



Glossary of Terms



A

Acoustic Neurinoma

Benign tumor arising from the supporting cells of the 8th cranial nerve. Called acoustic because it usually presents with hearing loss.

Adenoma

Benign tumor arising in a gland.

Adjuvant therapy

Treatment that is used in addition to the primary therapy to ensure that all microscopic cancer cells are destroyed. Radiation therapy is often an adjuvant therapy to surgery.

Angioma

Benign tumor of blood vessels or lymph vessels.

Anterior

In front – the opposite of posterior. In the head, the face is anterior.

Arteriovenous malformation (AVM)

A congenital disorder (one present at birth) of blood vessels in the brain, brainstem, or spinal cord that is characterized by a complex, tangled web of abnormal arteries and veins connected by one or more fistulas (abnormal communications).

B

Benign

A term that is used to describe a tumor which does not spread but grows through expansion. If within the body, its effects are often only noticed when the tumor interferes with the function of surrounding organs through displacement or pressure. Within the brain benign tumors can be fatal as they compress sensitive structures within the rigid skull.

Biopsy

Removal and microscopical examination of living tissue performed to determine the precise nature of a pathological process.

Brachytherapy

Radiation therapy delivered to the tumor volume from the implanting of radioactive sources in the form of beads, rods or wires. Sources are placed within the tumor, or nearby, by a machine known as an 'Afterloader'. The treatment is reserved to regions which are easily accessible without surgery.

C

Cancer

A complex set of diseases which involve malignant tumors capable of spreading. Can be systemic, such as leukemias, or organ specific, such as breast, kidney or lung cancer. Tumors grow in a manner uncoordinated with normal tissues and destroy healthy tissue.

Central nervous system (CNS)

The brain and spinal cord.

Carcinoma

A malignant tumor arising from an epithelium.

CAT Scan

Computer Assisted Tomography (see CT).

Chemotherapy

The application of cytotoxic (cell poisoning) agents to the patient through oral, injection or organ infusion methods in order to cure cancer. The dose administered is systemic and hence affects the whole being, resulting in wide spread side effects and is frequently delivered in fractions as the total dose would injure the patient if administered in a single treatment.

Cobalt 60

A radioactive substance emitting gamma rays. Used in radiation therapy.

C – D

Conformal therapy

Radiation treatment where the shape of the treatment volume conforms to the dimensions of the tumor. IMRT is one type of conformal therapy.

CT (Computerized Tomography)

Imaging technique using computer processing to generate an image of the absorption of X-rays in a field of view. The field of view is devised as a slice so that a complete examination of the brain or body may be obtained by taking a series of slices, one above the other (other abbreviations are CAT scan, EMI scan).

D

Dose

Quantity of ionizing radiation to which a body has been exposed or has absorbed.

Dose plan

End result of calculating the way in which radiation is to be delivered to a given target. Dose plans are constructed to deliver maximum dose to the target whilst sparing normal tissues.

Dosimetrist

The person who helps plan and calculate the radiation dose and delivery scheme to be used for radiation therapy.

E – F

Electron beam

High energy particles which can be used in the treatment of cancer. Electron radiation does not penetrate into tissue as far as X-rays. The beam is therefore useful for treating shallow tumors and tumors in the head and neck where control of depth is essential.

Epithelium

Cellular layer covering body surfaces which directly or indirectly has a contact with the surface of the body or has had contact during embryonic development (skin, gastrointestinal tract, urinary tract, respiratory tract, CNS).

External radiation

Use of a machine, such as a linear accelerator, located outside the body to direct radiation to the tumor, as opposed to Brachytherapy where radiation source is internal to the body

F

Fractionation

A term used when the total dose of radiation is divided into smaller doses to give normal healthy cells time to heal.

Functional Neurosurgery

Branch of neurosurgery directed at correcting a malfunction of the brain, performed by stimulating or destroying specific brain regions.

G – H

Gamma rays

A type of radiation of shorter wavelength and higher energy than kilovoltage X-rays used for diagnosis.

Germinoma

Tumor usually arising in the pineal region, particularly in young males.

Glioma

A common brain tumor which begins in the glial (supportive) tissue.

Gray (Gy)

The unit used to describe the dose of radiation given.

H

Hodgkin's disease

The most common type of lymphoma.

Intensity Modulated Radiotherapy (IMRT)

Varying both the delivered dose and shape of the radiation field to match the shape of the tumor.

Intracerebral

Within the cerebrum (the large rounded structure of the brain).

Intracranial

Within the skull or cranium.

Intraoperative radiation therapy (IORT)

Special technique whereby a radiation dose is delivered to a surgically exposed organ or tumor bed.

Intractable

Does not respond to treatment, eg., intractable pain.

Invasive procedure

Involves invasion of the body by some foreign agent, a knife, a catheter, a cannula.

Invasive tumor

Crosses tissue boundaries into neighboring tissues – classic sign of a malignant tumor.

Inverse Planning

A sophisticated software program that interprets clinical data to determine the best course of radiation therapy treatment.

Lesion

Localized pathological change in a bodily organ or tissue.

Leukemia

Cancer of the blood. White blood cells may be produced in excessive amounts and are unable to work properly which weakens the immune system.

Linear accelerator (Linac)

A medical device, that can rotate about the patient, that generates various energies of X-rays and electron beams for radiation therapy treatment.

Localization

In stereotaxy the determination of the precise position of the target in terms of the stereotactic coordinates.

Lymph vessels

Vessels which collect fluid left in the tissues together with protein.

Lymphoma

Lymphoma is a general term for cancers that develop in the lymphatic system. They account for about 4% of all cases of cancer in this country. The most common type of lymphoma is called Hodgkin's disease. All other lymphomas are grouped together and are called non-Hodgkin's lymphomas.

Malignant

Another term for cancerous cells and commonly refers to a malignant tumor, the main characteristic of which is that it is likely to penetrate the tissues or organ in which it originated as well as move to other sites.

MEG

Magneto-encephalography – a non-invasive diagnostic technique that directly measures the magnetic fields produced by electrical currents in the brain.

Melanoma

A cancer of the pigment-forming cells of the skin or the retina of the eye.

Meningioma

Benign tumor arising from the intermediate covering layer of the brain (arachnoid) and from the pia along the spinal chord.

Metastases

Secondary growths derived from a primary malignant tumor at a distant site.

Metastasis

- i) singular of metastases,
- ii) the process by which metastases spread from one part of the body to another via the lymph system or blood vessels.

MRI

Magnetic Resonance Imaging uses magnetic resonance to produce images of the body.

N – O

Neurinoma

Tumor of a peripheral nerve where the cell of origin is disputed.

Neurosurgeon

A doctor who specializes in surgery on the brain, spine and other parts of the nervous system.

Neurosurgery

Surgery on the nervous system.

Non-invasive

Opposite of invasive;

- i) characteristic of a Benign Tumor,
- ii) procedure where the integrity of the body is not breached.

O

Oncologist

A doctor who specializes in the treatment and prognosis of cancer. Oncologists may be specialists in particular areas such as chemotherapy, radiation or surgery.

Oncology

The study of diseases that cause cancer.

P – Q

Palliative care

Treatment aimed at relieving symptoms and pain rather than effecting a cure.

Palliative Treatment

Treatment performed which aims to relieve the symptoms (eg., pain) of disease. Does not aim to cure. Patients presenting for palliative treatment are not normally subject to treatment planning.

PET

Positron Emission Tomography is an imaging technique which uses a computer technique to record radiation and construct an image.

Pineal body

Small conical structure attached by a stalk to the posterior wall of the third ventricle of the cerebrum.

Posterior

Behind - the opposite of anterior.

Primary tumor

The original cancer site. For example, lung cancer that has spread to the bone is still called lung cancer.

R

Rad (radiation absorbed dose)

A measure of the amount of radiation absorbed by the body, replaced by Gray.

Radiation

A term to describe waves or particles. Types of radiation include X-rays, gamma rays and electron beams.

Radiation Physicist

A specialist in the subject of radiation and responsible for the choice and performance of the equipment used. The physicist assists in deciding on the optimum method for delivery of the prescribed radiation.

Radiation therapist

A physician specially trained to treat cancer with radiation therapy machines.

Radiation therapy

The use of high-energy radiation from X-rays, gamma rays, neutrons and other sources to kill cancer cells and shrink tumors. Also known as radiotherapy.

Radiologist

A doctor who specializes in reading and interpreting diagnostic X-rays and other imaging techniques.

Radioresistance

A term used to describe cancer cells that do not respond well to radiation.

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Radiosensitivity

A term used to describe how sensitive cancer cells are to radiation.

Radiosurgery

Therapeutic radiation technique, applying a field of radiation using multiple, focused, finely collimated radiation beams with surgical precision in a single session.

Radiotherapy

See Radiation therapy.

Recurrence

The reappearance of a disease after a period of remission.

Remission

Complete or partial disappearance of the signs and symptoms of disease. A remission, however, is not necessarily a cure.

Simulation

Simulation uses X-rays to mirror the radiation therapy treatment, allowing patient position and radiation field to be defined.

Stereotactic radiosurgery

Stereotactic refers to the location of a point within a body through the combination of three coordinates combined and calibrated with an external reference. Stereotactic radiosurgery relates to ablating a tumor or other target using high energy X-ray photons after determining its position via the external reference system. Treatment is performed in a single treatment session.

Stereotaxy

Neurosurgical technique enabling the localization of a given target within the brain in terms of a geometric axis system.

Teletherapy

Radiation delivered at a distance. cf. Brachytherapy where radiation is delivered locally by a source in contact with the patient. Cobalt 60 and linear accelerators are teletherapy machines.

Therapeutic Curative.**Tomography**

Any of several techniques for making detailed X-rays of a predetermined plane section of a solid object.

Total Body Irradiation (TBI)

A radiotherapy treatment performed for some leukemia conditions. May involve the removal and replacement of the patient's bone marrow after extra-corporeal irradiation.

Treatment planning

The act of producing a treatment plan. Can be performed by hand or by computer. Computers can produce plans from data derived from CT and MRI machines allowing the generation of 2-D, 2.5-D and 3-D plans.

Treatment volume

The three dimensional region within a body to which the prescribed dose is delivered.

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T - Z

Trigeminal nerve

The trigeminal nerve functions both as the chief nerve of sensation for the face and the motor nerve controlling the muscles of mastication (chewing).

Tumor

Mass of tissue formed by a new growth of cells, can be either benign or malignant.

X

X-ray

Electromagnetic radiation used to diagnose (low energy) and treat (high energy) disease.



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