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(1)

Q.5.

IMAGE RECEPTER OF CONVENTIONAL IMAGING SYSTEM

There are three key part of image receptor for conventional radiography.

- Film to record image.
- Intensifying screen to expose the film.
- Cassette to protect the screen and film.
- Most conventional radiographic cassette have pair of screen that sandwich the film. This design use double emulsion film.

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A part of casset use in the conventional x-ray film radiography contain fluorescent phosphor is active material.

- Different types of intensifying screen emit different intensities and color of light when irradiated by x-ray.

- Radiographic intensifying screen resemble flexible sheet of plastic or cardboard.

- Intensifying screen in size that compare to film size.
Digital radiography.

- with digital radiography no cassettes are used. the x-rays hit a permanently placed set of hardware, which then sends the digital information directly to a readout mechanism.

standard DR process

~~g-t-o-r?~~

(3)

x. ray produced by standard radiographic x. ray tube ...
Image captured by digital image detector. Digitised into stream of data via an analogue-to-digital converter (ADC). Transfer to a system computer. output via digital to analogue converter (DAC) to video format post-processing of image. display on to suitable display device.

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Q ①. NO 1:

Ans: Digital subtraction angiography (DSA) is a fluoroscopy technique used in interventional radiology to clearly visualize blood vessels in a bony or dense soft tissue environment. Imaging are producing using

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(4)
Contrast medium by subtracting
a "pre-contrast-image" or
mask from subsequent images.
Once the contrast medium
has been introduced into
a structure, hence the
term "digital subtraction
angiography". subtraction
angiography was first
described in 1935 and
in English sources in 1962,
as a manual technique.
Digital technology made
DSA practical from the
1970.

DSA is primarily used to
image blood vessels. It is
useful in the diagnosis
and treatment of arterial
and venous occlusion, including
carotid artery stenosis,
pulmonary embolism and
acute limb ischemia;

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(5)

arterial stenosis, which is particularly useful for potential kidney donors in detecting renal artery stenosis (DSA) is gold standard investigation for renal artery stenosis.

DSA is done less and less routinely in imaging departments. It is being replaced by computed tomography, angiography, (CTA), which can produce 3D images through a test which is less invasive and stressful for patient.

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(6)

Q NO 2:

Ans: COMMON ARTIFACT
IN DR.

Flat panel detector used for projection radiography.

→ Cassette and fixed panel detector.

→ Example from multiple manufacturers and models. cause:

→ Detector support electronic are visible due to excessive back scatter.

→ ~~Re~~ Resolution

→ Reduce back scattered radiation by

→ Collimating to no more than the detector edges.

→ avoiding over exposure

→ placing lead behind the detector.

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(7)

- Clinicle image artifacts.
- technologist should be trained how to ...
- recognize common artifacts
- resolve the problem themselves when possible are.
- when to contact a physicist or engineer for assistance.

Flat ~~field~~ artifact check.
field

- A flat field image should be acquired.
- After again celebration to detect celebration error.
- After a wireless detector drop to look for damage.
- As a part of routine QC.
- Acquire image of full detector using gain calibration technique and a uniform phantom.
- Apply minimal image processing.

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(8)

→ ~~stop~~ To determine location of artifact cause within the imaging chain repeat exposure with.

→ detector rotated or shifted ~~or~~
(wireless detector)

→ collimator rotated

→ different filter

→ different SID

→ detector outside of beam or table.

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Q NO 3:

Ans: poor spatial resolution.

→ Artifact due to imaging plate.

image processing algorithm etc.

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- Non availability of post processing function.
- increase sensitivity to scatter radiation.
- more expensive than screen film radiography.
- wear and tear
- infection control
- sensor size and thickness.

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Q No 4:

Ans: Better image quality
at lower dose:

- DR image can be higher in contrast and sharpness.
- DR panels (CSL) require less exposure to achieve equal ~~to~~ or better image quality.

P.T.O →

- significantly less exposure at altitude with DR.
- CR exposure range -4x to +16x mAs
- DR exposure range \pm 4x mAs.
- image situation can occur with DR...
Data is not recoverable
- with DR accurate exposure is key (similar to film)
- CR vs DR image quality. and dose
so DR is better than CR.