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Q1: What is the role of nuclear medicine in diagnosis and treatment of thyroid diseases?

Ans **Role:** → The Role of Nuclear Medicine For Thyroid Diseases: →
The nuclear medicine play a major role in the treatment and diagnosis of thyroid diseases. Thyroid Scintigraphy should be used as the imaging modality of choice for assessment of thyrotoxicosis. The therapeutic modalities include antithyroid drugs, radioiodine and surgery.

↳ **① Nuclear Medicine Role as a diagnosis of thyroid disease:** →
In order to diagnose the thyroid disease in nuclear medicine, the procedure uses a small amount of the radioactive material. Thyroid Scan work

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nuclear medicine.

↳ Radioactive iodine are mostly uses for thyroid scans or tests. As we know that the thyroid gland uses iodine and the thyroid cancers absorbs the iodine easily that's why a radioactive iodine are mostly used.

↳ The Scanner or gamma cameras is introduced to detects the emission caused by radioactive iodine in the thyroid gland, and then from the calculated result the physician will maintain the proper function of thyroid.

USES:→

It is used to check or see the abnormalities and misfunctioning, will be done in laboratory test or physical exam.

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By performing the test the resultant images will be used to Diagnose the following.

Hyperthyroidism.

Hypothyroidism.

Goiter -

Lumps -

Over Growths -

Thyroid Cancer.

Nodules (cyst) -

Swelling.

Inflammation.

(2) Treatment with nuclear Medicine →

The nuclear medicine is also used for the treatment of the thyroid gland disorders, including the hyperthyroidism and thyroid cancer.

↳ Nuclear medicine uses a small amount of radioiodine -¹³¹I- and is given to the patient to swallow.

↳ The use of ¹³¹I- iodine in

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treatment of hyperthyroidism is increasing, as it is easy to administer, relatively inexpensive, safe and highly effective. A single dose of radioiodine - 131 I - are to be taken orally.

The radioactive radioiodine is then absorbed into the bloodstream and is get concentrated by the thyroid gland, where it begins destroying the gland cells.

The nuclear medicine shows the patient condition whether he is responding to treatment, the nuclear medicine can identify the diseases in the earliest stages.

It is most likely that some or most of the thyroid gland cells are may be destroyed using nuclear medicine procedure.

No other side effects are there for the nuclear medicine procedure of thyroid gland.

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Q2: → What do you know about polycystic kidneys - Explain in detail?

Ans
Polycystic Kidney: → The abnormal proliferation of renal tubular epithelial cell, which manifest as cyst and will lead to massive kidney enlargement.

The polycystic kidney is an inherited disorder, it causes fluid filled cysts to form in the kidney.

This may impair kidney function and eventually cause kidney failure.

Types of polycystic kidney: →

There are three types of polycystic kidney which are given below.

- ① Autosomal Dominant polycystic kidney.
- ② Autosomal Recessive polycystic kidney.
- ③ Acquired cystic kidney.

① Autosomal Dominant polycystic kidney:→
This (ADPKD) is sometime
Called by adult polycystic
Kidney-

About 90% of the cases
are Autosomal Dominant polycystic
Kidney-

It is transmitted from
the parent to the offspring
and only one gene is
required for causing

Such disorder in offspring.

② Autosomal Recessive polycystic kidney:→
This is much less common
than Autosomal dominant polycystic
Kidney disorder-

It is also transmitted from
parents to offspring by
recessive inheritance-

It is to much serious
and also lead to death
fetal.

③ Acquired Cystic Kidney disorder:→
It is usually occurs later
in life, it is not
inherited, the acquired cystic
kidney usually develops

in the peoples who have already kidney problems, and as often associated with kidney failure and dialysis.

Causes of polycystic kidney:→
About 50% Chances in offspring whose parent having such disorder.

It is inherited disorder.
It appears in infancy or childhood.

A family history of PKD increase risk for the condition.

It is generally inherited, less commonly it develops in people who have other serious kidney problem.

Symptom of polycystic kidney:→
Many peoples lives without having symptoms upto 40-50 age, but the initial symptom are given below-
pain in the sides

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Frequent urination
Blood in the urine
Pain in the abdomen.
Urinary tract infection.
Pale skin color.
Pain in back
Kidney Stones.
Nail abnormalities, joint pain.

- ↳ High blood pressure is the most common symptom.
- ↳ Headaches associated with BP.
- ↳ Pain in back.
- ↳ Pain in the abdomen and sides.

Diagnosis of Polycystic Kidney:→
For the diagnosis of all types of polycystic kidney disorder the physician use imaging test to look for cyst of the kidney.
Ultrasound:→ uses sound waves to look your kidney for cyst.
CT Scan:→

This scan is used to detect smaller cysts in kidney.

MRI Scans → Use strong magnets to image body to visualize and look for kidney structure for cysts.

Treatment of polycystic kidney → The most important part of treatment is controlling high blood pressure.

- ↳ Medication to control pain.
- ↳ Smoking cessation.
- ↳ Blood pressure medication.
- ↳ Antibiotics to treat urinary tract infection.
- ↳ Surgery to drain cysts and help relieve discomfort.
- ↳ Reduces salt intake.
- ↳ Exercise.

Q3: What is lithiotripsy? Is it a therapeutic or diagnostic tool? what is general criteria for performing lithiotripsy?

Ans

Lithiotripsy:

The Lithiotripsy is a procedure used to treat certain types of kidney stones and stones in other organs, such as gallbladder or liver.

↳ OR: → The procedure involving the physical destruction of hardened masses like kidney stones or gallstones. It uses shock waves or a laser to break down the stones.

The sound waves break down the stones into small pieces, the waves only affect stones and will not harm muscles, bone or skin.

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Is It A Therapeutic or diagnostic Tool?

Lithotripsy are used for breaking the kidney stones into small pieces and so that it can easily exit the body. It uses shock waves for doing such, by this property it is a therapeutic tool.

Shock wave Lithotripsy is an adjunctive safe and effective method of secreting oxalic acid as a novel therapeutic tool for the prevention of kidney stone disease.

General Criteria for Lithotripsy:→

The general criteria for the lithotripsy as following.

- ↳ Fasting before the procedure.
- ↳ There should be no bleeding diathesis.
- ↳ No Anticoagulation.
- ↳ Women should not be pregnant.
- ↳ No infection associated with obstruction.

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- ↳ Complete physical examination for good health.
- ↳ Blood test and other diagnostic test should be performed.
- ↳ Take about 45 (min) - 1 hour.
- ↳ Stones Criteria:→
 - ↳ Lower Pole stone
 - ↳ Stone Size $> 2\text{cm}$
 - ↳ Multiple Stones.

Technical Criteria:→

- ↳ will be given general anesthesia.
- ↳ Optimal Coupling.
- ↳ wider focal size.
- ↳ Low shock wave rate.
- ↳ Active monitoring.
- ↳ A sequence of shock waves will be created.

After procedure:→

- ↳ Extra fluid should be taken.
- ↳ Follow physician instruction for daily base activities.
- ↳ Rest in recovery room to check pulse rate and breathing.

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Q4: Describe all the terms used in medical dictionary with suffix "otomy"?

Ans: "otomy" → The suffix "otomy" refers to the act of cutting or making an incision as in a medical operation or procedure.

It is derived from Greek word which means to cut.

All terms with suffix otomy: →

Amniotomy: → An incision created to accelerate labor.

Autotomy: → The act of removing an appendage from the body in order to escape when trapped.

Bronchotomy: → The procedure that ensures there is an open airway b/w a patient's lung and the outside world.

Coeliotomy: → It is a large incision through the

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abdominal wall to gain
access into the

abdominal cavity.

Colpotomy:→

Through needle, extraction
of fluid from pouch
of Douglas.

Craniotomy:→

To access the brain
a bone flap is temporarily
removed from the skull.

Escharotomy:→

This procedure is
used to treat full thickness
circumferential burns.

Episiotomy:→

It is the surgical
incision of the posterior
vaginal wall and perineum.

Fasciotomy:→

It is the procedure
where the fascia is
cut to relieve tension.

Hymenotomy:→

Surgical removal
of the opening of
the hymen.

Hysterotomy → It is the incision in the uterus and is performed during a Caesarean section.

Laparotomy → To gain access into the abdominal cavity, it is large incision.

Laminotomy → It is the partial removal of the lamina.

Meatotomy → Form of penile modification in which the underside of the glans is split.

Myotomy → procedure in which the muscle is cut.

Osteotomy → A bone is cut to shorten or lengthen it or to change its alignment.

Phlebotomy → Through needle it is incision of vein.

Pulpectomy → Removing of a portion

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of the pulp.

Sphincterotomy:→

It is the treating mucosal fissure from the anal canal.

Thoracotomy:→

Incision into the pleural space of the chest.

Thyrotomy:→

It is the incision of the larynx through the thyroid cartilage.

Tracheotomy:→

It is the incision of the anterior aspect of the neck.

Tenotomy:→

This procedure helps to lengthen a defective muscle and is commonly used to correct a club foot.

It is incision made into the tendon in order to correct a muscle deformity.

Q5:→ What do you know about urinary tract infection UTI
Explain in detail?

Ans

Urinary tract infection:→

The urinary tract infection is defined as the infection in any part of your kidney, ureters, bladder and urethra. It can affect different parts of the urinary tract but most infection involve the lower urinary tract the bladder and urethra.

Serious consequences can occur if the urinary tract infection spreads to your kidneys. Women are at greater risk of developing a urinary tract infection than are men.

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Symptoms of urinary tract infection:→

The urinary tract infection symptoms depend on age, gender, the presence of catheter and which part of the urinary tract has been infected.

Common Symptoms:→

- ↳ Cloudy, bloody, or strong smelling urine.
- ↳ Strong and frequent urge to urinate.
- ↳ when urinating there may be pain occurs.
- ↳ vomiting and nausea.
- ↳ Abdominal pain & muscle aches.
- ↳ The urine appears red in color.
- ↳ pelvic pain.

Types of urinary tract infections:→

There are three types of urinary tract infection.

- ① Pyelonephritis:→ (kidney) It is a type of "UTI" it cause fever, chills, vomiting, and pain in your upper

back side.

② Cystitis:→ (Bladder) It is a type of "UTI" which leads to lower abdomen discomfort, frequent, painful urination, Blood in urine and also lead to pelvic pressure.

③ Urethritis:→ (urethra) It is a type of "UTI" which cause burning in urination and burning in discharge.

Causes of urinary tract infections

↳ The urinary system is designed to keep out microscopic invaders, these defenses sometime fail, and bacteria may hold and grow into a full blown infection in the urinary tract.

↳ Urinary tract infection typically occur when bacteria enter the urinary tract through the urethra and begin to multiply in the bladder.

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↳ Test and Diagnosis for UTI:→
↳ Give urine Sample to test for UTI causing bacteria.

↳ For Sever and closer look should be done ultrasound, CTscan and MRI Scan.

↳ Cystoscope is also used to look inside your urethra and bladder.

Treatment for UTI:→

↳ Antibiotic are the most common treatment for urinary tract infection.

↳ Take medicine prescribed on daily base.

↳ Drink lots of water to help flush the bacteria from the body.

prevention:→

↳ Drink plenty of liquids especially water.

↳ Wipe from front to back after you use the toilet.

↳ Cleanse your genital area before sex.

↳ Empty your bladder soon after intercourse.

↳ Choose Shower over baths.