

## Radiology

**Radiology:** the science which deal with the uses of radiation energy(X-ray, radium, radioisotopes) for diagnosis and treatment.

X-ray: is an electromagnetic radiation of high energy (10-10ev) and low wave length have ability of penetration of bodies and tissue .

Properties of the X-ray:

1-Invisible.

2-travel in straight lines.

3-have penetration power ;the degree of penetration depending on:

A- Atomic number of matter

B- Wave length.

C- Density of matter.

D- Thickness of the matter.

4-fluoroscopy.

5-photographic effects .

6-ionization of cells.

7-biological effect.

Types of X-ray Machine:

1- portable x-ray machine (70-90kv)(15-30mA).

2- mobile x-ray machine (90kv)(40-60mA).

3- fixed x-ray machine (120-200kv)(300-1000mA).

**Accessory equipment for recording the radiographs:**

1-cassetes.

2-intensifying screen.

3-films.

4-dark room: composition from:

- a- dry bench :use for keeping the films and cassettes.
- b- Wet benches: consist from (developing , tank ,rinsing tank, fixating tank).
- c- Safety light.
- d- viewer.
- e- Hanger.
- f- Film dryer.
- g- Exhausting fan.

Processing of the x-ray films:

- 1- Manual method: after exteriorized the film from the cassette in dark room and fixed with hanger and put in developing solution and few move to removal the air bubbles which present on film and it remained for 5 minute in developing solution, it put in rinsing solution for 30 second, then it put in the fixating solution. it remain for 10 minute after that it exteriorized and washing with free water for 30 minute and then dryer the film.
- 2- Automatic method: the procedure is complete during 6-7 minute.

Developing solution: consist from :

- 1-sodium carbonate –acceleration appear the radiograph.
- 2-sodium sulphate – prevent the solution from oxidation.
- 3-potassium bromide – to prevent film turbidity.
- 4-siderokenon and iron -this material act on convert the silver halogen to silver metal.

Fixating solution: consist from:

1-sodium thio sulphate (hypo)-act on dissolving and removal of silver halogen which not oxidation in developing solution.

2-sodium sulphate –prevention oxidation of the solution.

3-aluminum chloride –act on strength the gelatin.

4-acetic acid-for neutralized the organized material which coming from developing solution.

































