

It is the experience of every exponent of radiotherapy, which he can confirm every day, that the patients who come to him to be treated for carcinoma of the uterus are extraordinarily bad material. This is borne out by our own figures: out of 1,723 cases of carcinoma of the cervix only 326, or 18.8 per cent., fell into Group 1 (operable). The reason is not that radiotherapists assess their material by a more exacting standard than surgeons, but that the large radiotherapeutic institutions admit all the cases that have been given up at a glance as hopeless subjects for operation or any other kind of treatment.

The figures of operability for the patients treated by radiotherapy for carcinoma of the cervix fluctuate between 15 and 28 per cent. In contrast to these, clinics which still practise operation give figures of 40 to 80 per cent., and for carcinoma of the body of the uterus as high as 100 per cent. The handicap which these low operability figures impose on radiotherapy can be illustrated by a simple calculation from our figures. If 40 per cent. of our material were operable the absolute cure rate by radiotherapy would be raised from 24 to 30 per cent., and if 60 per cent. of the material were operable it would

be raised to 40 per cent. The way to improve the material is suggested by one of the directions which Regaud has put forward for the work of the Radiological Commission:

"The encouragement of public and scientific propaganda directed towards the early recognition of carcinoma, so that early and effective treatment may be carried out."

CONCLUSION

I have endeavoured to explain within the scope of my paper: (1) what radiotherapy of uterine carcinoma, unassisted by surgery, can do nowadays; (2) the conditions of technique, system, and administration under which these results can be achieved; and (3) the prospects, according to our experience up to date, of improving our results. The figures show unequivocally that radiotherapy can do all that operation can and more, in that it can cure inoperable cases. Moreover, they prove the truth of Döderlein's words:

"I have long maintained that the day of the dangerous and drastic radical operation is over."

Success depends, however, on possessing the proper means and using them in the proper way.

RESULTS OF THE TREATMENT OF CANCER OF THE CERVIX UTERI*

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The subject with which I have to deal consists of certain data concerning the results which may reasonably be expected nowadays from the radium treatment of cancer of the uterus. Since I have the honour of addressing you as representative of the Institut du Radium de Paris, you will perhaps excuse me if I confine myself in this short survey exclusively to the statistics of the therapeutic section of that institution, of which Dr. Regaud is the head. We consider that, in practice at least, the epitheliomata of the corpus and the sarcomata of the uterus belong to the domain of surgery, while the epitheliomata of the cervix are for the most part the province of radiotherapy; it is with this class of cancers alone that I am concerned to-day.

Table I shows the total number of patients treated at the Institut du Radium de Paris by the staff of the Fondation Curie by radiotherapy, either alone or in combination with other treatment, between the years 1919 and 1926. They numbered 678, of whom 182 (26 per cent.) were alive and free from all symptoms of cancer five years after the date of treatment. The percentage of cures varies, however, from year to year, suggesting a constant improvement which is chiefly to be explained by the regular progress that has been achieved in radiotherapeutic technique.

ADVANCES IN TECHNIQUE

From the point of view of technique, the eight years under review fall into three distinct periods. The first, which comprises the years 1919 and 1920, just after the treatment department of the Institut Curie was opened, was a period of initiation and testing out of the medical personnel. Cervical cancers were irradiated with material that was not properly adapted to its purpose, and by diverse methods which subsequent experience has led us

to regard as defective. The results were frankly bad: 10 and 17 per cent. only of cures. In 1921 we instituted our technique of introducing radium into the uterine cavity, and have not appreciably modified it since; it is still given systematically in every case. It consists in the introduction into the uterus of a sound containing tubes of radium placed end to end in sufficient number to fill up the whole length of the uterine canal; an arrangement is employed in the vagina by which tubes are held

TABLE I.—Comprehensive Statistics of Cases treated by Radiotherapy (alone or combined) Compiled at the End of the Fifth Year after Treatment

Years	Total Number of Patients Treated	Patients Not Cured or Considered as Such				Patients found Cured at the End of the Fifth Year	Percentage of Cures
		Dead from Cancer or with Recurrence	Dead from Inter-current Disease	Lost Sight of	Total		
1919	103	85	2	5	92	11	10
1920	98	78	1	2	81	17	17
1921	48	35	1	—	36	12	25
1922	69	50	1	—	51	18	26
1923	85	55	—	4	59	26	30
1924	80	48	3	1	52	28	35
1925	97	60	3	—	63	34	35
1926	98	56	4	2	62	36	36
Totals	678	—	—	—	496	182	Mean of cures } 26%

round the cervix. The tubes used number from five to eight, have a wall thickness of 1 or 1.5 mm. of platinum, and contain a total quantity of about 60 to 70 mg. of radium element: the total dosage from a continuous application lasting five or six days rarely exceeds 8,000 mg.-hours. Nearly all the cases treated in 1921, 1922, and 1923 received this intrauterine treatment alone. Though inadequate, it was correct, and its merits are apparent in the increase in the rate of cure first to 25 per cent. and then to 30 per cent.

The staff then became convinced of the necessity of reinforcing the treatment by external irradiation, exerting

* Translation of a paper read in opening a discussion in the Section of Obstetrics and Gynaecology at the Centenary Meeting of the British Medical Association, London, 1932.

as uniform an effect as possible over the whole of the pelvic cavity. From 1924 onwards this combined treatment has tended to become the rule in cases which showed a malignant invasion of the parametrium. The external irradiation of the pelvis is carried out either by means of x rays or by means of a powerful radioactive source situated 10 cm. from the skin and consisting of 4 grams of radium element (a quantity which it is hoped will soon be increased), the radiations from which are applied through several fields. This amelioration in technique has resulted in a fresh improvement in the percentage of five-year cures to 35 and 36 per cent. Table II shows better than this verbal account the progress that has been

These are the results which radium therapy of cancer of the cervix was giving five years ago, with the methods and the knowledge that were at our disposal then. There is every ground for thinking that the cure rate will be still further improved, though possibly not with quite such rapidity.

THE PROBLEMS OF RADIUM THERAPY

The principal obstacles to the radium therapy of cervical cancer are known, and the staff are considering the lines along which to work in order to gain still further control over the disease.

(a) Many women suffering from Stage III lesions receive

TABLE II.—Statistics, according to the Stage of Extension of the Lesions of Cases treated by Radiotherapy Alone, Compiled at the End of the Fifth Year after Treatment

Years	Number of Patients Treated	Stage I		Stage II		Stage III		Stage IV		Total of Patients Cured	Percentage of Cures
		Irradiated	Cured	Irradiated	Cured	Irradiated	Cured	Irradiated	Cured		
1919	83	30	4	104	23	111	38	26	18	154	9
1920	89		12		5		3		0		
1921	36		7		8		0		0		
1922	63		4		6		4		0		
			33%		26%		8%				17%
1923	74	22	7	96	25	152	37	47	5	311	23
1924	68		3		10		12		0		
1925	88		8		9		15		1		
1926	87		4		15		12		0		
					86%				42%		
Totals ...	588	52	29	200	69	263	55	73	1	154	—
Percentages	—	55		34		20		1		—	26

made in the radiotherapy of cancer of the cervix in the course of the last few years. It contains only those cases treated by radiotherapy alone, and excludes all those who underwent operation—for instance, cases of post-operative relapse, cases treated by combined radium and surgery, and hysterectomies carried out after radiotherapy. The cases are classified according to the progress which the disease had made.* The period of eight years has been divided into two four-year periods, each comprising an approximately equal number of cases. This arrangement allows the five-year results of the two periods 1919-22 and 1923-6 to be compared. The cure rate over the whole period in a total number of 588 reached 26 per cent., but as the rate for 271 patients treated from 1919 to 1922 was 17 per cent., that for 317 patients treated between 1923 and 1926 inclusive was 33 per cent.

ANALYSIS OF RESULTS

I propose to consider the comparative results for the two four-year periods, and to analyse each one separately according to the various stages of the disease. In Stage I the total number of cases was fifty-two. In thirty cases treated during the first period ten cures were obtained (33 per cent.); but of twenty-two patients irradiated during the second period nineteen were still well after five years (86 per cent.). The number of cases in Stage II was 200; the 104 treated in the first period gave twenty-eight cures (26 per cent.); the ninety-six treated in the second period gave forty-one cures (42 per cent.). The Stage III cases give a still more striking proof of progress: whereas only nine patients (8 per cent.) of 111 were cured from 1919 to 1922, the number cured out of 152 treated between 1923 and 1926 was forty-six (30 per cent.). In Stage IV, on the other hand, the growths were practically incurable, which is not surprising to anyone who knows the extent of the lesions in this stage; they really belong to the category which the Americans term "desolated cases."

only temporary benefit from distant radium therapy by means of the 4-gram bomb. After some months recurrence shows itself in the pelvic glands, as a proof that the quantity of radiation that has penetrated to the deeper tissues is insufficient. It is permissible to hope that more patients will be permanently cured when the institute has its 8-gram bomb, for use at greater distances from the skin than 10 cm.; the new bomb is to be placed at its disposal in a short time.

(b) The immediate mortality from gynaecological radium therapy is due entirely to infection and hardly amounts to 2 per cent. In a much greater proportion of cases, however, the irradiation sets on foot infective processes which interfere with treatment and necessitate its interruption for a time, which may be short or long. When uterine cancers become heavily infected, radium treatment, and consequently cure, is sometimes impossible. The most frequent causative organism in these complications is the streptococcus, against which the bacteriologists have not yet provided the gynaecologists with an efficient weapon. If they could find an adequate antidote, one of its most useful effects would be to increase considerably the proportion of cures in uterine cancer.

(c) Too many of the patients who come for advice for the first time are already suffering from Stage IV lesions, which are beyond the scope of therapy. In our statistics these cases number more than 12 per cent., and this figure should really be increased by a certain number of cases, not shown in the statistics, whose lesions are so extensive that they contraindicate any attempt at treatment. The efforts which are being made in all countries to bring cancer under treatment earlier must inevitably reduce the numbers of these unhappy women.

We have, therefore, good reason to hope that the radium therapy of uterine cancer will make still further progress. One may prophesy that before long epithelioma of the cervix will be diagnosed earlier and irradiated correctly, and that it will cease to be an important factor in the tables of mortality from cancer.

* The state of the disease, for statistical purposes, was established by the rules laid down by the Section of Hygiene of the League of Nations