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Q No1 :— **Nuclear medicine :—**

Ans :— Role of nuclear medicine in treatment and diagnosis of thyroid diseases :—

→ Nuclear medicine is directly involved in both the diagnosis and treatment of thyroid diseases

→ which reauirs an understanding of the pathophysiology and management of thyroid disorders

Diagnosis:— Thyroid uptake & imaging the principal nuclear tests in thyroid disease, may be used as given below

i) Differential diagnosis of

Hyperthyroidism :—

A very low nuclear medicine uses are sugested to diagnose destructive thyriditis, a self limited disorder, where as a normal or elevated uptake is consistant with toxic nudular goiter and Graves' disease

→ Scintigraphic characteristics also help to differentiate b/w nodular and Graves' disease.

ii) Function of thyroid nodules:

Fine needle aspiration biopsy (FNAB) with cytological examination

is used routehly to assess for meligmaney in thyroid nodules with Scintigraphy assisstance before FNAB.

"Hot" nodules are benign and donet reeires FNAB while "cold" nodules may be malignant

Scintigraphy :- a diagnostic teehniaue in which a two dimensional pictures of internal body tissue is produced through the detection of radiation emitted substance (radioactive) after administered into the body.

Differential diagnosis of congenital hyperthyroidism :-

→ Scintigraphy combine with ultrasound examination may used to identify such condition as thyroid agenesis, dyshormonogenesis, and incomplete thyroid descent

Treatment of Thyroid with nuclear medicine :- The treatment of Graves' disease and toxic nodular disease occur with iodine (131) but it has high side effects.

→ Radioactive iodine therapy is a a nuclear medicine for an overactive thyroid, a condition called hyper thyroidism and also may be used for thyroid cancer

→ The thyroid is a gland produces two metabolic hormons when it is over active it produces too much hormones

→ I-(131) an isotopes of iodine that emits radiation is used for medical purposes

When a small dose of I (131) is swallwed it absorbed into the blood stream in the gastrointestinal tract and concentrated from the bleed by the thyroid gland where it begins to damaging gland's cell

→ I-131 may also be used to treat thyroid cancer.

→ As the cell no reduces over secretion of hermones decreases.

i) → Radioactive iodine treatment may occasionally aggravate hyperthyroidism, Graves' opthalmopathy and air ways obstruction caused by large nodular goiters

→ Radioactive iodine (RAI) in people with toxic multi-nodular goiters, RAI may be necessary.

→ The RAI is ingested orally, and then travels to your thyroid through blood stream where it destroys the excess tissue.

Radioiodine dose :- cure of hyperthyroidism with single (131) I treatment is desirable, but not always possible

→ such factors a a large goiter, severe hyperthyroidism and prior propylthiouracil therapy, may contribute to treatment failure

informed Patient :-

→ detailed discussion with the patient regarding the clinical risks, outcomes, and side effects of Iodine (131) is a critical component of successful management.

QNo2:-

Ans:- Polycystic Kidney:-

→ It is characterized by an abnormal proliferation of renal tubular epithelial cells.

→ Which build up as cyst that increase gradualy in size & numbers

→ It lead to massive kidney enlargment and loss of renal function

→ It is common to encounter the patient with single

renal cyst or even multiple ones an incidental finding, specialy in these aged 50 or over.

→ Adult polycyst kidney disease is a common condition with prevalence of approxitely 1:1000

Clinical Features :—

→ Vague discomfort in loin & abdomen due to increasing mass of renal tissue

→ Acute loin pain or renal colic due to haemorrhage into cyst.

→ High B.P

→ Haematuria (bleeding in urine)
→ UTI (urinary tract infection) or cyst infection
→ Renal failure

Types of PKD :-

1) Autosomal dominent polycystic kidney disease (ADPKD)
2) Autosomal Recessive Polycystic Kidney disease (ARPKD)
3) Glomerulocystic kidney disease GCKD

1) Autosomal dominent polycystic kidney disease :-

It is transmitted by parents to their child by dominent

Inheritance.

→ only one copy of the abnormal gene (dominent) needed to cause disease.

2) Autosomal Recessive polycystic Kidney Disease :- (ARPKD)

→ It can inherited from parents to child by recessive inheritance

→ It is serious and can be fatal in few early months

→ very rarely occur

→ It occur in 1 out of 25000 people.

3) Acquired cystic Kidney Disease (ACKD) :-

→ It is often associated with Kidney failure and dialysis

→ People with "ACKD" usualy seeking help because of noticing haematuria

→ This is because the cyst bleed into the UT which discolours urine.

- Causes of Polycystic Kidney :-

→ It is usualy inherited from parents in autosomal traits (dominent)

→ If on parent carries the

the gene the children have a 50% chance of developing the disorder.

Causes of autosomal dominent PKD:-

→ occur in both children & adult but very commen in adult.

→ until middle age symtomps often not appear.

→ It affects 1 in 1000

→ It can affect even more but asymptomatics.

Cause of autosomal Recessive PKD:-

→ appear early in infants

→ Less common than dominent PKD

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→ It is associated with lung & liver diseases

→ End stage kidney & eventualy cause death.

→ Person PKD have number of clusters of cysts in the kidney

→ Family history of PKD increase the risk of condition.

PKD associate with following condition :—

→ Aortic Aneurysm

→ Brain Aneurysm

→ cyst in liver, pancreas & testes

→ Colon diverlical
→ half of the people with PKD have liver cyst.

Sign & Symptoms :—

→ Most people do not have symptoms until they aged 40-50 yrs
→ side or back pain
→ size of abdomen increases
→ Blood in urine frequently
bladder
→ kidney infection
→ High BP with headach.
→ 25% of PKD have bloppy valve in heart

Ex pounding on chest with chest pain.

Diagnosis of PKD :—

→ Ultrasound
→ CT scan
→ MRI
→ Gene linkage analysis.

Treatment PKD :—

- until now there is no cure for PKD.
→ But supportive treatment can help to restore kidney function e.g
→ careful control of BP

→ antibiotic intake for kidney & bladder infection.

→ Exercise

→ control weight & reduce salt intake.

→ withdraw smoking

→ Pain killer and multivitamine.

Conclusion:—

→ Its difficult to identify it as family disease, but qualified counsellors understand its inheritance pattern and diagnosis

→ counsellors can assist families to retain maximum

productivity & acceptance whilst coping with what is difficult & challenging situation

→ It is important that patients discuss their disease concerns with doctors.

Q No: 3:—

Ans :- **Lithotripsy:—** Lithotripsy is a medical procedure involving the physical destruction of hardened masses like kidney stones, bezoars or gall stones using shock wave or laser.

→ The term is derived from Greek word mean "breaking stone"

→ This procedure is performed when the stone connot pass or medicine connot help.

Types of Lithotripsy :—

→ Laser Lithotripsy or FURSL (flexible urethroscopy & laser laser Lithotripsy

→ ESWL (Extracorporeal shock wave Lithotripsy)

i) FURSL :—

→ It is also called Intracorporeal endoscopic lithotripsy.

→ The laser lithotripsy is effective for larger stones (> 2cm) with good stone-free & complication rates

→ The FURSL procedure involves using an endoscope to treat stone in ureter

→ Endoscope is flexible tube with light and camera that help doctor to see inside an organ or body cavity.

→ doctor visualize stone using endoscope.

→ Ee using laser to breake down it into parts

→ Procedure usualy takes 30 min

→ The broken fragments of stone should easily pass through urine.

ii) **ESWL** :— The Extracorporeal Shock wave lithotripsy (ESWL) uses shock waves to break a kidney into small pieces that can more easily travel through the urinary tract & pass from the body

→ The patient lie on the water filled cushion

→ X-ray & Ultrasound performed

to precisely locate the stone

→ High energy sound waves passed on the body to break the stone into fragments

→ The small pieces travel through urinary tract and out of the body easily

→ The process end about one hour

→ sedative & local anesthesia may give to the patient

→ Surgeon may use stent in case of large stone.

→ The patient should pass stone particles over a several days. or weeks via urination.

⇒ Lithotripsy is therapeutic tools.

⇒ General Creteria for performing Lithotripsy :—

→ 1st of all ask the patient to remove the jewelry, clothing or any object that interfere the procedure

→ Physician wear the procedure gown

→ The patient should wear gown

→ IV cannula should inserted in arm or hand

→ Sedative and anesthetic agent

should administered to become pain free during procedure.

→ After sedation has taken effect patient will positioned on a water filled cushion. or imersed in water filled tube

→ When the stone is located with help of ultrasound or flouroscopy patient will positioned for the most direct access to stone.

→ The patient can feel light tapping on skin during procedure

→ A sequence of shock waves will be created to shatter the kidney stone.

→ The stone will be monitored by flouroscopy or ultrasound during procedure

→ A stent may be placed in the ureter to help the stone fragments pass.

→ If the stone fragment is small enough to pass through the urinary tract, the procedure will end.

→ After the procedure the patient taken to the recovery room for observation

Q NO 4 :—

Ans :— The terms used in Medical dichenary with suffex "otomy"

- Otomy => The suffix otomy means cutting into parts of the body
  → It is derived from greek suffex "tomos" meaning to cutting, sharp or separate"
- → Some of the terms with suffix otomy are given below

Biloteral cingulotomy:- An incision to perform Psychosurgery, to treat depression and addiction.

Coeliotomy:- A large incision through the abdominal wall to gain access into abdominal cavity.

Craniotomy:- A bone flap is temporarily removed from the skull to access the brain.

Escharotomy:- Procedure used to treat Full-thickness circumferential burns.

Episiotomy:- Surgical incision of the perinium and posterior vaginal wall.

Hysterotomy:- incision in the uterus ... Ce is performed during a caesarean section.

Hymenotomy:- Surgical removal or opening of the hymen.

Laminotomy:- The partial removal of the lamina

Myotomy:- Procedure in which muscle is cut into parts

Amniotomy :- An incision to accelerate labor are created.

Androtomy :- Dissection of the human body

Thyrotomy :- Incision of the larynx through the thyroid cartilage

Thoracotomy :- Incision into the pleural space of chest.

Phlebotomy :- An incision in a vien with a needle

Pulpotomy :- Removal of a portion of the pulp, including diseased aspect

Clitoridotomy :- plastic surgery of the clitorial hood.

Osteotomy:- A bone is cut to shorten or lengthen it or change alignment.

Radial Keratotomy:- a refractive surgical procedure to correct myopia.

Sphincterotomy:- Treating mucosal fissures from anal canal/sphincter.

Other otomies:-

→ Dicholomy
→ False dicholomy
→ Tricholomy
→ Trans-orbital Lobotomy

→ Tracheotomy (opening of the trachea)

→ Lobotomy (cutting a cortex lob)

→ Lithotomy (Pelvis exam surgically)

→ Heller myotomy (Muscles of cardia. cut)

→ Fasciotomy (Fascia is cut to reduce pressure)

→ Cricothyrotomy (opening air ways)

→ Cordotomy (Spinal cord cut of)

→ Bronchotomy (Bronchi cut during obstruction)

→

Q No 5 :- Urinary tract infection

Ans :- A urinary tract infection (UTI) is an infection in any part of urinary system.
kidney, bladder, ureters & urethra.

- These are the structures that passes urine through before being eliminated from the body

→ This type of infection is caused by microbes which are seen only in microscope

→ Most UTI's are caused by baderia

→ But some are caused by fungi and in rare case virus.

→ It is the most common infection in human

→ Most UTI's only involves urethra & bladder in the lower tract

→ However, UTIs can involve the ureters and kidneys in the upper tract.

→ Although upper tract UTIs are more rare than lower tract UTIs

→ Women are more prone to develop UTI's than men.

Causes

The vast majority of UTIs are caused by the bacterium

E. coli usually found in the digestive tract

→ Chlamyclia and mycoplosma baseria can infect the urethra but not a bladder.

Risk factors :-

→ Over 50% of all women will experience at least one type of UTI during their life time

→ 20-30% experiencing recurrent UTI

→ Diabetes

→ sexual intercourse, especially if more frequent, intense and

Multiple and new partners.

→ Poor personal hygen.

→ Urinerary catheter.

→ Problem of not emptying bladder completely

→ Blocked flow of urine

→ Menopause.

Symptoms

→ Sign and symptoms of urinery tract infection depends upon age, gender and the type of infection.

→ Strong frequent urge to urinate.

→ Burning sensation with urination

→ Bloody urine

→ cloudy urine

→ Urine that looks like color or tea
→ Pelvis pain in case of women
→ Pain in rectus in case of men
→ urine that has strong colour.

Symptoms of upper UTIs :—

→ Fever, chills, pain & tenderness of upper back and sides
→ Nauses & vomiting.

Types of UIIs :—

→ There are three types of UTIs

Acute Pyelonephritis :—

→ A infection of kidney is called Pyelonephritis
→ sudden & sever kidney infection
→ nephron are inflamed

→ If an individual develop this condition they could experience the below conditions.

Symptoms :—

→ upper back pain
→ side pain
→ High fever
→ Shaking
→ chills
→ Fatigue
→ mental changes.

Cystitis :—

It is a bladder infection

→ bladder are inflamed
→ bacteria makes its way to bladder

Symptoms :—

→ low grade fever
→ pressure & cramping of abdomen
→ Lower back pain
→ Blood in urine
→ frequent & painful urination

Urethritis :— It is urethral infection

→ The inflamation of urethra is called urethritis

Symptoms :—

→ Burning sensation when urinate
→ Discharge

Diagnosis :—

→ asking about symptoms
→ urine test
→ wbc, RBC & bacteria

in urine can diagnose it.

→ Diagnostic Imaging :- This can assessing the urinary tract using Ultrasound, CT-Scan & MRI or X-ray.

→ Urodynamics :- This procedure determine how well the urinary tract is storing and releasing urine

→ Cystoscopy :- To examine the bladder and urethra with a camera lens

Treatment :—

→ It is usually caused by bacteria
→ so it is treated with antibiotics e.g levofloxacin, ciprofloxacin, Penicline cyphlesporine etc.
→ Drink plenty of fluid
→ Frequent urination to flush out bacteria
→ uncomplicated UTIs can be treated with 2 to 3 days
→ But complicated can be treated about 7 to 14 days.

Prevention :—

→ Drink plenty of fluids
→ urinate frequently
→ Promote hygen
→ urinate shortly after sex.