

their origin. Experiments by Dr. W. Hale indicate, as far as they go, that this suspicion is not justified.

RESULTS IN 1916

In the first three months of the year, the following papers have been published:

Fate of Hypophosphites.—The use of hypophosphites is an illustration of the survival of the application of a theory, after the theory itself has entirely disappeared. The history and literature of the subject are reviewed by Dr. W. M. Marriott. This shows that there has never been any real evidence of their usefulness, any apparent benefits being undoubtedly attributable to the measures with which they are always associated. It is high time, therefore, that they should be discarded from scientific medicine.

Epinephrin in Pituitary Extracts.—W. C. Crawford has demonstrated the presence of epinephrin or a similar substance, accounting partly for the depressor effect of these extracts.

Uric Acid Solvents.—Dr. H. D. Haskins has investigated the influence of the administration of various substances on the solubility of uric acid in the urine. As might be expected, he found that the alkalinity of the urine was the most powerful factor. While the particular alkali made minor quantitative differences, sodium bicarbonate did all that could be accomplished by any alkali. The literature of urate solvents was further reviewed by Dr. P. J. Hanzlik.

Strontium Salicylate.—Interested manufacturers have long claimed a superiority of strontium over other salts. These claims were partly supported by rather loose statements in the textbooks, but had no very good foundation. The question was tested on the salicylates by Dr. M. A. Blankenhorn. The results showed that the claimed superiority is entirely fallacious, there being no difference between strontium and sodium salicylate.

A number of other problems are under way, some nearly ready for publication. Still more, of course, are to be solved. The committee will be glad to give suggestions to any one who wishes to cooperate in this wide and extremely useful field.

ABSTRACT OF DISCUSSION

DR. F. E. STEWART, Philadelphia: The producers of bacterial vaccines met in New York last Monday and extended the date of expiration for their products from one year to one and one-half years. I have no criticism to make on this, and presume it is all right, but I would suggest that the Council take up for investigation the keeping powers of bacterial vaccines. I am frequently asked for information on this subject, but I do not know of any satisfactory experimental data warranting an opinion. An investigation of this kind would be of much value to all concerned, including the producers, the medical profession, and the public.

MR. FREDERICK I. LACKENBACH, San Francisco: It is this phase of the Council's work which has always appealed to me most strongly, namely, the constructive work. In editing the reports of the Council in the *California State Journal of Medicine* I have generally put these matters first—this constructive work—and frequently omitted the work of the Council pertaining to obscure proprietary preparations, since these frequently were only of passing or local interest and not read by our physicians. Physicians in many instances never have heard of these proprietary medicines which were to take up valuable space in our journal. Only matters were discussed which might be of general interest to physicians. It is of interest to every physician, for example, to know that the hypophosphites are of no appreciable value. I have taken this matter up with Dr. Puckner in my correspondence. It is

this constructive work of the Council that has given it the recognition that it has at home and abroad. I for one would rather see more constructive work done by the Council and less of the critical work on proprietary preparations.

DR. I. J. MOYER, Pittsburgh: This paper agrees with my experience with the drugs and corresponds closely with my clinical experience and I wish to go further in the investigation of some of the drugs, especially caffeine. We know that in failure of compensation it is of great value. There is just one point in regard to the abolition of the hypophosphites. In tuberculosis or just preceding the onset of this disease there is a large amount of waste of the phosphates and calcium and calcium phosphate and this renders the person more susceptible to the disease. If we can supplant this and supply the calcium salts it will support the organism and replace the loss of the calcium salt and it seems to me that it is worthy of trial and investigation.

DR. O. T. OSBORNE, New Haven, Conn.: I do not know of any proof that calcium hypophosphite becomes anything else in the body than calcium hypophosphite. I agree that the body needs calcium in this condition, but it must get it in some other way. As to Mr. Lackenbach, I take decided issue with him. I believe constructive work is valuable, but destructive work is equally as valuable in the drug line. We are still in the realms of superstition and if we do not wash off from our books the obsolete drugs and preparations the same as we have these hypophosphites, then we do not accomplish very much with the larger medical fraternity. The investigations of the actions and limitations of the active drugs is bound to go on, but I believe there is a larger field for the work of the Council in showing that many of the proprietaries are mixtures of more or less useless drugs. If one goes through these mixtures with a red pencil he will find that it is a minute portion of an iodid, for instance, or a small amount of salicylic acid, that is doing the work and the rest is nonsense. I believe the only official way to show this fact is through the American Medical Association.

DR. TORALD SOLLMANN, Cleveland: There are many preparations that the Council considers it a waste of time to take up; at the same time it aims to cover the entire field of advertised proprietaries so that the physician can find the opinion of the Council on them. This is the reason for a great deal of this condemnatory work.

THE TREATMENT BY RADIUM OF CARCINOMA OF THE PROSTATE AND BLADDER

PRELIMINARY REPORT *

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In October, 1915, at the Memorial Hospital, we began treatment by radium of cases of carcinoma of the prostate and bladder. At this early date obviously no final results of our treatment can be predicted. In certain cases, however, our primary results have been good. This, together with the fact that the technic of the application of the radium, particularly in prostate carcinomas, is new, encourages us to give this report.

Problems presented by bladder and prostate carcinomas are so entirely different that they will be considered separately.

CARCINOMA OF THE BLADDER

The cases considered in this paper are not papillomas which may have undergone at one place or another carcinomatous degeneration, but rather flat

* From the Service of the Memorial Hospital.

* Read before the American Association of Genito-Urinary Surgeons, Washington, D. C., May 9, 1916.

sessile tumors, sometimes cauliflower, sometimes hard, sometimes multiple, generally sloughy in part. The cystoscopic picture or the rectal feel may suggest an indurated base. Microscopically they show carcinoma. Fulguration does not particularly affect this tumor.

Technic of Using Radium.—There are a number of different facts connected with these tumors which have determined our method of treatment.

1. These patients often have a great deal of pain both connected with and between urinations. We have tried not to increase their pain and discomfort; in other words, if we do not succeed in curing, we can at least say that we have not made them materially worse. We have not been altogether successful in this. The extent of the carcinoma, the presence of urinary retention, the involvement of the prostatic urethra, and other factors, seem to make it more or less impossible to determine accurately the amount of pain a patient will have from radium treatment.

2. In the first case in which we used radium, the bladder was opened suprapubically and the radium attached by hooks to the tumor. It took this man nearly three months to get out of the hospital. He had sloughs in his suprapubic wound for a long time and his physical condition at present is the worst of any of the patients treated. For this reason I have at least temporarily given up this method.

3. I believe that the problem of destroying carcinoma of the bladder by radium is, in most cases, largely one of accuracy in applying the radium to the growth. This has been the experience of those who have used radium treatment in uterine carcinoma. Therefore we have not used irradiation by means of rectal tubes or suprapubic application, but have tried to place the radium on the growth in the bladder. I have tried to use the radium in such quantities and over such periods of time that undue sloughing and burning of the normal portion of the bladder will not result.

The method which I use at present is as follows:

From 100 to 200 millicuries of radium screened with 0.6 mm. of silver and 1.5 mm. of rubber are put up so as to form a capsule about 1 inch long and one-eighth inch in diameter; to this is attached a long stout double linen thread. A direct cystoscope is introduced into the bladder, the capsule put through its sheath and the cystoscope withdrawn, leaving the radium in the bladder. The linen thread attached to the tube runs through the urethra and appears at the meatus. In women one may reintroduce a small cystoscope and see if the radium lies on the tumor. The patient remains in bed during the application. This perhaps is a crude and inaccurate way of applying the radium. On the other hand, a large majority of bladder carcinomas are in the base, and the tube of radium cannot be very far from a carcinoma in this position; certainly much nearer than a rectal or suprapubic tube would be. If the carcinoma is located on one side of the bladder, the patient is told to turn slightly toward that side while the radium is applied. The patients generally have been able to urinate without trouble during the application. Some have held their urine until the end of the irradiation, at most eight hours, and then urinated or were catheterized after the radium was removed. The urine possibly to some extent screens the vault of the bladder (all of my patients to date have had carcinoma of the base) and also lifts the bladder mucous membrane of the vault away from the radium. Whatever may be the reason, the normal

bladder mucous membrane seems very resistant to radium burns when the radium is used in this way.

Duration of Radium Burns.—There is much variation in the effect of any given dose of radium. The radium does not, as a rule, change the appearance of the tumor; that is, a red cauliflower tumor generally remains red after the radium burn, but it appears to be softer, and fulguration of the tumor has a much greater effect than before the irradiation. On the other hand, sloughing sometimes occurs and persists even for a number of months. My rule is not to reapply radium until a patient has entirely recovered from the effects of the first application.

Dangers of the Use of Radium.—I have lately heard of one case in which radium was used, quantity, time or screening not known, in which the patient some two and one-half months after the irradiation died of a ruptured bladder. This case emphasizes the fact that if the tumor is at all extensive it is very difficult by the cystoscope to tell exactly the amount of bladder involved. Cystographs may help some. It is possible that further experience will indicate that, in extensive carcinomas, we should do a suprapubic observation of the exterior of the bladder. If we find that the carcinoma has penetrated the bladder, radium treatment is probably both useless and dangerous.

REPORT OF BLADDER CASES

Nine bladder tumors have been irradiated.

Extent of Growth.—In one of these cases the growth was absolutely inoperable. In another case the growth should be classed as a prostatic carcinoma with secondary invasion of the bladder. In five other cases the extent of the growth indicated that total cystectomy would have been the only operation to offer anything. In another case partial cystectomy, with the reimplantation of the left ureter, would have been possible, while in another the growth itself possibly could have been removed.

Microscopic Examination.—In six of the nine cases the diagnosis of carcinoma has been confirmed by the microscopic examination of pieces taken from the growth. I believe that in all cases the diagnosis must be confirmed by the microscope. But when once confirmed the cystoscopy and the rectal feel give us much more trustworthy data as to the extent of the tumor and the prognosis in a given case than does the microscope.

Result of Treatment.—One patient died three months after irradiation. This patient had an extensive inoperable carcinoma of the bladder base; three patients have been too recently treated to make any report. Another patient is definitely getting worse. This is the patient in whose case the radium was applied through the suprapubic opening in October, 1915. I have never been able to examine this patient with the cystoscope to see the effect of the radium on the bladder, but he is losing weight and having more frequent and more painful urination. In two other cases the symptoms are about the same, and the patient's general condition is slightly improved, but the carcinoma still persists. One of these was treated with radium about three months ago, and the other was treated several times, beginning in October, 1915. In two of the nine cases the growth has disappeared. One has only recently been examined cystoscopically, notwithstanding the radium was applied in February, 1916. In the other the growth has been absent (by cystoscopic examination) for three months. These

last two cases are of enough interest to report in some detail:

CASE 1.—C. T., man, aged 59, came to Dr. Keyes in January, 1916, and stated that since June, 1915, he had had occasional attacks of painless hematuria. In July, there had been two bloody emissions, though he had been impotent for ten years. At that time a papilloma was found, and since then he has been fulgurated four times—October 22, November 1, December 9, and January 11. Because of the return of the growth it is suspected to be carcinoma. Dr. Keyes reports a sloughy ulcer about the left ureteral orifice with definitely carcinomatous looking lumps in the edge. A piece was removed which Dr. Ewing reports as diffuse carcinoma, and the growth was burned again with the high frequency current. Three weeks later, 214 millicuries of screened radium were left in the bladder for seven hours. After the irradiation the patient went to his home and had various ups and downs, an attack of grip, etc. Three days after the irradiation and for a period of two weeks, he arose five to six times at night to urinate, but had no special burning on urination. From that time on the frequency has diminished. He was examined cystoscopically, May 2, 1916, at which time no trace of the original tumor could be detected. The entire bladder was slightly congested, and there were a few bullae about the bladder orifice. He is the picture of health, and there is no hardness felt in the prostate or the base of the bladder.

CASE 2.—C. A. G., woman, aged 69, had painful and frequent urination for one year, three or four times at night, and by day every three to four hours. She has been passing bloody urine for some time. She was examined cystoscopically some months before I saw her, and a diagnosis made of inoperable carcinoma of the bladder. Cystoscopy revealed a large red cauliflower tumor with small necrotic areas on the left side of the bladder base. I had some difficulty in determining its full extent. It probably was as large as half a dollar and sessile. It was directly over the left ureteral orifice, which could not be seen. Dr. Ewing reports carcinoma. I burned the tumor twice with high frequency current, but this had little or no effect on it, and I considered it useless to continue. January 4, I put 100 millicuries of screened radium in the bladder and left it in eight hours. The patient went out of town the next day and at the end of three days had severe bladder pain with increased urinary frequency so that she urinated every hour. Two days later she was absolutely normal as to pain and urinary frequency.

February 4, cystoscopy revealed that the tumor was gone. The ureter was in plain sight and covered with normal mucous membrane. The patient had a little pedunculated papilloma of the bladder neck, which was burned. Dr. Keyes confirmed my examination. April 28, cystoscopy revealed that there was still no tumor. She had a slight cystitis (caused by retention of urine due to a cystocele).

Whether the carcinoma in these cases will return or not, no one can say. I believe that the fact they have reacted so quickly to radium may indicate that we have eradicated the growth. Only time will tell, however.

CARCINOMA OF THE BLADDER

The problem involved in the diagnosis and treatment of carcinoma of the prostate is different from that of carcinoma of the bladder. In the first place is the difficulty in diagnosis. An extensive carcinoma which runs up into the vesicles can usually be exactly and positively diagnosed by palpation. On the other hand, a carcinoma as extensive as this is probably beyond the hope of cure. If the carcinoma, as far as can be determined by palpation, is confined to the limits of the prostate, then the diagnosis by palpation alone is sometimes not only difficult, but impossible.

In a recent case which I treated with radium there were two positive diagnoses, including my own, which was possibly biased, one of "very suspicious," one of

merely "suspicious" and two indeterminate. As Geraghty has pointed out, palpation of the median lobe on a sound introduced into the urethra is of assistance. It has been suggested that enough of the prostate for microscopic diagnosis can be obtained by the introduction of a trocar through the perineum into the suspected prostate. In one of my cases part of a carcinomatous lobe was removed and the diagnosis made from this. Such a procedure, however, is not ideal, as it might make the carcinoma grow more rapidly. If one treats cases which one is sure are carcinomas of the prostate, but in which a microscopic diagnosis has not been made, and makes such patients temporarily or permanently better, one will, of course, run a risk of dealing with cases which were not carcinomatous.

Treatment.—The operation after Legueu, Young and others apparently succeeds in curing the disease in a certain number of cases. The operative mortality is probably between 10 and 20 per cent., and the cured cases very few. Aside from the mortality, one objection to the operation is the fact that many patients are left with partial or complete incontinence. Because the results of an operation are unsatisfactory, radium has been employed in attempts to destroy the growth. Irradiation has been both rectal and urethral. Pasteur and Degras¹ report a number of cases in which the radium in the prostatic urethra or bladder gave a marked diminution of the size of the prostate and a decided improvement in symptoms. One patient three and one-half years after treatment by radium was in excellent health, with a small regular movable prostate and clear urine. This carcinoma had extended through into the bladder. Geraghty, applying radium by way of the urethra, has been able to relieve the symptoms of frequent urination, tenesmus, etc., in a number of cases, but has been unable to cause any appreciable diminution in the size of the carcinoma.

Technic of Application of Radium.—Because the carcinoma starts in the interior of the prostate gland, and radium by urethra or rectum often causes intense irritation, I have applied the radium differently. A needle $4\frac{1}{2}$ inches long and about 18 gage has been used. From 50 to 100 millicuries of radium have been placed in the end of this needle for a distance varying between $\frac{3}{4}$ inch to $1\frac{1}{2}$ inches according to the indications of the individual case. The patient is placed in a lithotomy position, a finger introduced into the rectum and the perineum between the urethra and rectum is anesthetized with novocain (1 per cent.). I have frequently inserted the needle without anesthesia, causing very little pain. The radium needle is then plunged into the perineum between the urethra and rectum, and, guided by the rectal finger, the end of the needle is passed into the middle of one or the other of the carcinomatous lobes.² After the needle is introduced, the patient frequently does not feel its presence. The needle is left in place from four to six hours. If one wishes to irradiate the other lobe, the needle is pulled out of the first lobe and introduced into the second and left there the proper time. The ease of this procedure is obvious. I was nearly dissuaded from using this method by reports of necrosis following the use of unscreened radium. I have now used the needles in the prostate fifteen times, and to date have had no radium sloughs. These

1. Pasteur and Degras: Radium in Cancer of the Prostate, *Jour. d'Urol.*, September, 1913.

2. The needle in the prostate also serves to exclude prostatic stone, the one condition hard to differentiate from carcinoma.

patients are apt to have burning and pain beginning the week after the radium is used and lasting for from one to two weeks. During this time the prostate swells, and the maximum effect of the radium on the growth is not to be looked for until two or three months. Some patients, notably those with the carcinoma extending into the vesicles, have a great deal of pain. Neither the pain, however, nor the urinary disturbance are as great as when the radium is used in the bladder. And curiously enough, radium in the urethra seems to cause or increase an already present residual urine; while this needle method, as far as I have observed, does not. There is a certain class of borderland cases in which the carcinoma has broken through into the bladder neck and in which it is a question whether to use the prostate needles or the screened radium in the bladder neck. I think these cases should be started with prostate needles, as the reaction is often little or nothing.

REPORT OF CASES

Extent of Lesion.—Five patients have been treated by the needle method.³ In but one of these cases was a specimen obtained for pathologic examination. In this case the bladder was opened suprapubically, and one lobe of the prostate removed and found to be carcinomatous. In two of the cases there was very extensive carcinoma of the prostate with involvement of the vesicles. In another case there was but little involvement of the vesicles, but a large hard irregular unmistakable carcinomatous prostate. In the fifth case there was a doubt of the diagnosis. Dr. Keyes and I thought it to be carcinoma. Another surgeon said that it was "very suspicious," still another "suspicious," and two refused to give an opinion.

Number of Treatments.—In one case I inserted the needle four different times; in the four other cases I used the needle only once. The largest dose of radium that I have used in a needle is 102 millicuries for four and one-half hours in one lobe, and the same needle was changed to the other lobe, and remained there four hours. I have never seen a slough from the use of the needle, although I prefer to begin with small doses at first, from 50 to 75 millicuries for six hours.

Results of Irradiation.—One patient died two months after the irradiation. He had an extensive carcinoma of the prostate and vesicles. The immediate cause of his death I do not know. One of the patients has been too recently irradiated to determine the result. The other three patients have all improved symptomatically.

One who was irradiated in December, 1915, directly after suprapubic exploration (by another surgeon) I have been unable to reach to examine. I have heard indirectly, however, that he is up and doing a good day's work. This is all I know about him.

The second, a possible borderland case, was treated Feb. 8, 1916. He had just before the irradiation an acute retention of urine. For six months prior to this he had a night urinary frequency (from two to four times). The radium needle caused absolutely no pain and no urinary disturbance. When seen, May 3, 1916, his prostate was considerably reduced in size. He had gained a few pounds in weight, he had no night frequency and was doing a full day's work. During this time he had no urethral instrumentation.

The last patient is decidedly better symptomatically, and his prostate is so much reduced that if I did not know his history I would have much difficulty in convincing myself

3. A sixth patient was treated by radium inserted in the rectum. In this case there was considerable irritability and urinary retention, and the patient finally died uremic. I have not included him in the foregoing series.

that he had any carcinoma. He was first seen in November, 1915. He gave a history of night urinary frequency of from six to eight times for four months, and some pain running down his right thigh for five years. There had been no erections for one and one-half years. He weighed 116 pounds. He had lost about twenty pounds. Both lobes of the prostate were large, irregular, stony, hard, with slight extension up toward the vesicles. The prostate was so hard that the possibility of prostatic stones was thought of. A roentgenogram excluded this. He had no residual urine. Radium was used in November, 1915. A month later he reported that he had a number of vigorous erections which "gave him hope." The prostate at that time was at a maximum swelling. January 14, the weight was 126. The prostate was much reduced. Dr. Keyes said: "It is more the slight irregularity of the prostate than anything else that suggests carcinoma."

I again irradiated the patient, January 18. February 7, he was not up at all at night. He weighed 132¾ pounds. February 22, I irradiated again. April 4, I irradiated once again. When last seen, April 21, his frequency had gone from none at all at night to twice at night because of the radium of April 4. He has a small hard lump in the left lobe and a narrow, hard ridge along the outer margin of the right lobe. The prostate is very flat. This man has gained about 16 pounds in weight. From getting up at night six or eight times, he has had a long period just before the last radium burn of getting up not at all at night. His prostate is markedly reduced in size, but I believe still has carcinoma in it. For six months his carcinoma and the symptoms caused by it have markedly regressed.

SUMMARY

By means of radium we have caused the rapid and complete disappearance of two bladder carcinomas out of nine treated. These cases were carcinomatous by cystoscopic appearance and microscopic examination. Time only will tell whether these patients are cured.

In one case of prostatic carcinoma, treated for six months, the carcinoma and the symptoms have markedly regressed. In another case, treated three months (possibly borderland) the symptoms have improved. Of three other patients treated, one is dead, one has only recently been treated, and one is doing a full day's work but could not be reached for examination.

It has been possible to carry out this work because of the cooperation of three men: Dr. Janeway has given valuable advice as the radium expert of the hospital; Dr. Keyes has very generously contributed advice, corroborating examinations, and material; while Dr. Ewing has suggested ways and means and made all the pathologic examinations. My grateful thanks are due to these three.

109 East Thirty-Fourth Street.

Separation of Buttocks.—Occasions arise in which the examination of the anus or the contiguous skin is necessary, or some minor operation of the area is indicated, but when, unfortunately, the patient objects to a third person (assistant). At times, as in private homes, assistance on similar occasions is lacking. Being confronted with such a case (the removal of a small external hemorrhoid), I was much annoyed by the falling together of large, soft, flabby buttocks. This disadvantage was quickly overcome by the simple expedient of applying a 2 inch strip of surgical adhesive plaster to each buttock and by a bandage which united the ends in front, pulling the buttocks apart. The adhesive strips are applied about an inch from the anus, transversely to the axis of the body and closely attached to the skin for, say, 6 inches. It is a great relief to the operator to witness how easily the buttocks are separated by this means and what an excellent field this simple method provides. It is painless, quick, cheap, efficient and, best of all, may be applied at any time or place when a roll of adhesive is available.—JOHN C. SILLIMAN, M.D., Palo Alto, Calif.