

Name:- Muhammad Majid

ID No = 13628

Subject = Therapeutic Radiology

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Instructor Name:- Marn Attoofah Azmat

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Q 1 Explain when a patient will be needed radiation therapy?

Answers:-

Radiation Therapy:-

→ Radiation Therapy are denoted by RT, RTx, XRTx.

→ Radiation Therapy are used to treat shrink tumor and kill cancer cells.

→ These types of radiation used for cancer treatment, such as X-rays, gamma rays and charged particles.

→ Radioactive substances of radiation therapy are, such as radioactive Iodine, take place in the

blood to kill cancer cells.

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Explain when a patient needed radiation Therapy:-

⇒ Radiation Therapy some time use for diagnosis, such Nuclear medicine, Interventional Radiology etc.

⇒ Radiation Therapy are physician trained to use radiation to eliminate cancer.

⇒ For the treatment of cancer all patient communicate radiation therapy.

⇒ The radiation therapy are used for destroying or damaged cancer cells.

⇒ Someday radiation Therapy is the only treatment a patient needs.

⇒ Radiation therapy are merge with another treatments such as Surgery or chemotherapy.

## Uses of Radiation Therapy:-

### 1) To Cure Cancer:

⇒ Radiation therapy is used for damage tumors cells because that do not spread to other part of the body.

⇒ Decrease the risk of cancer that cancer will return after surgery or chemotherapy.

### 2) To reduce symptoms:

→ Relieve tumors affecting quality of life, such as lung tumor that is causing & dyspnea.

→ By decreasing the size of tumor that will reduce the pain.

## Team of Radiation Oncology:

→ Radiation Oncologist

→ Medical Radiation doctor

→ Dosimetrist

→ Radiation Therapist

→ Radiation Oncology Nurse

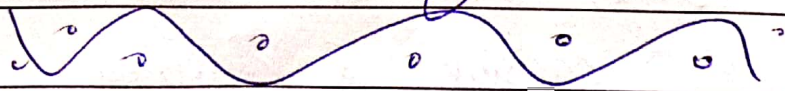
## Types of Radiation Therapy:

⇒ There are two types of radiation therapy.

(1) External beam radiation therapy also called linear accelerator.

(2) Internal radiation therapy, also known as brachytherapy or seed implants.

⇒ The types of Radiation therapy used for treatment will depend upon on the location, size and type of cancer.



Q (2) Write a short note on the following.

Answer(1)

(A) Image-guided radiation Therapy (IGRT):

→ Computed tomography (CT), Magnetic Resonance imaging (MRI), Ultrasound (US) and x-ray imaging can be used for IGRT by visible bone and soft tissue.

→ Some methods for IGRT use marker put on the patient body or entrance inside the patient body.

→ IGRT is used to treat tumors in place of the body that are prone to movement.

like the lungs, liver, pancreas, etc.

→ IGRT is used to treat located very near to sensitive structures and organs.

## (C) Intensity Modulated Radiation Therapy:

- Intensity Modulated Radiation Therapy is denoted by IMRT.
- It is a modern types of radiation therapy use to treat cancers.
- It is used hundreds of tiny radiation beam-shaping devices known as collimators.
- Collimators can get a single dose of radiation.
- During the treatment the collimator be dynamic or static position.
- Increases normal tissue sparing.
- Unlike another types of radiation therapy IMRT is planned in reverse called inverse treatment planning.
- Reduce radiation exposure to specific sensitive areas of around normal tissue.
- Matching with 3D-CRT, IMRT can decrease the risk of some side effects.

## (D) Stereotactic Radiosurgery:

- It is a non-surgical radiation therapy <sup>use</sup>
- It is used to treat functional abnormalities
- It is used to small tumors.
- It can get one or more high doses of Radiation to small tumors.
- It can used to treat only benign tumors.
- It is most commonly used to treat of brain or spinal tumors.
- It is also called whole brain radiation therapy.
- Use head frame during the treatment to stop patient movement.
- It is also called cyberknife.

## (E) Proton Therapy:

- It is sometime called proton beam therapy.

- > It is a type of radiation therapy.
- > It is used to treat cancer.
- > It is a positively charged.
- > A high energy proton can destroy cancer cells.
- > Proton therapy can be used for treatment of prostate gland, brain, head and neck, lung tumors, pediatric cancer etc.
- > It cannot treat tumors deep within the body.

### (B) Tomotherapy:-

- > It is a type of image guided radiation therapy.
- > A tomotherapy machine is a cross between a CT imaging scanner and an external-beam radiation therapy machine.
- > Tomotherapy can be better than 3D-CRT at sparing normal tissue from high radiation dose.
- > Side effect are fatigue, peeling, redness.

Important



Q3: What are the potential side effects of radiation therapy?

(3) Answer:-

→ Radiation Therapy can cause both acute and chronic side effects.

→ Acute side effects occurs during Treatment.

→ Chronic side effects occur ~~not~~ months or even years after the end stage of treatment.

→ The side effects that develop depend upon the area of the body being treated.

→ Acute side effect may include skin irritation, salivary gland damage, hair loss.

→ More acute side effects disappear after treatment ends, though can be permanent.

→ The drug amifostine can help protect the salivary glands from radiation damage during treatment.

→ This drug called ~~radio~~ radioprotector.

→ Some side effects are:

- \* Nausea
- \* Hair Loss
- \* Tenderness
- \* Memory loss
- \* Infertility
- \* Fatigue.

→ Chemotherapy drugs, Genetic Risk factors, Life style factors can also increase the risk of acute side effects.

→ Radiation therapy can not only kill or stop growth of cancer cells.

→ It also can affect ~~near~~ closest healthy cells, damage healthy cells can cause side effects.

→ Shortness of breath.

→ Less active thyroid gland.

→ Diarrhea

→ Sexual Problem

