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**Q1: Describe the three general phases of tissues enhancement.**

**Ans:** The three general phases of tissues enhancement are, the bolus phase, the non equilibrium phase and the equilibrium phase.

**The bolus phase:**

The bolus phase immediately follows an IV bolus injection. In the bolus phase the arteries are filled with contrast medium due to which they are displayed brightly on the image. This phase is also called the arterial phase. CT angiography images are taken in this phase.

**Non equilibrium phase:**

This phase follows after the bolus phase. The contrast is still present in the arteries which makes them brighter than the parenchyma of organs. So in this phase the venous structure is also opacified just like the arteries. This phase is also known as venous phase. This phase starts after 1 min of the bolus injection. This phase is only for a short time, about 1min. Body images are taken while the contrast is still in the non equilibrium phase.

**Equilibrium phase:**

The last phase is equilibrium phase also known as delayed phase. It starts after two minutes of the bolus phase. So in this phase the contrast is emptied from the arteries and made thinner in the veins and soaked the organs parenchyma. This phase is the worst of taking scans of the body mostly in the liver. In the other two phases the liver tumors visualization improves but not in this phase. This is the disadvantage of this phase because the contrast disappears more equally in the hepatic parenchyma and the tumors interstitial space and due to this the tumors density becomes the same as the surrounding tissues (isodense) and the tumors can be missed while scanning.

**Q5: Describe the appearance of intracranial hemorrhage on the CT image.**

**Ans:** CT is mostly used for intracranial hemorrhage (ICH). The appearance of ICH will change with time because the red blood cells within the hemorrhage begin to worsen within several hours this may depend on many factors like what if the patient is anemic or the blood has mixed with CNS. ICH will appear hyperdense to normal brain tissues for 3 days, after that it’s density will decrease slowly. Loss of density starts at periphery of hematoma. Density decreases portion of hematoma and becomes isodense to brain tissue. The loss of density becomes faster until the whole hematoma becomes hypodense to brain tissue. Intracranial hemorrhage can generally be expected to appear hyperdense white on the image from onset to 3 days, from 4 to 10 days. ICH contains a hyperdense center surrounded by concentric areas of hyperdense and hypodense tissue from 11 days to 6 months.it contains an isodense center surrounded by hypodense tissue by 6 months the ICH will be hypodense to brain.

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

**Ans:** Changing the image plane to coronal can produce additional information. There are two methods to achieve a coronal position for head scanning. The first method is to place the patient prone on the scanning table and tell him to extend the chin forward. The second method is to place the patient supine and tell him to drop his head back as far as he can. This position will require head holder for stability. In both of these methods the plane will be coronal. If the patient is having some problem in extending his neck than the gantry should be angled to obtain a coronal plane. Patient comfort and radiologist preferences should be taken care of.

 **Q3: what are symptoms of an idiosyncratic reaction to contrast media? What are symptoms of chemo toxic reactions? Into which category do delayed reactions belong?**

**Ans:** Symptoms of idiosyncratic reaction:

Mild symptoms of idiosyncratic reaction may include:

Cough, itching, rash, pallor, nasal stuffiness, minimal swelling in the eyes and face, facial rash.

Moderate symptoms of idiosyncratic reaction may include:

Respiratory difficulties(bronchospasm, dyspnea, wheezing, mild laryngeal edema), pulse change, hypertension and hypotension.

Severe symptoms of idiosyncratic reaction may include:

Substantial respiratory distress, unresponsiveness convulsions, clinically manifested arrhythmias and cardiopulmonary arrest.

Other symptoms may include: urticaria, rigors, nectroting skin lesions and abdominal pain.

**Symptoms of chemotoxic reactions:**

* Pain at the injection site
* Pain extending up the arm may be relieved by abduction the arm.
* Contrast media injected during peripheral artriography causes a sensation of heat or pain.
* Pain, swelling, erythema and sloughing of skin.
* Disturbance of cardiac rhythm.

Renal failure is very common in chemotoxic reactions other effects may include impaired renal perfusion, tubular injury, obstruction nephropathy etc.

The exact nature of delayed reactions is unclear but some can be attributed to chemotoxicity whereas other are idiosyncratic in nature. So we can say that delayed reactions lie in both.

**Q2: Write the qualities of an IV access site that would make it ideal for administering contrast media.**

**Ans:** Ideal IV access site for administering contrast media are:

* Well located
* Established recently(older sites are extravasate)
* Contains a connecting hub or part that is not accessed
* Does not show evidence of redness, blanching or swelling in the skin surrounding the puncture site.

**Q4: when performing a CT study of the brain what effect will moving the patient chin up or down have?**

**Ans:** The slice angle is determined by the position of the patient head which is to move the chin up or down. The angle of the gantry is also determined by moving the patient’s chin up or down. In old days it was common to program the cross sectional slices of brain to be parallel to orbitomeatal line. But nowadays supraorbital lines are used. Which reduces radiation exposure to lens of the eye. Many CT don’t allow the gantery to be tilted so axil techniques are used for routine brain imaging .

So as we know from above that moving a patient chin up or down helps in determining the slice angle and also the angle of gantry . It’s helps in picking any tumor in the head or any other problem.