

by irrigation has been made because experience has shown that while such a method may cure a few cases, it is a dangerous procedure and should be abandoned entirely in favor of laparotomy.

Mortality. In the 112 cases treated at the Children's Hospital there were 44 deaths, giving a percentage death rate of 39.2. Perrin and Lindsay⁵ had a mortality of 34.7 in 400 cases, while Clubbe³ reports a mortality of 20 per cent. If you will glance at the following diagram you will see that the fact on which the mortality depends is less the skill of the operator than the length of history prior to operation.

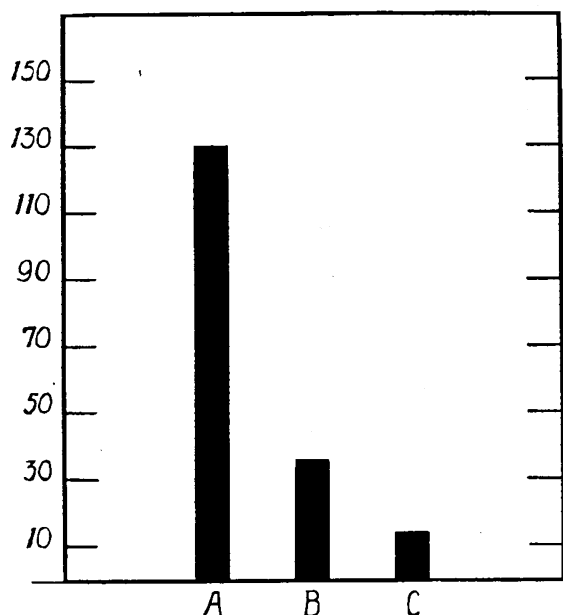


DIAGRAM No. 3.—(A) Cases dead. (B) Cases well. (C) Cases treated during first six months of 1921 with no mortality. Figures on ordinate indicate the number of hours elapsing between the onset of symptoms and operation.

It is both interesting and encouraging to find no mortality in the eight cases of intussusception treated at the Children's Hospital for the first six months of this year. The average duration of the disease prior to operation in these cases was fourteen hours. Consideration of the mortality of acute intussusception therefore shows that it lies in the hands of the practitioner to reduce the mortality.

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RECENT EXPERIENCE WITH RADIUM IN MALIGNANT DISEASE OF THE OESOPHAGUS AND UPPER RESPIRATORY TRACT.*

BY HENRY HALL FORBES, M.D., NEW YORK CITY.

MR. PRESIDENT and Members of the New England Oto-laryngological Society and Guests: Your secretary on our return trip from Europe last summer asked me to come to Boston and take part in one of your meetings. I little realized I would be a headliner, but I do assure you that I was pleased with the idea, and that I am doubly pleased that I am here tonight, although I should like very much to reverse the old quotation and say that it is better to receive than to give, for I certainly have every hope of taking back with me to New York much that is new and encouraging.

In coming here I feel some diffidence from the fact that I have so little to offer in a constructive sense. But before giving you my own conclusions, which are brief, it is quite fit and proper that an outline of the work which has been going on for the past two and a half years should be presented to you. This work covers the period of time which has been given over to the study of the results of the use of radium, especially in cancer of the larynx and oesophagus. My use of radium previously has been limited to the treatment of a comparatively few cases of papillomata of the larynx. The advent of the Department of Radium in the Postgraduate Hospital in charge of Dr. G. S. Willis seemed to me a golden opportunity for a co-operative plan of action—a combination where the experience of the radiologist and the bronchoscopist would be of mutual benefit; the one to control the type of radium, the method of application and the duration of the exposure; the other, by direct inspection, to diagnose the lesion, to make the applications and to note the progress of the case. Advantage has been taken of the x-ray department for the preliminary and corroborative diagnosis and later as a check in cases where a radium tube was used. This was in the early work through the oesophagoscope where I was not quite sure that the radium tube might not change its position following the removal of the oesophageal tube. Our one thought at the

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time was the possibility of giving to the patient and to radium a scientific standing. It has been most interesting and instructive, and I feel fully repaid if this has been in any way a stimulus, to those seeing the work, to continue the work or to suggest new modifications. I think it may be stated as a fact that the use of the x-ray for the direct treatment of laryngeal and oesophageal new growths is at present impracticable. (Dr. W. H. Meyer in charge of the x-ray department of our hospital.) Then it is to radium that we must turn for aid in the treatment of laryngeal cancer as an adjunct to surgery in operable cases; and to radium alone for relief and possible cure of the inoperable cancer of the larynx and all cancers of the oesophagus. The transthoracic operation for cancer of the oesophagus must be mentioned, but we all know the gravity of the operation and how rare it is for us to see a really suitable operative case—that is, one recognized in its early stages. At first all applications of the radium needles were made by the method of suspension laryngoscopy; some cases are still observed and treated by this method (recent case), but the greater number are examined and treated by direct laryngoscopy, using a Jackson tube; advantage being taken of the very comfortable position advocated by Dr. Johnson of Baltimore. The applications to the upper part of the oesophagus or hypo-larynx may be made through the oesophageal speculum, or lower in the tube by the oesophagoscope. Precision in location of the disease and the opportunity of watching the progress of the disease cannot be too strongly emphasized. "Dr. Willis feels that the application of radium, as to dosage and the question of the utilization of the Beta or Gamma rays, is still very much in the experimental stage." There also seems to be doubt as to the method of application which is best, emanations or the radium itself. (Practical advantage of emanations.) We have used the needle, availing ourselves of both the Beta and Gamma rays, and we have used the protected or screened tubes giving us the Gamma rays alone. Another operator combines the work of the internal application with an external application, getting the so-called cross-fire; the value of this latter method I must leave to the expert in radium to determine.

I will not attempt to individualize in giving you the results in the cases that have come under my care. I am sorry at the outset to state that, for some reason unknown to me, the greater number of cases have come under the class of the inoperable and a few advanced and hopeless. With the experience gained, many of our earlier cases, we feel, were decidedly not suitable for radium treatment. Not that a death has occurred from toxemia, as reported by other observers, but that cases have

simply not responded and probably death has been hastened. The laryngeal cases to date number some 24. In only one (and this a combined hemi-laryngectomy) do I feel that we have relieved the patient; I do not use the word "cured" because sufficient time has not elapsed for a possible recurrence (only two years). I do feel that I have learned that an early tracheotomy is a benefit to the patient in relieving the pain in inoperable cases and adding to his comfort. I feel that a number of abscesses that occurred following the use of the needle were not areas of infection, as first thought, but only a coincidence, as they occurred after all antiseptic precautions had been taken and have been observed by others where no radium has been used. At present the needles are limited to the non-ulcerative cases, and the tube to those in which ulceration has taken place, thus avoiding the possibility of introducing the needles through ulcerated or infected areas.

The oesophageal cases have increased in number since reading my paper at the annual meeting of the Peroral Endoscopists in Boston on June 1, 1920. Full details were given at that time of the method of treatment. The patients have invariably been received in what might be considered the advanced stage. It seems a fatality that oesophageal cancer is recognized so late. (Case at present who for six months had had difficulty in swallowing, loss of weight, cachectic and treated as cardio-spasm.) The disease unfortunately does not give symptoms in the early stages and hence is not recognized by the physician until the really grave symptoms become apparent and disease far advanced. I have noted recently the following given as the clinical signs of cancer of the oesophagus: Insidious onset; selective dysphagia to bread and meat; preservation of the appetite to an advanced stage; expectoration of small amount of blood-stained mucus; and malodorous breath. I might add localized pain and often expectoration of excessive amounts of mucus and loss of weight. How rare is it to have this complete picture. I do feel that an early gastrostomy is indicated in all cases of difficulty in swallowing and in the ulcerative stage where a physiological rest of the organ is demanded.

Under radium treatment we have added to the comfort and the morale of our patients; pain has been less or even temporarily relieved, the difficulty in swallowing has been less and many have gained weight.

Notwithstanding this apparent early beneficial effect both Dr. Willis and I agree that the results of the use of radium in cases of oesophageal cancer that have come to us have been nil and that no further cases should be treated until some other technique shall be suggested.

Under the head of personal experience I wish to mention that it was my privilege this summer to visit in London Dr. William Hill and note the method he employs, and also to have him demonstrate the use of his oesophagoscope. The general outline was the same as described. However, he uses the radium emanations properly protected in a tube. He had not buried any needles in the new growths of the oesophagus. It was pleasing to see that others were carrying out the direct methods of observation and application as already described. Dr. Hill was decidedly optimistic on the results that he was obtaining.

In conclusion, I wish to leave with you the impression that in all cases coming under my care as a laryngologist and bronchoscopist, and working in hearty co-operation with the radiologist who controlled the quality and quantity of the radium used, the results have been far from encouraging. In the pharyngeal cases of cancer we will continue the use of radium. We are hopeful in laryngeal cancer and are continuing our work. I feel that the earliest recognition of malignancy in the larynx and early operation will give the greatest benefit to the patient. Radium may be applied before the operation or later. I do feel that in radium we have a powerful therapeutic agent; that co-operation must exist between the radiologist and the specialist, both for diagnosis and for treatment. Failures of today may be successes of tomorrow, as our knowledge of the more scientific application of this element increases.

DISCUSSION OF DR. FORBES' PAPER.

DR. D. CROSBY GREENE: The ultimate results in the two groups of cases which Dr. Forbes has reported in his interesting paper are not widely different from what we have observed in the Throat Clinic at the Huntington Memorial Hospital in Boston. We have, however, seen a marked degree of palliation in some of the oesophageal cases, and a few apparent cures among the laryngeal cases.

In our clinic we use exclusively the emanations, which have the advantage over the radium element, chiefly in the greater flexibility of application. The emanations have the further advantage of being available for the seed method of treatment, which was devised by Dr. Duane, the physicist of the Huntington Hospital.

Briefly, this consists in the insertion of minute glass capsules, containing small amounts of the emanations, into the tissue of the tumor. A sufficient number of these seeds are inserted at proper intervals to subject the entire growth to radiation. The area of active radiation of seeds, containing one to three millicuries, has been shown to be about one centimeter. By inserting these seeds at intervals of about one centimeter throughout a tumor, the entire mass may be effectively radiated.

The seed method is of especial value in radiating lesions in the throat, since it permits accurate application and retention of the dose where it is desired. The instrument used for insertion is a simple trocar, varied appropriately in length and shape, according to the location of the growth to be treated. For treating the lower end of the oesophagus we use a trocar eighteen inches to twenty inches long.

When a tumor is of such an extent, and so located that it can be entirely radiated by seeds, the results are almost always favorable. We are confronted, in our clinic, by two great difficulties; first, the great majority of cases come to us with the disease so advanced that it is impossible to determine the extent of invasion; second, the location of the growth is such that it is not possible to determine its extent or reach it on all sides. For example, in cancer of the oesophagus, we can, by oesophagoscopy, locate the upper limit, but are not able to judge accurately its lower limit, or the extent of infiltration of the surrounding tissue.

The two important factors for success in treatment by radium are early recognition and accessibility. In some cases, as, for example, in cases of malignant disease of the accessory sinuses, a tumor may by surgery be rendered accessible for radiation. Dr. Mosher, Dr. Barnes, Dr. Harold Tobey and I have had favorable results in about 50 per cent. of the cases so treated.

In our experience, sarcoma as it appears in the throat is much more susceptible to improvement than carcinoma. Carcinoma of the papillary type yields better to radiation than the deeply infiltrating type. During the past two years we have been treating carcinoma of the oesophagus by radium seed insertions with the aid of oesophagoscopy. There has not been a single cure by this method, but in the majority of cases there has been definite palliation for three or four months. There have been no unfavorable effects from this treatment, excepting in cases of cancer of the upper end. In this region the reaction following the treatment has increased the dysphagia so much that I have given up using radium in this region. Some of these cases appear to be relieved, to a certain extent, by x-ray treatment, contrary to Dr. Forbes' experience.

In cancer of the larynx, we feel that in early cases surgery offers the most hope; in the later cases, surgery, supplemented by radium. We have now three cases of apparent cure out of a total of over 100 cases.

DR. HARRY A. BARNES: Mr. Chairman, and Members of the Society: In June, 1920, I reported before the Triological Society, meeting here in Boston, eight cases of malignant disease of the accessory sinuses, treated by operation followed by immediate radiation of the operative field. These cases were all operated upon during the two and one-half years previous to that time. Since then I have had nine other similar cases so treated.

Before I say anything about results, I should like briefly to describe the methods of treatment and their *raison d'être*. In the first place, I believe that all of these cases, unless they are distinctly inoperable by reason of involving inaccessible or vital parts, should be operated on first. Certain types of sarcoma, as Dr. Greene has stated, do respond wonderfully well to radiation. This is true especially of the sarcomas of lymphoid origin. Unfortunately this is not the type of sarcoma usually seen in the sinuses. And so it seems to me that with the sarcomas, as with the carcinomas, in this region at least, it is worse than futile, and a waste of very precious time, to try to get results by the use of radium alone.

The operation in these cases has been a modification of the one described by Moure; that is, two incisions in the cheek, both starting from a common point over the bridge of the nose; the first circling the lower rim of the orbit, and about a quarter inch below it; the other carried down the side of the nose near its junction with the cheek and ending just to the outer side of the ala. The flap between these incisions is turned outward, exposing the front bony wall of the antrum. This is then removed and easy access is had not only to the antrum, but also to the ethmoid, sphenoid, and