommends elastic bandages to the lower extremities, to raise the pressure in the kidneys. Thornton recommends for suppression after operations an ice-bag to the head. In one case he had success from packing the arms in cold, wet towels when the urine was nearly suppressed after ovariotomy. Injections of very hot water should be tried for their relaxing effect on any spasmodic condition.

In regard to all the ways of exciting the different secretions for the purpose of removing the urea, the remarks of Delhove et Dreyfous, who made very careful analyses of the blood and secretions in a case of anuria, are worth considering. "We think that in exciting the different secretions we cause the elimination of a considerable quantity of water and of a relatively very small quantity of urea, and the urea in the blood becomes thickening the arms from cold, wet towels when the urine was nearly suppressed after ovariotomy. Injections of very hot water should be tried for their relaxing effect on any spasmodic condition.

The history of the bodily and mental condition of the patient prior to the injury is: a woman of unusually fine physique, with a vigorous constitution, and always in perfect health during her life of thirty-nine years; of a calm and unemotional temperament, combined with great will-power and energy of character.

Was called March 19, 1887, five days after the accident. She had received a blow on the right side of the head in front, and one on the left of the occiput. The most serious injury was on the spine in the lumbar region, causing a swelling there to five inches in diameter, of an oval shape, red, and tender to touch. There was also a smaller one at the junction of the last cervical and first dorsal vertebra.

Notwithstanding the painful character of these injuries she felt obliged for five consecutive days to ride to her place of business (where she held the responsible position of cashier), and only when the pain and numbness became each day greater, being at last unable longer to walk or even stand, was she willing to submit to remaining in bed.

The pain in the lumbar and cervical regions, which in the latter extended from the spine around towards the right of the body on a line with the esophageal cartilage, daily increased, as well as the heat and tenderness of the swellings at the points of injury. She could not lie with any comfort except on the back, slightly inclined to the right side. Was unable to turn wholly on to the right side for nearly three months, and has not been able to do so on the left side to the present time.

Slight paresis of the left hand developed from the first week, together with great weakness of the legs; they are both moved about the bed slowly and with some difficulty. The inability to move certain muscles gradually increased.

During the first four or five months the tendon reflexes were increased, and the knee-jerks were exaggerated. The plantar reflexes, on testing the soles of the feet, met with abnormal response. The myotatic irritability being somewhat greater on the left side than on the right. With the exception of a persistent headache there has been at no time any brain symptoms. The pupils respond readily to light. No nystagmus. No spasm of any muscles or rigidity of them. No tremors. Sense of hearing, taste, and smell are perfect. Great weakness of the legs and fatigue of muscles on exercise, with nching