poisoning may arise, but vomiting and gastric symptoms are prominent features with poisoning, and precede the onset of diarrhoea. In bacterial food poisoning diarrhoea may commence suddenly, but several persons are usually involved and improvement is very rapid.

In treatment it is particularly important to attend to the warmth of the patient. The loss of heat and fluid from the body is very great, and the extremities are often pinched and cold. Owing to restlessness it is usually impossible to keep the arms under the bedclothes. The limbs should be wrapped loosely in cotton-wool down to the wrists and ankles, and hot-water bottles and plenty of blankets provided. Fluid must be given freely.

Diet must not be pressed at this stage. Feeds should be given every two hours, and should be alternately milk (about 7 ounces with 3 ounces of water), and meat extract such as bovril. They should be cold, but not iced, or just warmed sufficiently to take the chill off.

The essential treatment is the administration of starch and opium enemata on the same plan as in Stage I of chronic colitis.

If the patient comes early under observation it is a good practice to employ the saline treatment as used in bacillary dysentery. Sodium sulphate, 1 drachm, is given every two hours for the first twenty-four hours, then every four to six hours for the subsequent four or five days. Cases must be carefully selected for this treatment. It must be employed only at the onset of the attack, not later than twelve or at most twenty-four hours from the commencement, and it is contraindicated by numerous previous motions and by great severity.

Injections of morphine must never be given. Alcohol is also contraindicated; the patient usually dislikes it, and it is apt to disturb the stomach.

THE USE OF RADIUM IN THE TREATMENT OF RECTAL CARCINOMA.

BY

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THE treatment of rectal carcinoma by means of radium is still very much in the experimental stage, and it seems to me that it is important that at this stage we should frequently compare notes and review our successes and failures. There is still a great deal of work to be done before the results of treatment in rectal carcinoma can be compared favourably with the results already obtained in uterine and mouth carcinoma. Rectal carcinoma presents special difficulties, some of which are very hard to get over, and is beset with problems entirely its own.

Since radium needles and seeds for the treatment of rectal cancer first began to be used I have treated a number of cases by this method, and I think it may be of interest to others to survey some of the results.

Radium may be used in three ways in the treatment of rectal carcinoma: (1) As an adjunct to excision, thereby enabling a less serious operation to be performed. (2) To treat cases that are surgically inoperable. (3) As a substitute for the operation of excision.

Radium as an Adjunct to Excision.

At the present day it is generally agreed by surgeons that the only justifiable treatment for even early cases of carcinoma of the rectum is complete removal of the rectum and surrounding tissues. This of necessity involves the establishment of a permanent colostomy opening, which is naturally very distasteful to the patient. The old methods of local removal of the growth without leaving a permanent colostomy were some time ago universally abandoned because recurrence of the growth was the almost inevitable result. Since this principle of total removal of the rectum has been adopted the results of treatment in rectal cancer have greatly improved, so that the proportion of cures (based on a five years' survival) is now over 50 per cent. But the operation is a mutilating one, and it is obvious

that if a technique can be evolved by which the patient is saved a permanent colostomy and the proportion of cures can still be kept high a great advance will have been made over the present methods.

By the suitable use of radium we have, it seems to me, a means of treating at any rate early and favourable cases of rectal cancer by local excision of the growth without making a permanent colostomy, and yet obtaining a good percentage of cures. Many years must, of course, elapse before we can be sure that the results are satisfactory, or that they can be compared with the total excision of the rectum and colostomy, now the usual practice. The results in the few cases that I have already treated in this way have been sufficiently encouraging to warrant further trial of the method in suitable cases.

The cases treated were very early growths in the middle, or lower part, of the rectum on the posterior wall, and the patients were so extremely anxious to avoid a colostomy that they were prepared to run a possible additional risk of recurrence.

The Operation.—The rectum was cut down upon from behind after removal of the coccyx, or where necessary a portion of the sacrum, the muscular tissues were divided, and the rectum was well freed and opened to one side of the growth, which was then cut completely out with a margin of at least half an inch of apparently healthy tissue. The resulting wound in the rectum was then carefully closed by catgut sutures in a transverse direction, so as not to narrow the lumen more than could be helped, and the muscular structures were sewn back into place so as to support the first line of suture. Radium needles were then placed in the mesorectum as high up as possible and all along the line of lymphatic spread, also on each side of the rectum and in all the tissues in the immediate neighbourhood where it was considered possible cancer cells might be. The back wound was then entirely closed except for a small drain, the threads attaching to the radium needles being left inside the wound. The rectum itself was drained with a large tube through the anus. No colostomy was performed.

At the end of a week the wound was reopened, the radium needles were removed, and free drainage provided.

These cases have done very well, and in only one was there any faecal leakage through the back wound, and this was quite small and very soon closed up. Function has been perfectly restored, and the bowels act in the normal manner. If—which time alone will show—the ultimate result in these cases is good as regards recurrence, then we have a method in suitable cases which will enable a colostomy to be dispensed with and a normal functioning rectum to be left. One case showed a doubtful recurrence at a point in the scar some six months later, and this was treated again with radon seeds. It seems to me that this method of using radium in association with local removal of the growth may have a useful future in suitable cases.

Radium as a Substitute for Excision.

In view of the results up to date I do not think any surgeon would advise the treatment of an operable case of cancer of the rectum by radium alone. A few cases have been treated because the patient has refused colostomy, or excision was otherwise not advisable on account of age or infirmity, but the results of radium treatment at the present time do not justify it being used in place of excision in operable cases. The best results that I have seen have been in cases of epithelioma of the anus in elderly persons. One patient was 83, and a large and horrible epitheliomatous ulcer healed up as the result of the insertion of radon seeds.

Radium Treatment in Inoperable Cases.

Most of the cases treated so far have been in this category. The technique is still very much in an experimental stage, and we have much to learn as to the best methods of applying it. In the early stages a large dose was given and the needles, containing 5 to 20 mg. of radium, were removed in twenty-four or thirty-six hours. This proved unsatisfactory for two reasons: (1) there was too violent local reaction, and (2) the growth was not sufficiently

destroyed. For the last two years the method has been to use much smaller doses spread over a longer time. Needles containing 2 or 3 mg. of radium are put in and left for seven to ten days. This method has given much better results, but it has been found necessary to increase the dose up to 6,000 mg. hours and more, and also to increase the screening. Screens of 0.5 mm. of platinum cause necrosis around the needles and very dense fibrosis of the neighbouring tissues. We are now increasing the screening to 1 mm. of platinum, with beneficial results. I have tried, in addition, placing the needles in rubber catheters to increase the distance between the radium and the tissues, and I think this tends to reduce local necrosis, but the insertion of the catheters is troublesome.

The method of dealing with growths that I have chiefly used has been to expose the rectum from behind after removing the coccyx, or such part of the sacrum as is necessary, and to insert 3 mg. needles into and around the growth about 1 cm. apart, the object being to expose all parts of the growth to a lethal dose of radium as uniformly as possible. The needles are placed roughly parallel to the bowel lumen. If inserted at right angles to the lumen it is almost impossible to avoid some of the needles perforating the lumen, with consequent serious infection. The number of needles inserted depends upon the size of the growth and the amount of lymphatic spread into other parts. After the needles have all been placed in position the silks to which the needles are attached are tied together and pushed into the wound, which is closed with a small drain. At the end of a week or ten days the wound is reopened and the needles removed. After this the wound is not reclosed, but is left open and freely drained with tubes.

This method has to be modified when the growth is on the anterior wall of the rectum. I have in such cases exposed the rectum by an incision in front across the perineum and barraged the growth in a similar manner, care being taken in a male subject not to place any needles quite close to the urethra and not to get needles in front of the vesiculae seminales. In this way I have so far avoided causing damage to the urethra or bladder.

The greatest difficulty is in dealing with the area of lymphatic spread on the pelvic and abdominal aspect. For this purpose the abdomen has to be opened and the needles inserted into the upper part of the mesorectum and the areas on each side of it. All the early cases developed a plastic peritonitis which had to be drained and was clearly due to the action of the radium on the peritoneum. To get over this, packing had to be inserted over the needles and free drainage provided. This difficulty I am trying now to get over to a large extent by using radon seeds for the abdominal barrage in place of needles. This at any rate saves having to reopen the abdomen at the end of a week or ten days.

The results of radium treatment are that the growth in the course of a few weeks begins to get markedly smaller and the ulcerated area heals. In a successful case the growth entirely disappears, leaving normal tissue in its place. Very often there is a considerable amount of scarring and thickened fibrous tissue in the situation of the growth, but this tends gradually to soften in course of time. Unfortunately, what too often happens is that the growth is not entirely destroyed, and the main mass disappears, leaving islands of cancer tissue that have failed to be destroyed. These islands can be attacked again with radium needles or radon seeds, but it is very difficult to be sure that they have been adequately treated, and the dense fibrous tissue resulting from the first treatment makes insertion of the needles at the second operation peculiarly difficult.

The main difficulty of the radium treatment of cancer of the rectum is that of access to the growth. It is not easy to get satisfactory access to the upper part of the growth, which is in many ways the most important. One has to work at a considerable depth and endways to the main mass, also the bowel is thin, and it is very important not to injure the lumen.

Another difficulty is that the wounds are very slow in healing, and considerable sepsis is at present unavoidable.

Sepsis is due partly to the fact that some necrosis in the immediate neighbourhood of the needles seems inevitable, and partly to the fact that the action of the radium is very markedly to lower the natural resistance of the tissues to infection. If proper care is taken to avoid a primary sepsis at the time of the operation the sepsis is only secondary, and therefore not serious, but it is very tiresome and makes convalescence very slow.

The chief indications for improvement in technique in these difficult cases appears to me to lie in the direction of: (1) Increased screening of the radium to cut out the action of unwanted rays. (2) The use of radon seeds to barrage the growth and infected lymphatics from the abdominal aspect in place of needles. (3) More successful aseptic methods in respect of the wounds of access.

It is too soon as yet to give any figures of the results of radium treatment in these cases. Some of the results are good, some very unsatisfactory. My object in writing this paper is to give some of the results of my experiences with the treatment, in the hope that it may encourage other surgeons to do the same. It is at the present time, when the technique of treatment is developing, that an exchange of views and experiences is most likely to be of value.

THE OCHSNER-SHERREN (DELAYED) TREATMENT OF ACUTE APPENDICITIS: INDICATIONS AND TECHNIQUE.*

BY

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I WAS brought up in the belief that as soon as acute appendicitis was diagnosed immediate operation was always indicated unless the patient was obviously getting over the attack. This was my faith until I became surgical registrar to James Sherren at the London Hospital. Association with this eminent surgeon was responsible for altering my views; slowly I began to realize that an appreciable number of deaths and many complications are due to immediate operation in certain phases of the disease.

The "delayed treatment," as McNeill Love has called the postponing of operation in selected cases, was originated by Albert J. Ochsner of Chicago, who published his first communication on the subject as long ago as 1902. James Sherren's treatment differed from Ochsner's on many points, and some of the details of his method have been still further modified by his pupils.

The objective of the Ochsner-Sherren school is to help to reduce the serious total mortality of appendicitis, which, at the present time, in spite of better transport, increased hospital facilities, better technique, and a full post-war complement of a temporarily depleted medical profession, shows no abatement. Not even its few ardent supporters would attempt to deny that the delayed treatment of appendicitis is open to abuse, and if abused would defeat the very object of its inception. Just as we believe that its universal adoption under proper conditions would help to reduce mortality, so we freely admit that its misinterpretation would prove disastrous. Evil lies in the abuse of all good things.

The treatment is not merely a postponement of operation; it is not just the old "interval appendicectomy"; it is unfair and inaccurate to dub the treatment as temporizing; it is not a substitute for operation, but a preparation for it—essentially a surgeon's treatment, to be undertaken only in a surgical hospital, or a correspondingly equipped nursing home, with a nursing staff trained in the method. Above all, in a civilized country, the treatment must always be carried out on the very threshold of the operating theatre. As private houses are not thus equipped, it should be regarded as criminal to attempt the treatment in the patient's home. But one can picture

* An address given to the Leicester Medical Society on November 13th, 1929.