

Radiotherapy of Female Genital Cancer

by

K. B. Chia, D.M.R.T.

RADIO-THERAPIST, GENERAL HOSPITAL, SINGAPORE.

As with all forms of malignant disease treatment of female genital cancer by radiotherapy is determined by several factors, namely:-

1. The site.
2. Extent.
3. Histology.
4. Presence of pregnancy.
5. General condition of the patient, particularly age, anaemia and sepsis.

From the foregoing a decision is made as to whether the treatment is to be radical or palliative, and whether it is to be supplemented with surgery, chemotherapy or both. When it comes to combined treatment it is better to give radiotherapeutic treatment before surgery because blood supply is then intact. Lack of blood supply leads to anoxia, promoting radioresistance. It is also uneffects are much aggravated with little improvement in therapeutic effect.

Radiotherapy treatment can take the form of:-

1. Intracavitary Radium, (Cobalt or Caesium) where sources are placed in the uterine cavity, vaginal vault or vagina according to certain geometry and loading. The insertion can be continuous over five days, two insertions of 72 hours separated by an interval of 4 days or three weeks and two weeks. As a general rule the dose to Point A (2 cm. up and 2 cm. lateral from the uterine canal) will be 6,000 - 8,000 rads and Point B (5 cm. from the midline) 1,000 - 1,500 rads.
2. Radium implant where radium needles are implanted into an accessible tumour of limited extension over a period of 168 hours to give a dose of 6,000 - 8,000 rads to the tumour.
3. Intracavitary radioactive colloidal gold instilled into the patient's peritoneal cavity to treat spills or small peritoneal

seedlings 1-2 mm. diameter. Radioactive colloidal gold has been used interstitially in parametrial extensions of disease but since dosimetry cannot be accurately assessed this practice is not desirable.

4. External irradiation by conventional X-rays, megavoltage and electron beam therapy, as a primary form of treatment or to supplement intracavitary radium.

Of Female Genital Cancer, Carcinoma of Cervix Uteri was earliest treated by intracavitary radium in 1903 by Margaret Cleaves. Properly employed radiotherapeutic treatment of Carcinoma of Cervix Uteri is most effective and is generally accepted as the treatment of choice.

Clinical staging is perhaps the most important of the investigations made before initiating treatment and is best made under examination under anaesthesia, and includes rectal examination and cystoscopy. Biopsy helps towards deciding the kind of treatment to be given but the concept that adenocarcinoma is radioresistant is not so firmly held now. General examination intravenous pyelogram, retrograde pyelogram, lymphangiogram and chest X-ray may further modify staging. Presence of supraclavicular nodes renders a Stage I lesion a Stage IV.

All forms of Radiotherapy treatment damage normal tissues. Hence for a carcinoma in situ or Stage 0, where the carcinoma can be completely controlled by surgery radiotherapy should not be considered (even though it is completely efficacious) unless there are contraindications to surgery.

Radiation treatment of carcinoma of the cervix aims to achieve cancericidal doses to the primary growth and possible spread to lymph nodes within the pelvis. Even in Stage I cases such extension is possible. Positive para-aortic nodes are also known to occur with Stage II and Stage III cases.

This being the case intracavitary radiation is always inadequate because the pelvic wall receives less than 1500 rads of which two parts are contributed by the intrauterine source, (hence the necessity of preserving the uterus always) and one part by the vault ovoids. The placing of the sources in correct geometry can be prevented by large growths, ulcer, granulations, fibroids and other pelvic masses or adhesions, e.g. ovarian tumours. Where there is extension of disease to lower 1/3 vagina, sources in tandem to take in the extension are used in place of the usual side by side placing. It is important to limit rectal doses because of rectal reactions, particularly if the uterus is retroverted and cannot be corrected. This is done by shielding the sources posteriorly and differential loading of uterine sources. Where geometry is affected by malignant growth pre-intracavitary external irradiation may at times correct this defect.

External irradiation (by the more powerful megavoltage units) by itself can deliver adequate doses to the pelvis but at somewhat greater cost because a large volume is involved. The more usual practice is to supplement intracavitary radiation by external irradiation graduated in such a way as to give a high dose to the shell of the volume treated and low dose to the centre portion thus achieving a homogeneous dose throughout the volume. A somewhat lower contribution by external irradiation is given in Stage I cases usually. Because of the ability to deliver higher doses by megavoltage higher survival rates are reported particularly in late Stage II, Stage III, pregnancy carcinoma and adenocarcinoma. This improvement is not shown with stump carcinoma.

The higher dose treatment to the pelvis results in fairly severe radiation proctitis. The occurrence of recto-vaginal and vesico-vaginal fistula, sigmoiditis and ileitis with or without fistula formation is higher. With higher radiation doses post-radiation surgery complications, e.g. uretero-vaginal fistula, are also high. If care is taken to control over an adequate period secondary infection, complications are less likely to take place, or if they do, run a milder course.

With Carcinoma of Corpus Uteri the early cases confined to the uterus are best treated by surgery alone. But because of the likelihood of vault recurrence radiation therapy is often requested as an insurance measure. If there is to be any radiation therapy this should be given before surgery. Generally the uterine sources are more heavily loaded or the cavity packed with many small sources while the same vault radium placement is used. Once there is ex-

tension to the cervix the lesion should be treated as a case of Carcinoma Cervix Uteri.

Kottmeier however treats his cases with radiotherapy only with excellent results but his uterine radium loading is very high.

Since there is greater consciousness of radiation hazards after-loading methods for treatment of uterine carcinoma have been developed. Here the applicators are placed in position (with no hazard to the operator) and after verification are loaded, sometimes remotely, with the radiation sources. Naturally better results can be expected with these methods.

Carcinoma of the Ovary

Generally the first line of treatment here is surgery to confirm diagnosis, determine the histology, remove the primary and assess extent of disease.

Once the histology and extent is determined the place of radiotherapy in the treatment can be decided. For almost all limited lesions if removal is incomplete treatment of the whole true pelvis by external irradiation may be given prophylactically. The para-aortic nodes may be treated if suspect.

Histology determines the radiation treatment considerably.

For the Papillary Cystadenocarcinoma and Pseudomucinous Cystadenocarcinoma if there has been spill or obvious extension outside the pelvis intracavitary radioactive colloidal gold can be instilled into the peritoneal cavity. Some would irradiate the whole abdomen by large fields or strip fields as a palliative measure particularly if peritoneal seedlings are large.

For the Dysgerminoma the treatment is similar to that for seminoma of the testis. The lesion is radiosensitive and the whole pelvis and para-aortic nodes should be treated to a radical dose.

Carcinoma of Vulva

A squamous cell carcinoma associated with leucoplakia is normally easily treated by radiotherapy because of its superficial site. But the moist skin of the vulva tends to break down early and thus limits the dose that can be delivered. Hence surgery is preferred here specially for the anterior vulva. Radium implant is used especially in posterior 1/3 lesions and also urethral lesions. However with electron beam therapy which does not damage the deeper tissues, it may be possible to treat the requisite volume to high doses. Even though skin reaction is severe it heals more completely with less fibrosis.

Carcinoma of Vagina

This is usually a squamous cell but secondary extension from the uterus must be kept in mind. The vagina tolerates radiation fairly well and treatment is really much like an extension of the intracavitary radium from the vault. Provided the lesion has not infiltrated deeply treatment is by a line source in a 2 cm. moulded tube. The surface dose here is of the order of 7,000 rads. Supervoltage treatment is generally preferred for lower 2/3.

Carcinoma of Fallopian Tubes

Normally these lesions are said to be radio-resistant and radiation treatment here is purely palliative and second to surgery.

Chorionepithelioma

While surgery and chemotherapy have been used extensively here in the treatment of this lesion it is worth noting that this lesion is radio-sensitive. If limited to the pelvis, treatment should be as effective as surgery locally with less likelihood of dissemination by manipulation.

Once widespread, treatment with radiation therapy is not possible but treatment of local resistant lesions should secure good response. It is in the lung where radiation dosimetry in air space is still not properly understood that radiation fails, as it does even in the very radio-sensitive reticulos.