

INU

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Assignment =) CRP and  
CP.

Submitted TO :-

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Radiology  
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(1)

Q.No:1

Ans:- Ideal contrast agent for IV administration:

→ The ideal contrast agent for IV route is iodinated LOCM and IOCM.

→ The osmolality of these contrast agent are 2-3 times the osmolality of a blood

⇒ LOCM included

(\*) Iopamidol

(\*) Iopromide

(?)

(\*) Ultraviolet

(\*) Ioversol.

⇒ The LOCM also  
contain iso-osmol  
contrast media (IOCM)

→ It is same as  
blood and are  
less toxic.

⇒ IOCM included  
visipaque.

→ The visipaque is  
only IOCM that  
are currently uses.

⇒ The visipaque has  
dimer structure fits  
a higher concentration

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of iodine atoms per  
osmole.

→ Permitting diagnostic  
level of contrast  
application at less  
toxic osmolality.

⇒ Ideal properties  
of IV contrast

→ The ideal properties  
of IV contrast are:

→ It should not  
cross blood-brain  
barrier.

→ It is safe.

→ It is non toxic.

→ Opacification.

(4)

- It is easily injectable.
- Easy Ejection.
- Low surface tension.
- Cost effective.
- water soluble is more effective than lipid soluble.
- Residual Contrast media.

⇒ Favourable characteristics  
to be used IU contrast

→ The favourable characteristics of IU contrast are following

(5)

- Low osmolality.
- less chemotoxic
- proper viscosity.
- It would not impact GFR.
- It is safe in elder people, child and pregnant women.
- These contrast should be safe with elevated creatinine level.
- These contrast should bear all the properties mentioned above.

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(6)

## Q No: 2

Ans:

⇒ Venography :

→ It is also called "phlebography" or "ascending phlebography"

→ It is a procedure in which x-ray of vein, a venogram is taken after a special dye is injected into bone marrow or vein.

→ Dye has to be injected constantly

(7)

via catheter. making  
it an invasive procedure

→ Normally the catheter  
is inserted by the  
groin and moved  
to the appropriate  
site by navigation  
through vascular system.

## Indication:

- Deep Venous Thrombosis
- Congenital abnormality  
of venous system.
- Odema of unknown  
Cause.



(8)

## ⇒ Contraindication

- Local Sepsis
- Previous Severe Contrast medium reaction.
- Allergic to iodinated contrast agent
- Impaired renal function test

## ⇒ Contrast Medium

The contrast medium may be -

- Low osmolar Contrast medium. (LOCM)
- High osmolar Contrast medium. (HOCM)

## ⇒ Equipment:

The equipment for venography are:

→ Fluoroscopy with spot film devices

→ Tilting radiography table

## ⇒ Patient Preparation

The patient should be prepared as-

The leg will be elevated overnight to lessen oedema if the leg swelling is severe

(10)

## Technique :-

→ The patient is lying supine

→ head tilted up

... 40 degree to delay the transit of contrast medium.

→ A tourniquet is applied above ankle joint occlude the superficial, anterior tibia vein.

→ A 19 g butterfly needle is inserted into vein of dorsum foot.

(11)

→ 40ml Contrast is injected by hand and

→ Spot film of selected area are taken.

→ Further 20ml bolus Contrast is injected while compression is applied to delay the transit time of Contrast. in to upper thigh and pelvic vein.

→ The compression is released over femoral vein with patient head side down

→ Spot film are taken after 2 second.

(18) (10)

→ The needle should be flushed with normal saline to reduce the chance of phlebitis due to contrast medium

→ Films :-

Film of venography are:

- AP of calf
- Both of calf (foot externally and internally)
- AP of the popliteal, common femoral and iliac vein.

(13)

After care:

→ The limb should  
be exercised.

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(14)

Q No: 3

Ans:

⇒ Loopogram

→ A Loopogram is a diagnostic test that is performed on section of bowel that junction in place of urinary bladder.

→ Patient who do not have bladder or have malfunctioning bladder may undergo

(15)

a Surgical procedure called a urinary diversion to reroute the flow of urine through an opening in abdomen.

→ The opening called "Stoma"

→ The stoma has no muscle and cannot control urine flow

→ So that urine flows continuously through it.

→ Sometime section of bowel, usually the small intestine is



(16)

removed and repositioned  
to enable urine to  
flow from ureters  
that connect the  
kidney to stoma.

This section of bowel  
called "ileal conduit"

⇒ A loopogram is  
a fluoroscopic study  
of an ileal conduit  
which is a type  
of urinary diversion.

⇒ Terminology

This procedure also

(17)

Known as ~~oral radiology~~

ileal conduitogram

ileal loopography

or

ileostometerography.

⇒ Procedure :

→ It is retrograde study in which

→ Contrast injected via anterior abdominal wall stoma of ileal conduit

→ The stoma is initially "catheterized" with urinary catheter

(18)

To allow access.

→ A series of images are taken in a number of positions to assess the conduit.

→ In the majority of cases a postoperative stricture being the chief clinical concern.

→ It is typical to observe contrast entering the ureter during the procedure.

## After the procedure

→ You will need to put a new stoma bag and off you go.

→ you may experience a bloated feeling as the bowel is distended with contrast during procedure.

→ But it should not be painful.

→ Minor bleeding can occur from the fistula.

→ The risk of infection is small.

(20)

→ Normally result will be you getting about 2-4 weeks after procedure.

⇒ Examination that Show loopogram:-

(\*) Loopogram examination show.

→ Kidney

→ Ureters

→ Ileum

→ Stoma

→ It is done to ensure that the conduit and surrounding organs are functioning efficiently.

(91)

→ Benefits :-

The examination will help your doctor to make a correct diagnosis or decision about your treatment.

⇒ Associated Risk

→ It is an x-ray procedure so there are some risk associated with radiation.

→ But radiation should kept as minimum as possible.

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## Q No: 4

Ans:

⇒ Role of Technologist  
in performing fluoroscopy

Procedure:-

→ Technologist may perform noninterpretive fluoroscopic procedure.

→ Assist licensed practitioner with fluoroscopic and specialized interventional imaging procedure.

(23)

→ The technologist receive formal training in radiation management.

→ The technologist are frequently are trained to perform double contrast barium enema Examination.

→ Reviewing the patient clinical history to ensure the proper imaging procedure has been observed.

→ According to American Society of Radiological



(24)

Technologist (ASRT).

that the technologist

Scope of practice.

and the technologist  
is responsible for

following parts of  
medical imaging.

procedure.

→ Prepare patient for  
the procedure.

→ Select proper imaging  
equipment and  
associated accessories.

→ Patient positioning  
best demonstrate to  
anatomy of interest.

(25)

immobilizing patient  
as necessary.

→ Administering of  
medication such as  
contrast agent

→ Determining the  
radiographic exposure  
technique.

→ Applying principle  
of radiation protection  
to patient and staff.

→ Technologist should  
evaluate the image  
before submitting them.

→ Technologist should  
be demonstrate proper  
patient positioning.

Appropriate anatomy  
and over all satisfactory  
image quality.

→ Technologist record  
the justification for  
the repeat images.

Technologist also  
should develop and  
maintain a technique  
chart for imaging  
equipment including  
fluoroscopy system  
to minimize repeat  
caused to exposure  
error.

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(28)

Q No: 5

Ans:

Catheter:

"A catheter are these medical devices that can be inserted in body to treat disease or perform a surgical procedure."

→ It is a thin tube made from medical grade materials serving a broad range of functions.

(29)

→ By modifying the materials or adjusting the way catheter are manufactured.

It is possible to tailor catheters for

(\*) → Cardiovascular

(\*) → urological

(\*) → Gastrointestinal

(\*) → Neurovascular

(\*) → ophthalmic application

→ Catheter can be inserted into a body cavity ducts or vessels.

→ Functionally:-

- They allow ~~many~~.
- (\*) administration of fluid.
  - (\*) Drainage.
  - (\*) Gases.

→ Access by surgical instruments.

→ Perform a wide variety of other tasks depending on type of catheter.

→ Process of inserting catheter:-

The process of inserting catheter is "catheterization"

(31)

→ A catheter left inside the body either temporarily or permanently.

→ may be referred to as an "indwelling catheter". (e.g: a peripheral inserted central catheter)

⇒ Uses of Catheter

Placement of a catheter into a particular part of body may allowed.

(32)

⇒ Urinary catheter

→ Drainage urine from the urinary bladder as in urinary catheterization

e.g.: intermittent catheters. or Foley catheter.

⇒ Drainage urine from kidney by percutaneous nephrostomy.

⇒ Drainage of fluid collection e.g. an abdominal abscess.



(33)

⇒ pigtail catheter

pigtail catheter used to drain air from around lung. (pneumothorax)

⇒ Administration of intravenous fluid medication or parenteral nutrition with a peripheral venous catheter.

⇒ Angioplasty, angiography, Balloon sinuplasty, catheter ablation often Seldinger technique is used.

(34)

⇒ A subcutaneous administration of insulin or other medication with use of an infusion set and insulin pump.

⇒ Direct measurement of blood pressure in an artery and vein.

⇒ Direct measurement of intracranial pressure.

⇒ Administration of anaesthetic medication into the epidural space, the subarachnoid space or around a major nerve bundle such as the brachial plexus.

(35)

⇒ A central venous catheter is a conduit for giving drugs or fluid into large-bore catheter placed into the pulmonary artery for measuring pressure in heart.

⇒ An embryo transfer catheter is designed to insert fertilization into uterus. They may vary in length from approximately 150 — 190 mm.

(36)

⇒ An umbilical line is a catheter used in neonatal intensive care unit (NICU) providing quick access to central circulation of premature infants.

⇒ A Swan-Ganz catheter is a special type of catheter placed into the pulmonary artery for measuring pressure in the heart.

⇒ A Quinton catheter is a double or triple lumen, external catheter used for hemodialysis.

## ⇒ Types of Catheter

Types of catheter are  
follow

- Indwelling catheters.
- External catheters.
- Short term catheters.
- Foley catheters.
- Intermittent catheters
- Quinton catheter
- Swan-Ganz catheter
- Pigtail catheter.
- urinary catheter.

(38)

## Guidewire :-

→ A device used to enter tight space  
e.g obstructive  
valves or channels  
within the body or  
to assist in inserting  
positioning and moving  
a catheter.

⇒ Guidewire vary in

(\*) Length

(\*) Size

(\*) Stiffness

(\*) Composition

(\*) And Shape of the tip

(3.9)

→ Tiny guidewire are designed to navigate vessels to reach a lesion or vessels segment.

→ Once the tip of the device arrives at its destination, it acts as guide that larger catheter can rapidly follow for easier delivery to treatment site.

→ Guide wire come in two basic configuration:

(\*) Solid steel or nitinol core wire and solid core wire

(40)

in smaller uline coil.

### 3-step process

① Guidewire stays inside the tip of catheter until ready for use.

→ Increase risk

associated with being too far in or out

→ Too far in: Blood clots due to large amount of dead space in catheter.

→ Too far out:

Dissection of blood vessels.



(4)

(II) Guidewire advances distally into the blood vessels.

→ Distal guidewires assess offers anchored stability for catheter advancement.

(III) Catheter advance along the guidewire until it return to position

→ Torque is applied to catheter to.

→ Aid in following guidewire contours.

→ Reduce friction.

(42)

## Covers:

- polymer  
or plastic.
- lubricity.

## Coating:-

- Distal half
- Create textile gel
- Reduce friction.
- Affect lubricity  
and tracking.
- facilitate movement  
of ulixie within  
vessels.

(43)

⇒ Different types  
of wires:-

→ Access wires.

→ Rail wires.

→ Maneuvering wires

Hydrophobic wires

→ Silicon based  
coating.

→ Repel water.

→ Require no activation  
by liquid to create  
a "max-like" surface.

→ Reduce friction.

→ Increase tackability  
of wire.

(44)

## Hydrophilic

→ Applied over entire working length of wire including tip of coils.

→ Attract water.

Need lubrication.

→ Decrease friction.

increase trackability.

→ Reduce Thrombogenic

→ increase risk of perforation

→ Tendency to stick to angioplasty cath.

(u5)

## ⇒ Uses of Guidewire

→ Guide wire used to enter tight spaces. e.g. obstructed valves or channels.

→ A wire or spring used as a guide for placement of large device or prosthesis such as catheter or intramedullary pin.

→ A guidewire is long flexible fine spring used to introduce and position an

(46)

intravascular angiographic  
catheter.

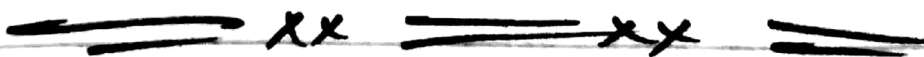
→ A thin wire used  
to control movement  
of catheter as it is  
inserted into the  
body.

⇒ Types of Guidewire

1) → Solid core wire.

2) → Membral wire

3) → Ribbon wire.



THE END

★ Thank You ★