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 Paper General Radiology
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Q-1 Answer

Difference between calcium tungstate
 and rare earth screen.

Calcium tungstate rare earth screen.

Calcium tungstate screen	Rare earth
are not faster	Screen are faster.
It has low patient radiation dose.	→ It has higher than of calcium tungstate.
→ The film used is called double-emulsion film.	→ The film is used is single film.

- It has four layer. protective coating, Phosphor, Reflective layer.
- The materials used in calcium tungstate is zinc sulfide and barium lead sulfate, as well as oxysulfides of the earth gadolinium, Lanthanum and yttrium.

Rare earth Screen.

Except for barium- and zinc-based phosphors, the other new identified as rare earth.

- The term rare-earth screen describe those elements of group IIIa in the periodic table that have Atomic numbers 57 to 71.
- ⇒ These elements are transitional metal that are scarce in nature.
- They are principally gadolinium, Lanthanum and yttrium.

→ The Composition of four Principally rare earth screen phosphors are terbium-activated gadolinium oxysulfide ($Gd_2O_3S:Tb$).

→ The terbium-activated lanthanum oxysulfide ($La_2O_3S:Tb$). The terbium-activated yttrium oxysulfide ($Y_2O_3S:Tb$) and lanthanum oxybromide ($LaOBr$).

→ The Rare earth radiographic intensifying screen have the principal Advantage of speed.

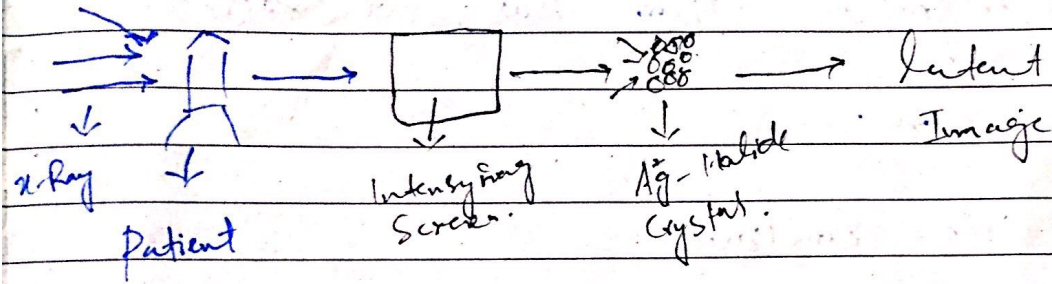
Q2. Formation of Latent Image

→ The image-forming x-rays existing the patient and incident on the radiographic screen - film deposit visible light energy in the ~~em~~ emulsion primarily by the interaction with atoms of the silver halide crystal.

→ This energy is deposited in a pattern that is representative of the anatomical part that is being radiograph.

→ An invisible image is present however is called latent image.

→ The latent image is the invisible change that is induced in the silver halide crystal.



Q3

Radiographic film :-

Radiographic film has two parts:

① The base.

② The Emulsion.

Between the emulsion and base is a thin coating of materials called the adhesive layer.

① The Base

The Base is the foundation of radiographic film. its primary purpose is to

→ The base is flexible and fracture resistant to allow easy handling.

→ The base of radiographic film is 150 to 300 μm thick, semirigid, lucast and made of polyester.

→ The original radiographic film base was a glass plate. During world war I high quality glass became largely unavailable

→ A substitute, cellulose nitrate soon the standard the base.

→ it was ~~safe~~ flammable.

→ film with a safety base, cellulose triacetate was introduced.

cellulose triacetate was similar properties to those of cellulose nitrate but is not flammable.

Emulsion → The emulsion is the heart of radiographic film.

→ The emulsion consist of a homogeneous mixture of gelatin and silver halide crystal.

- It is coated evenly with a layer that is 3 to 5 μm thick.
- The gelatin is similar to that used in salad and desserts but is much of higher quality.
- The principal function of gelatin is to provide mechanical support for silver halide crystal by holding them uniformly dispersed in place.
- The silver halide crystal is the active ingredient of the radiographic emulsion.
- In emulsion 98% the silver halide is silver bromide. the remaining is silver ~~iron~~ Iodide.