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Assignment = CRP & CP

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Shew

Q No: 1 :-

Ideal Contrast agent
For IV administration :-

Ans: - The ideal contrast agent for IV route is iodinated LOCM (low osmolality contrast medium) & IOCM.

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

→ LOCM included

→ iopamidol (Isovue)

→ iopromide (Ultravist)

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→ ionic (omnipaque)

→ ionic (optiray)

The LOCM also contain

iso-osmol contrast media (IOCM)

which has about same

osmolality as blood and

are much less toxic

→ The only TOCM uses

currently are

→ iodixal (visipaque)

→ The dimer structure of

visipaque fits a higher

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concentration of iodine atoms per osmole, permitting diagnostic level of contrast opacification at less toxic osmolality.

Ideal Properties of IV contrast:-

- Safe
- Non toxic
- Should not cross blood-brain barrier
- Similar physiologic properties when compared with to blood saliva
- Inertness
- Opacification

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→ Low surface tension

→ Easy ejection or elimination

→ Easy injectability

→ Residual contrast media

→ Cost effective.

→ Water soluble is more effective than lipid soluble.

⇒ Favourable characteristics

to be used as IV contrast

→ Proper viscosity

→ Low osmolality

→ Less chemotoxic

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- These contrast should safe with elevated Creatinine level
- It would not impact GFR
- It may also safe in elder people, child & pregnant women
- These contrast should bear all the properties mentioned above.
- The person with liver diseases can use it safely.

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Q No: 2 :-

Ans Venography :- It is also known as "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 via catheter

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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 abnormalities of
venous system

→ edema of unknown cause

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Contraindication :-

→ local sepsis

→ Previous severe contrast
medium allergy.

→ Allergy to iodinated contrast
agent

→ Impaired renal function test

Contrast Medium :- The

contrast medium may be

LOCM (low osmolar contrast medium)

HOCM (high osmolar contrast medium)

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Equipment :- The equipment for venography are

→ Fluoroscopy with spot film devices

→ Tilting radiographic table

Patient Preparation :-

→ The patient should be prepared as the leg will be elevated overnight to lessen oedema if the swelling is severe

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Technique :-

→ The patient is laying
supine

→ head tilted up 40°
to delay the transite of
contrast medium

→ A or tourniquet is
applied above ankle joint
to occlude the superficial
venous Tibia vein

→ A 18g butterfly needle
is inserted into vein of
dorsum foot.

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→ 40 ml contrast is injected
by hand & arm

→ Spot film of selected areas
are taken

→ Further 20 ml 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 hand
side down.

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→ Spot Film are taken after
2 second

→ 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

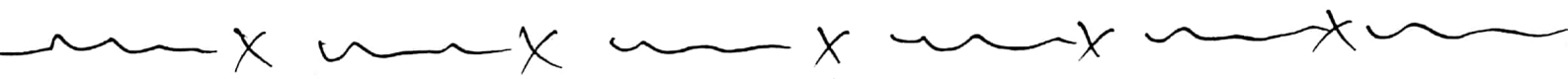
→ Both of coils (foot externally
and internally)

→ AP of the popliteal common
femoral and iliac vein.

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Abler care :-

→ The limbs should be exercised



Q No: 3 :-

Ans :- Loopogram :-

A Loopogram is diagnostic test that is performed on section of bowel that function in place of urinary bladder

→ Patient who don't have bladder or have malfunctioning bladder may undergo a surgical procedure called a

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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 flow continuously through it

→ Some time section of bowel, usually the small intestine is removed & repositioned to enable urine

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to flow from ureter that connect
the kidney to stomach.

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 called ileal conduitogram
ileal loopography or
ileostoureterography

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- ⇒ 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 to allow access the conduit
 - In the majority of cases a post operative stricture being the chief clinical concern
 - It is typical to observe contrast entering the ureter during the procedure.

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After the Procedure :-

- Put a new stoma bag & off yogo.
- Patient may experienced a bloated feeling as the bowel is distended with contrast during procedure.
- ~~But should it should not~~
- But it should not painful
- minor bleeding can possible from fistula
- The risk of infection is minor
- Normally patient will get result within 2-4 weeks after procedure.

Examination with ⁽¹⁸⁾ loopogram can show :-

→ kidney

→ ureter

→ pelvis

→ stoma

→ It is to ensure that conduit

and surrounding organ are

functioning efficiently

⇒ Benefits :- The examination

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

⇒ Associated Risks :-

It is an x-ray procedure

so there are some risk

associated with radiation

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→ But radiation should kept
as minimum as possible

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Q No: 4 :-

Role of technologists

In performing fluoro scopy :-

Ans :-

Radiographers may perform

non-interpretive fluoroscopy

procedure and assist licensed

practitioner with fluoroscopic

and specialized interventional

imaging procedure

→ The American College of

Radiology suggests that

technologists receive formal

training in radiation management.

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- Radiographers frequently are trained to perform double contrast barium enema examination
- According to the American Society of Radiologic Technologists (ASRT) Radiographer scope of practice the technologist is responsible for the following parts of the medical imaging procedure
 - Reviewing the patient's clinical history to ensure the proper imaging has been ordered.
 - Prepare the patient for procedure
 - select the proper imaging equipment and associated accessory

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Positioning patients to
best demonstrate the anatomy
of interest

→ Immobilizing patient as
necessary

→ Preparing & administering
medication, such as contrast
agents, prescribed by a
licensed practitioner

→ Determine the radiographic
exposure technique, while
applying principles of radiation
protection to patient & staff.

- Following image acquisition, the radiographer should evaluate the images before submitting them to the radiologists
- Image should demonstrate proper patient positioning
- Appropriate anatomy and over all satisfactory image quality
- The technologists must record the justification for the repeated
- Image improve the over all diagnostic value of procedure if additional

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Information review.

→ If additional images are obtained

→ Radiographer also should develop and maintain a technique chart.

For imaging equipment including fluoroscopy system. to maintain minimize repeats caused to exposure error.



Q NO: 5 :-

Ans :-

Catheter :-

A catheter are medical devices that that can be inserted in body to treat diseases or perform a surgical procedure

→ It is a thin tube made from medical grade material serving a broad range of function.

By modifying the material or adjusting the way catheter manufactured.

It is possible to
Catheters for

→ Cardiovascular

→ Gastrointestinal

→ Neurovascular

→ Ophthalmic application

→ Urological

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

⇒ Functionally :-

→ They allow

→ Administration of fluid

→ Drainage

→ Gases

⇒ Access by surgical
instruments

→ Perform a wide
variety of other
tasks

tastes depending on
type of catheter.

⇒ Process of Inserting
Catheter :-

The process of inserting
catheter is "Catheterization"

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

→ May be referred to
as an "indwelling
catheter" (e.g. a
principal inserted central
catheter)

Uses of Catheter :-

Placement of catheter
into a particular

Part of body may
allowed.

⇒ Urinary Catheter :-

→ Drainage urine from

urinary bladder as known
as urinary catheterization
e.g: intermittent catheter
or Foley catheter

⇒ Drainage urine from
kidney by percutaneous
nephrostomy.

→ Drainage of fluid
collection e.g an
abdominal abscess

Pigtail Catheter :-

A pigtail catheter used
to drain air from

air from pleural cavity around lungs (Pneumothorax)

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

⇒ Angioplasty,

angiography, balloon sinuplasty, catheter ablation of len seldinger techniques are used.

⇒ 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 & vein.

→ Direct measurement of of intracranial pressure

→ Administration of anesthetic medication into the epidural space, the subarachnoid space or around a major nerve bundle such as the brachial plexus

A central venous catheter is a conduit for giving drug 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 150-180 mm

⇒ An umbilical line is a catheter used to in neonatal intensive care unit (ICU)

Providing a direct 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 :-

→ Indwelling catheter

→ External catheter

→ Urinary catheter

→ Pigtail catheter

→ Swan-Ganz catheter

→ Quinton catheter

→ Foley catheter

→ Short term catheter

Guid Wire :-

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

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

Guid wire vary in

- size
- length
- composition
- stiffness E_p
- shape of the tip.

→ Tiny guide wire are designed to navigate vessels to reach a lesion or vessels segments.

→ 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~~ or nitinol core wire
2 solid core wire in smaller wire coil.

3-1 Step process

1) Guide wire 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.

2) Guide wire advances distally into the blood vessels

→ Distal guide wire
access offer anchored
stability for catheter
adjustment.

3) Catheter advance
along the guide wire
while it return to
position

→ Torque is applied to
catheter to

→ And in following
guide wire contours

→ Reduce friction

Covers :- Polymers
or plastic

→ Lubricity

Coating :-

→ Digital half

→ Create hydrophobic feel

→ Reduce friction

→ Facilitate movement

of wire within vessels

⇒ Different types of
Guide wire :-

→ Access wire

→ Rail wire

→ Manuevering wire.

Hydrophobic wires :-

→ Silicon based coating

→ Repel water

→ Require no activation

by liquid to create

a wax like surface.

→ Reduce friction

→ Increase tackability
of wire.

Hydrophilic :-

Applied over entire
length of wire including
tip of coils

→ Attract water need

Lubrication

→ Decrease friction ^{increase} tractability

→ Reduce thrombogenic

→ Increase risk of perforation

→ Tendency to stick to angioplasty catheter

Uses of Guide wire :-

→ Guide wire is 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 prostheses
such as catheter or
intermediary pin

→ A guide wire is long
flexible fine spring
used to introduce &
position an intravascular
angiographic catheter

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

Types of Guide wire :-

1) Solid core wire

2) Mandral wire

3) Ribbon wire

—X—X—X—X—X