

Name Hazrat Omer  
ID 13919  
Subject CT Procedure  
Semester 6<sup>th</sup>  
Programme Bs Radiology

Submitted to Mam Maheen Gul

Date 15-4-2020

### QUESTION NO 01

Describe the three general phases of tissue enhancement.

There are three general phases of tissue enhancement

⇒ Bolus phase

⇒ Non equilibrium phase

⇒ Equilibrium phase.

and now we discuss

one by one.

① Bolus Phase:

It is also called arterial phase.

The bolus phase is that which immediately follows an in the time of IV bolus injection.

Their function is difference between aorta and the inferior vena cava mostly (30) or more Hounsfield units.

Contrast enhancement of the bolus phase, all the arterial structure are filled with contrast media. So after that the all structure of artery are clearly visible on the image.

Hence this phase also called arterial phase

Arterial phase are mostly used in the CT angiography images.

Aorta 70HU - IVC HU35 = 30HU.

## ② Non-Equilibrium phase:

also called venous phase. The easily differentiate the Hounsfield unit between 10HU up to 30HU.

The artery is yet very clearly than the parenchyma of organs due to intake of contrast agent. The venous structures are clearly visible on the images.

This phase is start after one (1) minute the beginning of the bolus injection.

Non-equilibrium phase takes short time around 1 minute.

### ③ Equilibrium phase.

After the non-equilibrium phase this phase is start.

This phase also called Delayed phase.

It may be start after two minutes of the bolus phase.

They differentiate those organ in which HU below 10 HU.

They are mostly used in the liver.

Disadvantages.

No differentiate

## QUESTION NO 02

List the quality of an IV access site that would make it ideal for administering contrast.

IV Access sites:-

- Antecubital vein (injection site)
- Subclavian vein to superior vena cava.
- Right atrium into right ventricle
- Pulmonary artery into pulmonary vein.
- Left atrium into left ventricle & aorta.
- Carotid arteries to head.
- Renal arteries to kidney.
- Hepatic veins to inferior vena cava.

Leg

→ Great saphenous vein at the knee. They run just behind the medial aspect of the knee and they visible back side on the knee.

(5)

and they curves around  
the top of the tibia  
Access is easy and  
property will be splinded.

### Foot:

They easy to access  
dorsal arch. dorsal arch  
veins are small but  
they easily cannulated  
and fast the vein on  
the lateral aspect, running  
below malleolus and easy  
to access.

### Wrist:

They are easily  
seen on the volar  
side of the wrist  
They are usually small  
and they easily  
cannulated do not last  
well.

(6)

They are useful secondary sites, but must be carefully watched when noxious substances, as they are prone to burn.

### Cubital fossa:

Median antecubital, cephalic and basilic veins,

They are easy to hit and tend to last quite well if splinted properly.

These vein are the preferred sites for insertion of percutaneous central venous catheters.

The median nerve and brachial artery are both in the same anatomical vicinity and therefore vulnerable to damage.

(7)

Q3 = symptoms of idiosyncratic reaction to contrast media.

Three types on the basis of symptoms.

Mild

e.g. nausea, vomiting, flushing  
pruritus mild urticaria  
and headache.

Treatment: supportive measures are enough.

Moderate:-

more prominent symptoms and demand medical attention with specific treatment - symptoms includes

- \* severe vomiting.
- \* bronchospasm.
- \* facial edema.
- \* laryngeal edema.
- \* vasovagal attack.

(8)

Severe

life threatening symptoms.

- \* Respiratory arrest.
- \* Cardiac arrest.
- \* Pulmonary edem
- \* hypovolemic shock.

Symptoms of chemotoxic Reaction

They depends on dose  
symptoms include.

infusion rate such as arthymias  
seizure, nausea, renal toxicity,

hypotension

→ Delayed <sup>reaction</sup> to contrast media  
are showed between 1 hours  
and 7 days, after the  
intake of contrast  
media.



(9)

Q4: When a perform a CT study of the brain in that effect will moving the patient chain up or down have?

When we perform a CT study of the brain,

The angle of the slice help to find out the position of the patient by the help of gantry.

If now if the patient chain up or down during the procedure, motion artifact are produced.

→ slice of the brain parallel to the supra orbital meatal line to reduce radiation exposure to the lens of the eye.

(10)

Q5: Describe how a patient can be positioned, so that data can be acquired of the head in coronal plane.

There are two methods to change the images from axial to coronal plane.

Basically CT perform on the basis of axial plane and ~~now~~ now we change the axial form to coronal plane.

We used two methods to achieve a coronal plane position for head.

⇒ One is to place the patient prone position on the scanning table, and request the patient to extend the chin forward.

and also ask the patient to drop his head back away as possible.

The position will be required a specialized head holder.

⇒ In second position the slice plane will be coronal

If the patient can not extend the neck fully,

So the gantry can be angle to obtain coronal plane.

Q6 = Describe the appearance of intracranial hemorrhage on the CT images.

To detect the intracranial hemorrhage the CT is the most important and initial exam.

The appearance of the intracranial hemorrhage depends on the passage of

(12)

time. The appearance change will the passage of time i.e. red blood cell change the appearance and the few hours. These changes depend on many factors. Such as least whether the patient is anemia or whether and to what degree blood is mixed with (CSF)

A general rule

APPEARANCE:

Intracranial hemorrhage appear hyperdense to normal brain tissue.

After the 3 days. the density of will be decrease.

generally simplified intracranial hemorrhage can be generally expected to show hyperdense from onset to 3 days.

→ from 4 to 10 days same to

(13)

contain hyperdense centre surrounded  
by concentric areas of  
hypodense and hypodense  
tissue.

from 77 days to 6 months  
it is likely to contain  
isodense center surrounded  
by areas of hypodense  
tissue.

\* After 6 months the intra  
cranial hemorrhage will  
be hypodense to brain.

END