



Radio Therapy

Radiation Oncology- An introduction for General practitioner.

Radiation therapy is used for cure, control, and palliation of cancers in more than 60% of cancer patients. It is used alone as well as in combination with surgery and chemotherapy. The goal of radiotherapy is to treat the cancer and spare the normal tissue as much as possible. Advances have been made that allow delivery of higher doses of radiation to the tumor while sparing a greater amount of surrounding tissue, thus achieving more cures and fewer acute and long-term side effects.

Radiation therapy is an important and affordable modality for cancer treatment with minimal side effects. Radiation kills cancer cells with high-energy rays targeted directly to the tumor.

Radiation therapy works by damaging the DNA and preventing its replication: therefore, it preferentially kills cancer cells, which rapidly divide.

Technological advances and research are being continued to result in improvements in the field. Several new devices and techniques are used these days in radiotherapy for accurate treatment of cancer.

Teletherapy (external radiation therapy) uses focused radiation beams targeting well-defined tumors through extremely detailed imaging scans. Conventional external beam radiation therapy (2DXRT) is delivered via two-dimensional beams using linear accelerator machines (X-RAY used). Stereotactic radiation type of external beam radiation therapy, which uses a focused radiation beam targeting a well-defined tumor, these treatments include gamma knife surgery. Intensity-modulated radiation therapy (IMRT) is an advanced type of high-precision radiation which improves the treatment volume to concave tumor shapes. In 3-dimensional conformal radiation therapy (3DCRT), the profile of each radiation beam is shaped to fit the profile of the target using a multi-leaf collimator (MLC) and a variable number of beams. In image-guided radiation therapy (IGRT) or four-dimensional radiation therapy, real-time imaging combined with real-time adjustment of the therapeutic beams is used.

Brachytherapy (internal radiation therapy) is an effective treatment for cervical, prostate, breast, and skin cancer and can also be used to treat tumors in many other body sites.

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