

Al- Mustaqbal University

College of Science

Medical Physics Department

Third Stage



جامعة المستقبل
AL MUSTAQBAL UNIVERSITY

Diagnostic Radiology Physics

Lecture 3 : Computed tomography (CT Scan)

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CT scan

- The computed tomography (CT) scan is a medical imaging procedure that uses x-rays and digital computer technology to create detailed two- or three-dimensional images of the body .
- the CT scan can make an image of every type of body structure at once, including bone, blood vessels and soft tissue.
- The CT scan may also be referred to by its older name of computed axial tomography or (CAT) scan.

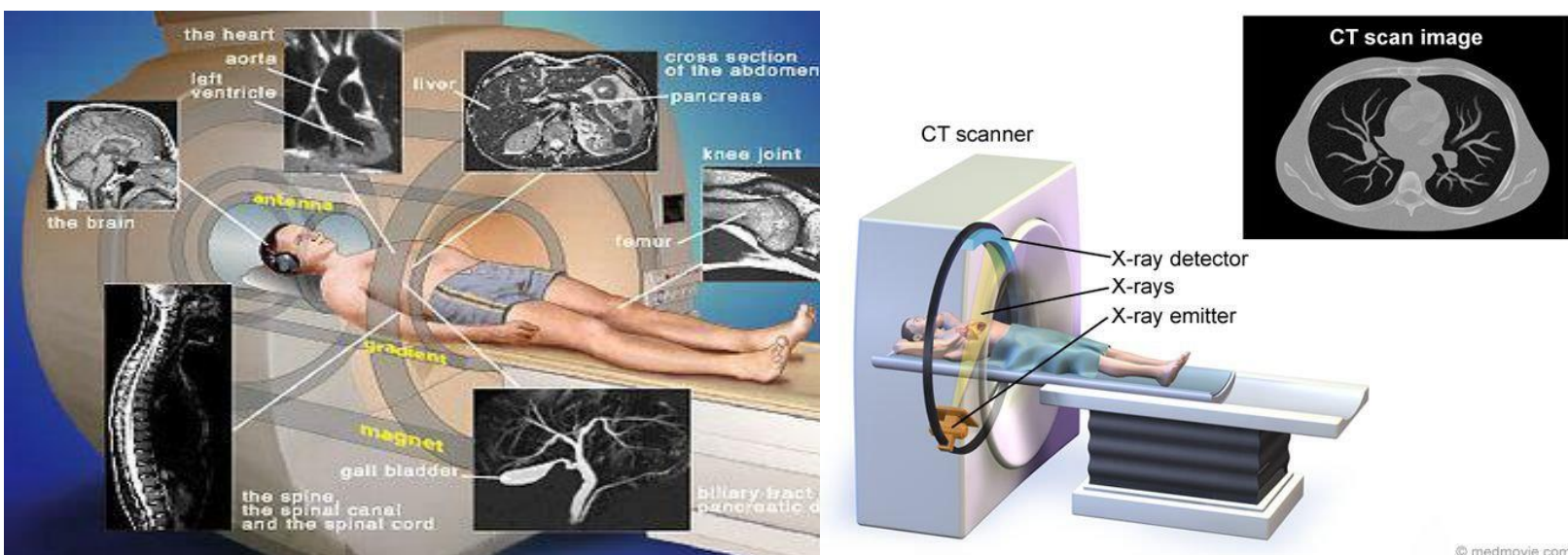
Where is a CT scan is used

- assessment of a body part's structure or shape.
- diagnosis of diseases, particularly cancer.
- diagnosis of trauma or injury.
- diagnosis of vascular disease.
- aid to planning particular surgeries.
- aid to planning radiotherapy.
- visual aid to radiotherapy administration.
- measurement of bone strength.



CT scan procedure

- The patient is asked to remove metal objects and wear a hospital gown.
- The patient lies on the CT table in the required position.
- The technologist selects the appropriate scan protocol.
- The table moves slowly through the gantry as the X-ray tube rotates.
- The computer reconstructs cross-sectional images.
- The images are reviewed and analyzed by a radiologist.



Contrast material

- These are materials used in medical imaging to improve the visualization of organs and tissues inside the body in X-ray, CT, MRI, and other images. The dye appears bright on images.
- It makes certain areas of the body that are being scanned show up better .
- make blood vessels, intestines or other structures easier to see.

Contrast material might be given:

By mouth: If your esophagus or stomach is being scanned, you may need to swallow a liquid that has contrast material. This drink may not taste good.

By shot, also called injection: Contrast agents can be given through an artery or a vein in your arm. You may get a feeling of warmth or a metallic taste in your mouth when the dye goes into your body.



Complications of a CT scan

The CT scan is a very safe procedure. Some people who have an injection of iodinated contrast material may feel nauseous for a short time afterwards. On rare occasions, a person may have an allergic reaction to this substance.



Patient Positioning (Scanning Positions)

- **Head CT:** The patient lies supine with the head centered and secured to prevent movement.
- **Chest CT:** The patient lies supine, arms raised above the head to avoid artifacts.
- **Abdominal CT:** The patient lies supine; sometimes instructed to hold breath for clear images.
- **Spine CT:** The patient lies supine with proper alignment of the vertebral column.

