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BS. Radiology

Semester 4rth

Clinical Medicine

Mam Maheen

Date _____

Q1:

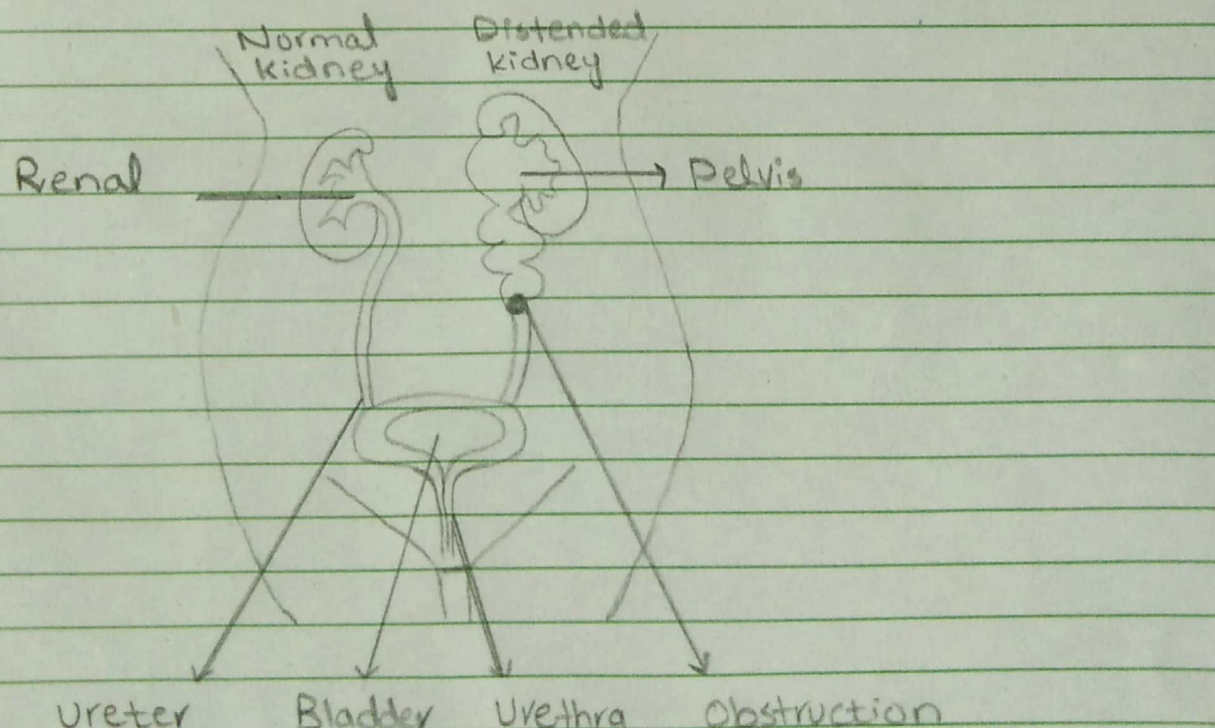
What is Hydronephrosis? write in detail its causes, Pathophysiology, dignosis and treatment.

Hydronephrosis :-

→ Hydronephrosis is the swelling of a kidney due to build-up of urine.

→ It happens when urine cannot drain out from the kidney to the bladder from a blockage or obstruction.

→ Hydronephrosis can occure in one or both kidneys.



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Date_____

Causes :-

→ Acute unilateral obstructive uropathy.
(sudden development of an obstruction in one of your ureters).

→ Kidney stone.
→ Blood clots.
→ Tumors in or near the ureter.
→ A narrowing of the ureter from an injury or birth defect.

Pathophysiology :-

Dilatation of the renal pelvis and calyces.

Types of hydronephrosis :-

→ Pelvic type
→ Renal type
→ Pelvirenal type: most common type, both the pelvis and calyces are equally dilated.

Diagnosis :-

→ Ultrasound
→ IVU
→ Cystourethralgram

Date_____

→ Cystoscopy
→ RGP
→ Delayed empty
→ Isotope renography
→ Urine culture.

Treatment :-

Depends on the causes, site, duration and degree of kidney damage.

→ U.T.I. Antibiotic therapy
→ Prompt drainage.
→ corrected to the cause
→ Relief of lower tract obstruction
Catheter drainage, urinary diversion, indwelling pigtail ureteral catheter.
→ Nephrectomy (tumor or nonfunction kidney).

Date_____

(4)

QNo2:

Explain in detail the types categories and Pathophysiology of tuberculosis.

Tuberculosis :-

→ Tuberculosis (TB) is an infectious disease caused by a bacterium, called Mycobacterium tuberculosis.
→ It is a contagious / infectious disease which means that it spread from person to person, usually through the air, when a person with active disease coughs and sprays the bacteria into the air.

Types of TB :-

Pulmonary TB : It means when the bacterium mycobacterium tuberculosis infection involves the lungs. Pulmonary TB occure by breathing in air droplets from a cough or sneeze of an infected person.

Extra Pulmonary TB :-

TB lymphadenitis :- It is the most common type of extra pulmonary TB and involves the Lymph nodes. It tends to effect the cervical lymph nodes, which are lymph nodes in your neck.

Date

Genitourinary TB :- It is the second most common type, it can effect any part of genitals or urinary tract, but kidneys are the most common sites.

Abdominal TB :- It is a type of TB that effects the gut, the peritoneum, abdominal lymph nodes, and more rarely the solid organ in the abdomen (liver, Pancreas and spleen).

Skeletal TB :- Skeletal or bone TB is TB that spreads to your bones from your lungs or lymph nodes. It can affect any of your bones, including your spines and joints.

Categories :-

TB can be categories into :

→ Active TB
→ Latent TB
→ Miliary TB.

Active TB :-

→ It is an illness in which the TB bacteria are rapidly multiplying and invading different organs of the body.

Date

→ A Person with active pulmonary TB disease may spread TB to others by airborne transmission of infectious particles cough into the air.
→ Symptoms of active TB is lung disease, but it may invade other organs, so-called "extrapulmonary TB".

Latent TB :-

→ It occurs when a person has the TB bacteria within their body, but the bacteria are present in very small numbers and do not develope disease. Thay are under control by immune system.
→ It does not cause symptoms and isn't contagious.
→ People with latent TB have a normal chest X-ray and a negative Sputum test.

Miliary TB :-

→ A rare form of active disease that occurs when TB bacteria find their way into the blood stream. In this form, the bacteria quickly spread all over the body in tiny nodules and affect multiple organs at once.

→ This form of TB can be rapidly fatal.

Date

(7)

Pathophysiology of TB:-

→ (Initial infection or primary infection).

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→ Entry of micro organism through droplet nuclei

↓

→ Bacteria is transmitted to alveloi through airways.

↓

→ Deposition and multiplication of bacteria.

↓

→ Bacilli are also transported to other Parts of the body via blood stream & Phagocytosis by neutrophils and macrophages.

↓

Mycobacteriam

↓

Pulmonary Alveoli

↓

Immune system has lodged in (Alveolar macrophages)

↓

Detects Presence of Pathogen and engoulph the bacteria.

↓

Mycobacterium bacteria inhibits the macrophages (Phagosome + Lysosome) to forms Phagolysosome and remains protected inside the macrophages.

Date_____

Starts replication inside macrophages.
↓
Primary infection occurs.
↓
Cell mediated immunity gets activated, surrounds the cell to form granuloma (3 weeks).
↓
Leads to necrosis of tissues at infection site (Terminus Gone Focus).
↓
Involve nearby lymph nodes (Cone Complex).
↓
Calcification of cone complex (Latent T.B.).

QNo3:

How are renal stones formed and what are different types of renal stones? Which radiological procedure is most suitable for diagnosing renal stones?

Renal Stone:-

Nephrolithiasis:- It is a condition in which hard masses (kidney stones) form within the urinary tract.

Formation of kidney Stones:-

Date

→ The urinary concentration of crystal-forming substances (e.g, calcium, oxalate, uric acid) is high.
→ The urinary concentration of substances that inhibit stones formation (e.g, citrate) is low.
→ The life time incidence of kidney stones is approximately 13 Percent for men and 7 percent for women.

Types of renal Stones :-

Calcium Oxalate Stones :- Most common type of kidney stone is a calcium oxalate stone. These result when the urine contains low level of citrate and high level of calcium & either oxalate or uric acid. calcium oxalate stones are linked with foods high in oxalate, include beets, black tea, Chocolate, nuts, Potatoes and spinach.

Calcium Phosphate Stones :- Caused by abnormalities in the way the urinary system functions. your doctor may order a series of blood and urine tests to determine whether any urinary or kidney problems could be causing this type of stones, which often occurs simultaneously with calcium oxalate stones.

Date

Struvite Stones :- It is more common in women, it result of certain types of urinary tract infections. These stones tend to grow quickly and become large, sometimes occupying the entire kidney. Left untreated they can cause frequent and sometimes severe urinary tract infections and loss of kidney functions.

Cystine Stones :- It is caused by hereditary genetic disorder called cystinuria that can lead to excessive amounts of the amino acids cystine collecting in the urine. Results in the formation of stones in the kidney, bladder and ureters, which transport urine from the kidneys to the bladder.

Diagnosis :- most suitable is CT scan.

1) **CT Scan** :- Your doctor may use a CT scan to look for stones in the kidneys, ureters, and bladder to determine their size and exact location, and to evaluate the anatomy of your urinary tract.

2) **Intravenous Pyelogram (IVP)**:

3) **Kidney - Ureter - Bladder Xray**: KUB. Xray of the abdomen and pelvis can help doctors to

Date

determine whether a kidney stone has grown, passed, or returned.

4) MRI Scans:- MRI scans in which magnetic waves are used to create computerized two- or-three-dimensional images, are not typically used to evaluate kidney stones. However this procedure, which does not use radiation can sometimes help to safely diagnose kidney stones in pregnent women. Our urologists have experience managing kidney stones in pregnent women, and work closely with NYU Langone obstetricians to do so.

QNo4:-

Briefly describe the types, causes, diagnosis and treatment of goiter?

Goiter:- A condition that increases the size of thyroid is called a goiter. It may develop in anyone, but is more common in women. Sometimes, it affects the way the thyroid functions.

Types of Goiter:- These include:

Date

Colloid Goiter (Endemic):

A colloid goiter develop from the lack of iodine, a mineral essential to the production of thyroid hormones. People who get this type of goiter usually live in areas where iodine is scarce.

Nontoxic (Sporadic) :- Its cause is usually unknown though it may be caused by medication like Lithium is used to treat mood disorders such as a bipolar disorder. It do not affect the production of thyroid hormone, and thyroid function is healthy. They are also benign.

Toxic Nodular or Multinodular goiter :- This type of goiter formes one or more small nodules as it enlarges. The nodule produce their own thyroid hormone, causing hyperthyroidism. It generally forms as an extension of a simple goiter.

Causes :-

Iodine deficiency is the main cause of goiter. Iodine is essential to helping your thyroid produce thyroid hormones. when you dont have enough iodine, the thyroid works extra hard to make thyroid hormone, causing the gland to grow larger.

Date_____

Grave's Disease :- It occure when thyroid produce more thyroid hormone than normal which is known as hyperthyroidism.

Hashimoto's Disease :- It occure when the thyroid does not produce enough thyroid hormone, causing hypothyroidism.

Inflammation :- some people develop thyroiditis, an inflammation of the thyroid that can cause a goiter.

Nodules :- Solid or fluid containing cysts may appear on the thyroid and cause it to swell. These nodules are noncancerous.

Diagnosis :- Your doctor will check for neck for swelling. Thay will also order a number of diagnostic tests that include :

Blood tests :- It can detect changes in hormone levels and an increased production of antibodies which are produce in response to an infection or injury.

Thyroid Scan :- Your doctor may order scans of your thyroid. These scans show the

size and condition of your goiter.

Ultrasound :- Produces image of your neck, the size of the goiter whether their are nodules.

A biopsy :- Procedure that involves taking small samples of your thyroid tissue. The samples are sent to a laboratory for examination.

Treatment :- Doctor will decide base on the size and condition of your goiter, and symptoms associated with it.

→ Medications
→ Surgeries
→ Radio active Iodine
→ Home care.

Date

(15)

QNO5:-

Write a detailed note on Atelectasis, bronchiectasis and pneumonia?

1) Atelectasis :-

Atelectasis is a loss of lung volume that may be caused by a variety of ventilation disorders, for instance, bronchial injury or an obstructive mass such as a tumor. It may be catogarized as obstructive, non obstructive, postoperative or rounded. Ranging from no symptoms to respiratory distress.

Diagnostics :-

- → Arterial blood gas analysis.
- → Chest x-ray
- → CT
- → Bronchoscopy

2) Bronchiectasis :-

It is a disease in which there is permanent enlargement of parts of the airways of the lung.

Symptoms :-

- → Chronic cough

→ Shortness of breath
→ Coughing up blood
→ Chest pain.

Treatement :-

→ Antibiotics
→ bronchodilators
→ Lung transplant.

Diagnosis :-
CT Scan.

Pneumonia :- It is an infection in one or both lungs. Cause by bacteria, viruses or fungi. It cause inflammation in the air sacs in your lungs which called alveoi.

Symptoms :-
Inflammation.

THE END