

# Radium, X-Ray in Gynaecology

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**T**HE greatest use of Radium and X-ray in Gynaecology is in the treatment of carcinoma of the genital tract, but it is also used to some extent, less now than formerly, in certain benign affections of the pelvic organs.

## BENIGN UTERINE CONDITIONS

There are two groups of benign conditions affecting the uterus in which radium, and particularly X-ray, are used in treatment, under certain circumstances.

**FIBROMYOMATA UTERII.** The non-operative treatment of this condition is undertaken in those cases which are a poor operative risk, such as advanced renal or cardiac disease, and in advanced pulmonary tuberculosis. There are, however, certain contra-indications to the use of irradiation in this condition which may be listed as follows:

1. Tumors larger than four months pregnancy.
2. Tumors undergoing degenerative changes such as softening, necrosis, etc.
3. Those showing rapid growth.
4. The presence of inflammatory lesions in the pelvis.
5. Other conditions, which being present, require operative treatment, e.g. ovarian cysts, etc.

The treatment consists of the introduction, through a dilated cervix, of a tube containing Radium emanations. The tube, which is metal, is enclosed in rubber and is placed in the fundus of the uterus and kept there by means of gauze packing. The Radium tube is left in place a sufficient number of hours to give the required dosage of radium, i.e. about 2000 to 2500 millicurie hours (MCH).

**THE EFFECT OF TREATMENT.** If the Radium is used just after a menstrual period or midway between them, no further bleeding takes place as a rule. If used just before a menstrual period, that period is likely to occur. In some cases the bleeding may continue irregularly from four to five weeks and usually following this method of treatment there is a leucorrhoeal discharge which is an objectionable feature of this form of treatment. Shrinkage of the growth takes place in about three-fourths of the cases but is not usually appreciable for from five to six months. Temporary or permanent amenorrhoea results, depending upon the dosage of the Radium used, and in women over forty, by using the above mentioned dosage, a permanent amenorrhoea is produced. In younger women

amenorrhoea of a temporary nature may be produced by a dosage of 1000 to 1500 MCH. The disadvantage of the smaller dose is that the symptoms may recur following the resumption of the menstrual flow. Menopausal symptoms are not any more frequent following this type of treatment than those which occur following hysterectomy with conservation of one or both ovaries, the effect of the radium upon the ovaries apparently not being severe enough to totally destroy the hormonal secretory power. The Radium controls the bleeding by the production of an endarteritis in the uterine vessels in the walls of the uterus, and destruction of the uterine mucosa.

**BENIGN UTERINE BLEEDING.** Up to the discovery a few years ago of the female sex hormones, Radium and X-ray were quite frequently used in cases of non-malignant uterine bleeding which were not benefited by uterine curettage, and in which hysterectomy was not advisable. Since the discovery of these hormones, the majority of cases of this type of bleeding can be effectively treated by this means. The disadvantage, however, of hormonal treatment, lies in the length of time necessary to effect the cure and in the expense necessary in its undertaking. In the public wards of the Victoria General Hospital the disadvantage is apparent and so these cases are treated by some form of hysterectomy. It is only in rare instances that radiation is used, because of contra-indication to operations. When radiation is used in these cases, X-ray is the choice, and either a temporary or permanent amenorrhoea can be produced, the latter being a sure cure. Younger women desirous of having more children, in whom curettage has failed to relieve the condition, may be subjected to a temporary amenorrhoea by means of X-ray, in the hope that when the periods are resumed, the previous condition may not recur. The objection to this form of treatment is the risk of a permanent amenorrhoea being produced, which sometimes happens. It is unnecessary to state that in all these cases of benign uterine bleeding carcinoma must be ruled out before undertaking this form of treatment.

### MALIGNANT GYNAECOLOGICAL LESIONS

These are in their order of frequency of occurrence:

1. Carcinoma of the cervix.
2. Carcinoma of the body of the uterus.
3. Intra-cervical carcinoma.
4. Carcinoma of the vulva.

We will consider only the treatment of the first two conditions.

**CARCINOMA OF THE CERVIX.** This is the most frequent site of malignant new growth in the genital tract. It has practically no age limits, occurring as it does in the late teens and twenties and in the seventies; the majority occur in the fourth and fifth decades. It can well be said that

any woman from puberty onwards, who bleeds irregularly from the vagina, has cancer, until it is proven otherwise, and further, that any woman past the menopause, who bleeds from the vagina, has cancer, in at least ninety percent of cases.

**TREATMENT.** The general concensus of opinion today is that Radium and X-ray is the procedure of choice. Some clinics, however, follow this form of treatment in clinically early cases by Wertheim's hysterectomy.

The diagnosis having been made clinically, and being supported by pathological examination, treatment is as follows: In cases which have a proliferating or cauliflower-like type of growth, this is removed by means of the electro-surgical cautery. All patients whose haemoglobin is 55% or less are given blood transfusions of 500 c.c. of citrated blood sufficiently often to put the patient in a good general state. This is done because anemic patients do not respond well to radiation, and the better general condition the patient is in, the better the results of treatment. The actual treatment of the cancer is then proceeded with. It consists in a course of deep X-ray therapy, each patient receiving a minimum of six erythema doses and more if the patient can stand it. The X-ray treatment is directed towards the gland bearing areas in order to attack any spread of the cancer which may have taken place. While the effect of high voltage X-ray and Radium is the same on cancerous tissue, the advantage of X-ray over Radium is the fact that it can be used over a wide area, whereas the effect of Radium is limited to about four centimetres in all directions, but its advantage lies in the fact that it can be applied directly to the growth. The course of X-ray depends to a large extent upon the size of the patient and particularly to the depth both antero-posteriorly and laterally of her pelvis. The greater the depth and width, the larger the number of exposures to X-ray in order to get sufficient dosage. X-ray treatment has, in a fair percentage of cases, caused shrinkage in the local growth. Upon completion of the course of X-ray treatment, which usually takes about two weeks, the patient is then ready for treatment with Radium. The method of applying the radium to the growth depends upon the extent of the growth, and a suitable applicator for the Radium must be chosen in order that all the cancerous tissue will be reached by the emanations. One can not lay down any hard and fast rule as to the way in which the Radium is to be applied. Each case must be treated according to the state of affairs present. Having decided upon a suitable applicator, properly screened to cut out all the rays which do not effect the cancer cell, this applicator is applied to the growth and left in place a sufficient number of hours to give the desired dosage. This dosage runs between 3000 and 5000 millicurie hours and depends on the size and extent of the local growth. The dosage is arrived at by multiplying the number of millicuries of Radium emanations by the number of hours it is left in contact with the growth. Thus one hundred millicuries left in place twenty-four hours would give a dosage

of 2400 MCH. This constitutes the initial treatment. All patients are instructed to return in three months for a check up, and if further treatment is deemed necessary, they will receive it.

**CARCINOMA OF THE BODY OF THE UTERUS.** This condition occurs in about 15% of cases and is a disease of women past the menopause in the majority of instances. Practically the only malignancy of the body of the uterus which occurs in women under forty, is that known as Chorion-Epithelioma.

**TREATMENT.** The ideal treatment of this condition is effected by means of total hysterectomy and bilateral salpingo-oophorectomy, followed in about one week by a course of deep X-ray therapy, the latter being designed to cope with any possible glandular involvement which may be present. Where the disease has caused any fixation of the uterus, or where the patient's general condition contra-indicates operation, Radium and X-ray are used. X-ray is used in the same manner as in carcinoma of the cervix, but in using Radium the procedure is as follows: Two metal tubes enclosed in rubber are introduced into the uterine cavity by dilating the cervix. Packing is placed between the tubes, which reach to the fundus of the uterus, in order that the whole uterine cavity may be effectively irradiated, because in these cases we do not know exactly where the growth is nor how much of the cavity is involved. The dosage in these cases is about the same as in cervix cases.

This briefly is a description of the radiation treatment given to the ward patients at the V.G.H. The reader is referred to numerous articles, from numerous clinics, appearing in current literature, for statistics and for the different methods of treatment in use.

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To learn how to treat disease, one must learn how to recognize it. The diagnosis is the best trump in the scheme of treatment.—*Charcot*.