

clean up the room and let in light and air, what to do with dishes, sputum, etc., and she goes back again and again to see that these things are done and done correctly. Often it is impossible for the patient to go away for treatment, and then the nurse must arrange the patient's daily life, supply food and clothing, and day after day, and week after week, go back to encourage, advise and direct, not only the patient, but the whole household. In houses where there has been exposure from a chronic case, she can often detect suspicious symptoms in other members, and by getting them to a doctor for examination can get the diagnosis before the disease has begun to make headway.

The visiting nurse has another and a very important duty. We are recognizing more and more the value of proper after-care of our discharged patients, and are slowly realizing how much can be done by follow-up work toward making our so-called cures permanent. It is human nature to be on one's best behaviour when we know someone is watching. When the visiting nurse has a record of the discharged cases returning to town, and these patients know that she will visit them and inquire as to their daily routine, they are going to be more careful as to what they have to report. More than this, the nurse can discover, and often do away with, adverse conditions either in the home or in the place of employment, and can see that the patient goes to his physician at frequent intervals for examination and advice. Her coöperation after the patient goes back home and to work is not the least valuable of her many good works.

Given a dispensary where physicians trained in the diagnosis and treatment of tuberculosis can see the patient at intervals and direct the course to be followed; a visiting nurse to go to the home, instruct the family there, see that the patient follows orders, and bring any suspects to the dispensary for diagnosis; and behind these two a local association to furnish funds for treatment at home or in an institution, and we have the most valuable development of all our tuberculosis work.

The State Board of Health report for 1913 furnishes statistical evidence of the truth of this. The four largest counties in the state are New Haven, Hartford, Fairfield and New London. Almost all of the visiting nurses, dispensaries, and local associations are in New Haven and Hartford counties. Fairfield has none outside of Stamford, and New London none at all. Since 1907, the time when the work was begun, the records for these counties is as follows:—

New Haven, pop. incr. 311—357,000; death decr. 488 to 441 rate decr.
 Hartford, pop. incr. 229—266,000; death decr. 324 to 309 rate decr.
 Fairfield, pop. incr. 206—263,000; death incr. 358 to 369 rate decr.
 New London, pop. incr. 87—96,000; death incr. 123 to 136 rate incr.

These figures would indicate that there was some agency at work in New Haven and Hartford counties that was not present in the other two, and the agency is to my mind the work of the local associations and their visiting nurse.

I feel very strongly that this is the work which we must strive to extend throughout the state if we would ever hope to control tuberculosis; and I feel that the future efforts of the state itself must be directed along this line, rather than toward the erection of more sanatoria, once the children have been cared for.

In taking over the state agency for the Christmas seals this year, the State Tuberculosis Commission had chiefly in mind the opportunity it afforded for getting in touch with the people throughout the state and aiding in the establishment of local tuberculosis associations wherever possible. We hope in time to see it develop to where the local associations will be able to devote all their funds to local relief work, and will be supplied by the state with visiting nurses to look after their tuberculosis cases, and to teach the prevention of tuberculosis where it should be taught—in the homes of the people. This plan would not entail a great expense upon the state and it would increase enormously the funds available for local relief work in the cities and towns. Suppose, for instance, the salaries of the three tuberculosis nurses of New Haven were paid by the state and the amount this requires released for relief work, can you not see how the latter could be extended? It would be a long step toward the solution of the problem of providing funds to keep tuberculous patients under treatment long enough to secure lasting results. We also hope in coöperation with the physicians of the state, to have the nurses' work supplemented by the establishment of dispensaries for the tuberculous poor, where the nurses and their patients can have the advantage of the advice of both the physicians of their towns and of men with special tuberculosis training, supplied from the medical staffs of the state sanatoria. When we have this local work established and supplemented by the generous provision the state is making in our sanatoria, we feel that we will be combating tuberculosis in the right place, at the right time, and in the right way.

Original Articles.

A RARE TYPE OF BLADDER ULCER IN WOMEN; REPORT OF CASES.*

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AFTER a review of the literature on simple ulcer of the bladder I wish to present for your consideration this evening a group of cases in

* Read at a meeting of the New England Branch of the American Urological Association held in Boston on November 30, 1914.

which the lesion differs in many respects from the so-called Fenwick ulcer which has been the type heretofore designated as simple ulcer.

This group presents a strikingly uniform picture, an appreciation of the features of which by our branch of the profession will save the patient from much suffering, both from errors in diagnosis and consequent futile operations on other organs, and from the unnecessary prolongation of ordinary cystitis treatment when more radical measures are demanded.

These ulcers have been found in women, my work being confined to that sex. They probably occur in men. The average age of the eight women on first consultation was thirty-seven years, but the average duration of the bladder symptoms was seventeen years, making twenty years the average age at onset. Two cases stated that they had had bladder trouble as long as they could remember. In striking the average for the group I arbitrarily placed their onset age at fifteen years or about the menarche.

In none of the histories could I determine cause for the bladder lesion.

Three of the patients were unmarried, and there was no reason from the history or examination to suspect a former gonorrhoeal cystitis. Of the five married women, all had borne children, but in three of them the bladder trouble antedated childbearing and in the other two the bladder symptoms came on, in one, eleven years, and in the other one year after the last childbirth; so we cannot ascribe their trouble to puerperal infection. In no case was there a history of operation or catheterization to give an opportunity for possible traumatic or infectious origin from such sources.

If we accept the usual view that either an embolus or a thrombosis of a blood vessel is immediately responsible for simple ulcer of the bladder and cast about for the distant focus of infection in these cases, we find very little of even suggestive importance.

With the possible exception of Case IV, who gave a history of indefinite bladder symptoms since scarlet fever at six years of age, and who later recalled that for weeks after peritonitis (appendicitis) at twelve years of age, she suffered intensely on voiding, none of the cases gave a history of acute infectious fever immediately preceding their bladder symptoms.

CASE 1 had her bladder symptoms exaggerated when she caught cold, but there is nothing said in her history about tonsil or sinus infection.

CASE 2 had complained of rheumatism for several years and has had occasional attacks of rheumatism while under my care for the past six years, but I have been unable to find a source of origin.

CASE 3 had an attack of tonsillitis twenty years ago, but has had no throat trouble since, and she had been treated for bladder trouble before the tonsillitis attack.

CASE 4, as noted, may possibly have followed scarlet fever or an acute appendicitis attack.

CASE 5 never had evidence of tonsil or sinus

trouble, but had had rheumatism of the left knee intermittently for three years. Her bladder symptoms antedated this by three years.

CASE 6 had scarlet fever as a child and had nocturnal enuresis up to the menarche at fourteen years of age. Her severe bladder spasms began six months after the first menstruation.

CASE 7 had never had tonsillitis. As a child she had measles, mumps, and whooping-cough. Her bladder symptoms had been present as long as she could remember.

CASE 8 had had severe temporal headaches since childhood, more likely to occur around the menstrual period, and for two years she had noticed stoppage of the right nostril. Nasal and x-ray examination revealed marked disease of the right frontal sinus.

CASE 2 gave a history of the passage of a ureter stone five years before her bladder trouble began; and CASE 7, who had bladder symptoms all her life, had passed a pea-sized stone from the bladder ten years before consultation.

In view of the causal relationship which I have previously pointed out (*J. A. M. A.*—Vol. lvi, pp. 937, also *International Clinics*, Vol. iv—Twenty-second series) between chronic urethritis and infections of the tonsils, adenoids, sinuses, and teeth, there may be some significance in the fact that every one of these cases had a granular urethritis. The tenderness and scar tissue contraction was so marked in most of the cases as to require thorough cocainizing and careful manipulation in order to do satisfactory cystoscopy. Fenwick emphasizes this urethral hyperesthesia in most cases of non-malignant ulceration of the bladder and advises chloroform anesthesia for the cystoscopic examination. It is possible that the bladder ulceration and the inflammatory condition of the urethra may have a common cause, or it may be that the frequency of voiding and straining bring about an hypertrophy and hypersensitivity of the sphincter region.

After these remarks bearing on the etiology, let us now return to a consideration of some of the clinical features associated with the ulcer itself. These ulcers have all been found in the vertex or summit or free portion of the bladder; this being one important distinction in comparing the simple solitary ulcer of Fenwick which is found on the base or fixed portion of the bladder.

In three of the cases the ulcer was well forward—just back of the symphysis; in four, it was in the summit, with a tendency in three of them to occupy the posterior pole region, while in one case there was an ulcer area near the posterior pole, and another on the left anterior wall immediately back of the symphysis.

With the knee-breast posture and the Kelly cystoscope we are at some disadvantage in locating ulcers on the anterior or pubic wall. On the other hand, a chief characteristic of these ulcers is the extremely slight mucous membrane change found in certain periods of the ulcer, and I am confident that we have an advantage

over the Nitze method in our clearer definition obtained by direct vision through an air medium. We have another great advantage in using the knee-breast posture and air distention in being able to study the ulcer under similar conditions at all times. Fenwick warns against positive conclusions from one study of an ulcer through the magnifying cystoscope, which gives such different pictures at varying distances, and the ulcer itself varying in size and appearance with different amounts of the distending fluid.

While cystoscopy usually reveals only one inflammatory spot, there may be two or three granulation areas near together or somewhat separated, and operation usually reveals a more extensive area of inflammation than was appreciated by cystoscopy.

The ulcer area may be easily overlooked and the attention may first be arrested by an area of dead white scar tissue. In the neighborhood of this scar-looking area, one sees one or more areas of hyperemia which, on being touched with a dry cotton pledget, or with the end of the speculum, bleed and first show their character as ulcers.

In other cases, or perhaps at subsequent examination on the same case, the ulcer may be well defined as a deeply red area with granulating base and with congested vessels surrounding the area. In none of these cases has an individual ulcer area been more than a half centimeter in diameter, although two or three such ulcers have at times been grouped in a larger inflammatory area.

At certain examinations the central inflammatory area is found surrounded with a fairly wide area of edema. This was seen on one examination in Case 5, and it was much more marked at operation. In Case 3, whom I had examined many times, edema was never seen at cystoscopy, but at operation an edematous oval area of about 5 x 3 centimeters surrounded the central ulcers, and this was removed with a margin of one centimeter of normal mucosa.

In Case 2, in addition to the small ulcer area in the left vertex, which has been studied for the past six years, there has occasionally been a slightly congested area near the posterior pole, perhaps four centimeters distant from the ulcer, and on one occasion there was edema about this posterior pole congestion.

I am not prepared to estimate the significance of this edema area, but until we know more about it, I shall try to excise it entirely at operation. I have never noticed it in any other class of bladder operations. I think some of the edema area was left in Case 5, and she is the only one of our five operated cases who is not well.

The cystoscopic picture reveals the granulation surface as on the same general level as the surrounding mucosa, in other words one would describe these ulcers at cystoscopy as being superficial. I have never seen a deposit of urinary

salts on one of this variety and the surface has never shown the ragged, irregular character suggesting a possible malignancy.

At operation, after opening the bladder, the slight granulation surface can be easily detected with the bared palpating finger, and one is surprised after the cystoscopic picture, suggesting a simple superficial process, to find at operation that some of these inflammatory processes extend through the bladder wall and involve the peritoneum.

The urine presents a macroscopically normal appearance and the few leucocytes and red blood corpuscles present may be entirely overlooked with the microscope, unless care is used to settle or centrifugalize the specimen. Indeed the patient may come complaining of about her usual symptoms, at a time when the ulcer is temporarily closed and the urine is absolutely negative on microscopic examination. At her next visit there may be the usual urine picture of a few leucocytes and a few red blood corpuscles, found only on careful examination, and cystoscopy reveals a granulating area, or a slightly hyperemic area which oozes blood on being touched.

The most characteristic sign or symptom of simple ulcer as described by Fenwick and others, is hemorrhage. Only one of my eight patients ever noticed anything abnormal in the urine. Case 7 had seen blood at times, but when she came for treatment, the urine as in all the other cases, looked macroscopically clear and contained only a few red cells and a few leucocytes.

Diagnosis. So far as I know there is no form of bladder inflammation or ulceration that has an absolutely characteristic clinical history or cystoscopic picture. The ulcer under discussion is no exception to the rule.

The patient's recital of the insidious onset without apparent antecedent cause, and the long duration in spite of various forms of treatment, make one think at once of tuberculous disease. This is excluded as soon as one finds macroscopically clear urine associated with such a long history and absence of any sign of disease of the kidney or ureter.

One sometimes gets a history of serious symptoms simulating cystitis from patients suffering with chronic urethritis. As stated above, these cases under discussion have all had signs of chronic urethritis, but the presence of microscopic pus or blood, or of both, in urine catheterized from women makes one certain that he is dealing with something more than a urethritis.

There is nothing absolutely characteristic in the cystoscopic picture. Perhaps the most characteristic thing is the insignificance of the lesion as compared with the long duration and intensity of the patient's suffering. As stated above, one's attention may first be arrested by the slight smooth white scars of former ulceration rather than by the slight hyperemia or inflammatory spots near these scars. In other cases

there is a small granulation area which is bleeding from the distention of the bladder, or bleeds easily on being touched. In other cases or at other examinations of the same case the inflammatory spot is occupied and surrounded by an area of edema. Anyone familiar with bladder work has seen slight lesions, similar in appearance to these under discussion, and has seen them clear up spontaneously or after a few instillations of some antiseptic drug. Such slight lesions are generally accompanied by infection and the healing depends upon ridding the bladder of infection. In gonorrhoeal infections this takes place spontaneously in a few weeks, or much sooner if the bladder is treated.

Our conclusion therefore is that a diagnosis of this peculiar form of bladder ulceration depends ultimately on its resistance to all ordinary forms of treatment.

The difficulty of diagnosis in this class of cases unless we are awake to their unusual features, is best illustrated by the fact that four of the eight cases had operations on other organs in the effort to relieve symptoms caused by the bladder ulcer.

Microscopically one finds in the resected portion of the bladder wall a typical picture of chronic, simple ulcer. The epithelial layer is absent at the site of the ulcer and the mucosa layer is occupied by typical, chronic granulation tissue. In some of the specimens this granulation tissue is fairly richly supplied with capillaries, but in most of them there is a preponderance of connective tissue and infiltration of small round cells and leucocytes.

The epithelium surface in the neighborhood of the ulcer shows multiple layers of the transitional type of cells, the external layers being of the squamous stratified type and in places appearing hornified. Next to the ulcer the epithelial layer may end abruptly with a precipitous edge or there may be seen extending beyond this abrupt edge an attempt at repair in the nature of a single layer of cuboidal cells growing toward the bare surface of the ulcer.

The mucosa layer in the neighborhood of the ulcer shows an increase in the number and size of the capillaries, varying in the different specimens. The capillaries are often stuffed with leucocytes, as are many of the lymph spaces. There are some enlarged lymph spaces crowded with lymphoid cells and leucocytes, and where these are seen lying beneath the normal epithelium near the ulcer, they at first suggest the picture of tubercle.

There is hyalin degeneration in some areas and in some of the sections the edema causes rarification.

Some of the specimens show considerable non-striated muscle in the mucosa coat in the neighborhood of the ulcers.

The muscle coat shows enlarged lymph spaces, and these as well as some of the blood vessels of the muscle coat, contain many leu-

cocytes. Immediately beneath the ulcer, the muscle in places shows invasion and breaking up by the inflammatory process. The peritoneum, which in Case 3 was thickened and torn at the time of operation, shows microscopically a fibrous thickening and in the tissues a few wandering leucocytes.

Treatment and Results. Of these eight cases, five have had excision of the diseased area, with probable perfect result in all but one, Case 5. Of the three unoperated cases, I have treated Case 2 six years, with apparent healing on two or three occasions. Case 8 has been treated about eight months with improvement in the symptoms, but with little change in the appearance of the bladder lesion. Case 4 is now being treated by Dr. John Caulk of St. Louis, her symptoms having improved, but the lesion persisting after four months of rather desultory treatment under my directions during the past summer.

My experience with this relatively small number of cases convinces me that excision is the treatment after one arrives at a diagnosis of this particular form of ulcer.

As stated under the discussion on diagnosis, I would not arrive at a final diagnosis calling for operation unless the patient has had systematic local treatment for the bladder symptoms and presents in addition the signs and symptoms above enumerated as more or less characteristic.

The excision is done through a suprapubic extraperitoneal incision. To facilitate the finding and handling of the bladder, it is left full of air if cystoscopy has just been done in the knee-breast posture, or it is distended with sterile fluid just before operation.

If the peritoneum is involved in the inflammatory process and is accidentally torn in peeling it from the muscle wall, it is sutured at once before opening the bladder.

The incision in the bladder wall is made with a view to open near but not into the inflammatory area.

In my first cases I was interested in palpating the ulcers with bare fingers, but this is not necessary and tends to change the microscopic picture. The inflammatory area is easily found by vision, and by doubling it back over the fingers on the outside or muscle wall, it can be excised with all layers of the bladder wall without touching the mucosa layer of the inflammatory area. As soon as removed, the specimen should be pinned to a stiff cardboard before passing it to the preservative fluid. Otherwise it quickly shrinks and mars the microscopic study.

The few blood vessels of consequence should be grasped with forceps, and after the excision they should be tied with fine (No. 1) twenty-day catgut. Otherwise they may retract into the muscle wall and temporarily cease to bleed, only to give trouble during the first few days of convalescence, as happened in Case 3.

The bladder edges are quickly brought together by a running, lock stitch suture of either ten- or twenty-day, No. 2 catgut, leaving a slight opening in the vertex through which the mushroom retention catheter is carried and sutured to the bladder wall with a No. 2, ten-day catgut. The abdominal wall is closed, except for a small opening to carry the rubber catheter and a cigarette drain, which is introduced down to the bladder wall.

The cigarette drain is removed at the end of forty-eight hours, and daily irrigations of the bladder with 1:10,000 solution of silver nitrate are carried on through the retention catheter, increasing the strength of the solution as the patient recovers. An ounce or two of the solution is introduced and immediately withdrawn through the catheter until several washings are made. This is best accomplished with the patient on her side.

The retention catheter is withdrawn on the tenth to the fourteenth day, after which the daily irrigations are given through the urethra until the bladder is free from infection.

EPIDIDYMYTOMY FOR ACUTE EPIDIDYMITIS, AS AN OUT-PATIENT PROCEDURE.*

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AND

A. RILEY, M.D., BOSTON.

INFLAMMATION of the epididymis occurs practically always secondary to inflammation of the deep urethra in the region of the ejaculatory ducts. This inflammation of the deep urethra is usually associated with involvement of the vesicles and prostate. The severity of the inflammation in the epididymis bears no relation to the severity of the inflammation in the deep urethra. In some of the most acute cases of epididymitis the posterior involvement seems to be almost nil.

The causative factors may be most any of the pus-producing bacteria or the tubercle bacillus. It very frequently happens that a patient who is on constant catheter drainage or who is catheterized frequently or has instrumentation, develops an acute epididymitis. These cases usually develop very rapidly and are accompanied by a considerable rise in temperature, pain, rapid pulse and malaise. The course of such an epididymitis is usually short, subsiding almost as rapidly as it appeared. In some of these, however, an abscess develops which may point outwardly and has to be opened or breaks spontaneously. This almost never occurs in those cases of gonorrhoeal origin. We have never known of anyone doing epididymotomy for

these non-gonorrhoeal cases, but we should think it would be advisable, provided the inflammation does not clear up quickly.

What we are dealing with in this paper is epididymitis caused by the gonococcus. Up to about a year ago at the Boston Dispensary we had been treating these cases conservatively by local applications, strapping, rest in bed with ice bags, etc. We found that such treatment had many drawbacks. In the very acute cases the pain was very severe for a week or more, the patients frequently looked septic and had malaise, even after a subsidence of the acute pain. Many of these patients continue to have dull pain and uneasiness at times for many months after. Then, too, after the acute symptoms have subsided and treatment of the urethritis, which had been suspended, is begun again, these cases which have been treated palliatively are very apt to recur.

Finding this palliative treatment far from satisfactory, a little over a year ago Dr. Augustus Riley and I began to perform epididymotomy on the very acute ones. The results have been so gratifying that now we advise operation, even in the milder ones. During the past year we have operated upon twenty-eight cases, two of which were double. In one the double infection came simultaneously and in the other first the left was involved, and in about ten days the other became infected. In this case when the second epididymis became infected the patient returned at once and asked to have the operation done.

Apparently the first man to do epididymotomy for gonorrhoeal epididymitis was a Frenchman named Pirogoff in 1852; later it was done by H. Smith in 1864. These men apparently only punctured the epididymis from the outside. The operation then was neglected until Francis P. Hagner revived it in 1906. Following his original report of six cases operated upon, a great many men have reported series of cases, and all who have done it are enthusiastic about the results.

The operative procedure that we use differs from that used by Dr. Hagner only in some small details. We suture the wound differently and we operate a great deal under local anesthesia. Dr. Hagner advised against local anesthesia.

At first we operated only under ether. This meant that the patient must either go to a hospital or have it done at home. We found that many cases were unable to enter a hospital and consequently had to get along without an operation. Finally we decided to operate under local anesthesia and let the patient go home after the operation. The results were so good that now we do even the most acute cases in this way.

We use from 20 to 30 c.c. of 1% novocaine, to which has been added from three to six drops of adrenal solution 1:1000. The method is much

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