

DATE

MONTH

YEAR

Name : Amiee Hamza Khan

I.D NO : 15164

Paper : Clinical Medicine

Instructor: Mam Maheen Gul

Program : B.S Radiology

Date : 24-6-2020

(1)

## Attempt All Questions:

Q1 What is hydronephrosis? Write in detail its causes, pathophysiology, diagnosis and treatment?

Ans: Hydronephrosis:-

Hydronephrosis is a condition that typically occurs when a kidney's swells due to urine failing to properly drain from the kidney to the bladder. This swelling commonly affects only one kidney, but it can involve both kidneys.

Hydronephrosis isn't a primary disease - it's a secondary condition that results from some other underlying disease. It's structural and is the result of a blockage or obstruction in the urinary tract - hydronephrosis is said to affect about 1 in every 100 babies.

## Symptoms of hydronephrosis:

- Pain in the abdomen or flank
- Nausea
- Vomiting
- Pain when urinating
- Incomplete voiding
- Fever

## Causes of hydronephrosis:

Hydronephrosis isn't a disease - instead, it can be due to internal and external conditions that affect the kidney and the urinary collecting system.

One of the most common causes of hydronephrosis is acute unilateral obstructive uropathy - This is the sudden development of an obstruction in one of your ureters, which are the tubes that connect your kidneys to your bladder. The most common cause for this blockage is a

(3)

Kidney stone, but scarring and blood clots, can also cause acute unilateral obstructive uropathy.

A blocked ureter can cause urine to go back up into the kidney, which causes swelling.

This backflow of urine is known as vesicoureteral reflux (VUR).

Other potential causes of a blockage include:

- A kink in the ureteropelvic junction, which is where the ureter meets the pelvis of the kidney.
- pregnancy, which causes a compression due to a growing fetus.
- Tumors in or near the ureter.
- A narrowing of the ureter from an injury or birth defect.

(3)

Kidney stone, but scarring and blood clots, can also cause acute unilateral obstructive uropathy.

A blocked ureter can cause urine to go back up into the kidney, which causes swelling. This backflow of urine is known as vesicoureteral reflux (VUR).

Other potential causes of a blockage include:

- A kink in the ureteropelvic junction, which is where the ureter meets the pelvis of the kidney.
- pregnancy, which causes a compression due to a growing fetus.
- Tumors in or near the ureter.
- A narrowing of the ureter from an injury or birth defect.

(4)

## Pathophysiology of hydronephrosis:

Hydronephrosis can result from anatomic or functional processes interfering with the flow of urine. This interference can occur anywhere along the urinary tract from the kidneys to the urethra. The rise in ureteral pressure leads to marked changes in glomerular filtration, renal function, and renal blood flow. The glomerular filtration rate declines significantly within hours following ureter obstruction. This is followed by a decline of GFR continuing for weeks after relief of obstruction. In addition renal tubular ability to reabsorb sodium, potassium and protons and concentrate the urine is severely impaired.

## Diagnosis of hydronephrosis:

- Getting a diagnosis as early as possible is extremely important. Your kidneys could be permanently damaged if your condition is left untreated for too long.
- Your doctor may use a catheter to drain some of the urine from your bladder.
- If they are unable to release a large amount of urine this way - it could mean your blockage is in your bladder or your urethra.
- Your doctor may also want to perform a renal ultrasound or CT scan to get a closer look at the extent of the swelling and to possibly locate the area of the blockage.
- Both of these procedures let your doctor view an image of the inside of your body,

But the renal ultrasound is generally considered the gold standard for the diagnosis of hydronephrosis.

## Treatment :-

Treatment for hydronephrosis primarily focuses on getting rid of whatever is blocking the flow of urine - The treatment option of your doctor chooses for you will depend on the cause of your obstruction.

If a blocked ureter is causing your condition, your doctor might need to do any of the following:

- insert a ureteral stent, which is a tube that allows the ureter to drain into the bladder.
- Insert a nephrostomy tube, which allow the blocked urine to drain through the back.
- prescribe antibiotics to control infection.



Q2 Explain in detail the types / categories <sup>and</sup> of pathophysiology of tuberculosis?

Ans: Tuberculosis (T.B):-

T.B is a contagious / infectious disease which means that it spread from person to person mainly through the air when a person with active disease coughs he sprays the bacteria into air.

Types of T.B:-

(1) Pulmonary T.B:-

It means when the bacterium *Mycobacterium tuberculosis* infection involves the lungs. Pulmonary T.B occurs by breathing in air droplets from a cough or sneeze of an infected person.

## Extrapulmonary T.B:-

### T.B Lymphadenitis:-

T.B Lymphadenitis is the most common type of extra-pulmonary T.B and involves the lymph nodes. It tends to affect the cervical lymph nodes in your neck. But any lymph nodes can be affected.

### Genitourinary T.B:-

Genitourinary T.B is the second most common type of extra-pulmonary T.B and involves it can affect any part of the genitalia or urinary tract, but the kidney are the most common sites.

### Abdominal T.B:-

It is a type of T.B that affects the gut, the peritoneum lymph

nodes and more rarely, the solid organs in the abdomen (liver, pancreas and spleen).

### T.B meningitis:-

When the membranes surrounding the brain and spinal cord are infected by bacteria.

### Skeletal T.B:-

Skeletal T.B or bone T.B is T.B that spreads to your bones from your lung or lymph nodes. It can affect any of your bones, including your spine & joints.

T.B can be categorized;

- Active T.B
- Latent T.B
- Miliary T.B

## (1) Active T.B disease:-

Active T.B is an illness in which the T.B bacteria are rapidly multiplying and invading different organs of the body. The typical symptoms of active T.B variably include cough, phlegm, chest pain, weakness, weight loss, fever, chills and sweating at night. A person with active pulmonary TB disease may spread T.B to others by airborne transmission of infectious particles coughed into the air. If you are diagnosed with an active T.B disease, be prepared to give a careful, detail history of every person with whom you had contact. Since the active form may be contagious, those peoples will need to be tested as well.

## Latent T.B infection:-

Many of those who are infected with T.B do not develop overt disease. They have no symptoms and their chest x-ray may be normal. The only manifestation of this encounter may be reaction to the tuberculin skin test (TST) or interferon-gamma release assay (IGRA). However, there is an ongoing risk that the latent infection may escalate to active diseases. The risk is increased by other illnesses such as HIV or medications which compromise the immune system. To protect against this, the United States employs a strategy of preventive therapy or treatment of latent T.B infection.

## Miliary T.B:

Miliary T.B is a rare form of active disease that occurs when T.B bacteria find their

(12)

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.

## Pathophysiology of Tuberculosis:-

- (Initial infection as primary infection)



- Entry of microorganism through droplet nucleus



- Bacteria is transmitted to alveoli through airways



- Deposition and multiplication of bacteria.



- Bacilli are also transported to other parts of the body via blood stream and phagocytosis by neutrophils and macrophages.

## Pathophysiology of T.B.

- Cavity tubercle ulcerates and releasing cheesy material into bronchi  
↓
- Bacteria then become airborne resulting in further spread of infection. ↓
- Ulcerated tubercle heals and becomes scar tissue.  
↓
- Infected lung become inflamed  
↓
- Further development of pneumonia and tubercle formation.  
↓
- Unless the process is arrested it spreads downwards to the hilum of lungs.  
↓
- And later extends to adjacent lobes.

(14)

Immunology

Site of infection: inside macrophages

Primary infection occurs

All mediated immunity gets  
suppression, suppresses the cells to  
form granulomas (weeks)

cells in reviews of tissue at  
infect site (Tuberculous granuloma)

infect nearby lymph nodes  
see index

infiltration of case complex  
(latent TB)



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

Ans. Renal stones are formed when your urine contains more crystal forming material such as calcium oxalate and uric acid than is found in your urine pass tube. At the same time, you may lack substances that prevent crystals from sticking together, creating an ideal environment.

### Types of renal stones:-

#### (1) Calcium Oxalate Stones:-

The most common type of kidney stone is a calcium oxalate stone. These occur when the

Urine contains low levels of citrate and high levels of calcium and often oxalate or uric acid. Calcium oxalate stones are linked with foods high in oxalate which is a naturally occurring substance in plant and animal. These include beets, black tea, chocolate, nuts, potatoes and spinach.

If you continually develop calcium oxalate stones, your doctor may recommend further evaluation of your urinary function and metabolism. This requires blood tests and the collection of urine at home for at least one 24-hour period. Your doctor may also recommend dietary modification to reduce the likelihood of kidney stones returning.

## Calcium phosphate stones:-

Calcium phosphate kidney stones are 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 stone, which often occurs simultaneously with calcium oxalate stones.

## Struvite stones:

More common in women, struvite stones form as a result of certain types of urinary tract infections - These stones tend to grow quickly and become large, some times occupying the entire kidney - Left untreated, they can cause frequent and sometimes severe urinary tract infections -

## Cystine stones: (18)

Cystine stones are caused by a hereditary genetic disorder called cystinuria that can lead to excessive amounts of the amino acid cystine collecting in the urine.

A Procedures for diagnosing renal stones:-

(1) Ultrasound:-

Your doctor may recommend an ultrasound scan to evaluate your kidneys, bladder and ureters, which are the tubes that carry urine from the kidneys to the bladder. This helps your doctor to check for stones that haven't passed, to monitor the growth of a stone, and to screen for recurrence. In this test, handheld device called a transducer is placed on the

(19)

abdomen and used to produce sound waves that create images of the pelvic organs.

## (2) Kidney - Ureter - Bladder X-ray:

A kidney - ureter - bladder or KUB, X-ray of the abdomen and pelvis can help doctors to determine whether a kidney stone has grown, passed, or returned.

## (3) C-T 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. Another kind of CT scan, called dual-energy CT, can help to determine the kidney stone type.

## (4) MRI Scan:-

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 pregnant women. Our urologist have experience in treating kidney stones during pregnancy.

Q. Briefly describe the types, causes, diagnosis and treatment of goitre.

Ans. Goitre-

Ans. Goitre is a condition in which the thyroid gland grows larger. The thyroid gland is a small butterfly-shaped gland located in the neck, below the Adam's apple.

Types of Goitre:-

There are different types of goitre. These includes;

(1) Colloid goitre (endemic)

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

DATE

MONTH

YEAR

(22/11)

## (2) Non-toxic goiter (sporadic):

The cause of a non-toxic goiter is usually unknown. Though it may be caused by medications like lithium - lithium is used to treat mood disorders such as bipolar disorder.

Non-toxic goiters don't affect the production of thyroid hormone, and thyroid function is healthy - They are also benign.

## (3) Toxic nodular or multinodular goiter:-

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





often non-cancerous.

### Thyroid cancer:

Cancer may affect the thyroid, which causes swelling on one side of the gland. Thyroid cancer is as common as nodules.

### \* Diagnosis of Goiter:-

Your doctor will check for neck for swelling. They'll also order a number of diagnostic tests that include these below;

#### (1) Blood tests:-

Blood tests can detect changes in hormone levels, and an increased production of antibodies, which are produced in response to an infection or injury or over-  
~~capacity~~ <sup>activity</sup> of immune system.

## (2) Thyroid scan:

Your doctor may order scans of your thyroid. This is usually done when your thyroid level is elevated. These scans show the size and condition of your goiter, overactivity of some parts or whole thyroid.

## (3) Ultrasound:-

An ultrasound produces images of your neck, the size of your goiter, and whether they are nodules. Over time an ultrasound can track changes in those nodules and the goiter.

## (4) Biopsy:-

A biopsy is a procedure that involves taking small samples of your thyroid nodule. If present these samples are sent to a laboratory for examination.

## Treatment:

Your doctor will decide on a course of treatment based on the size and condition of your goitre, and symptoms associated with it. Treatment is also based on health problems that contribute to the goitre.

## Medications:

If you have hypothyroidism or hyperthyroidism, medications to treat these conditions may be enough to shrink a goitre.

## Surgeries:-

Surgical removal of your thyroid, known as thyroidectomy, is an option if your goitre is too large or doesn't respond to medication therapy.

Q5 Write a detail note on Atelectasis, bronchiectasis and pneumonia-

Ans Atelectasis:-

Atelectasis is the collapse or closure of a lung resulting in reduced or absent gas exchange, it is usually unilateral, affecting part or all of one lung. It is a condition where the alveoli are deflated down to little or no volume, as distinct from pulmonary consolidation in which they are filled with liquid. It is often called a collapsed lung, although that term may also refer to pneumothorax - It is a very common finding in chest x-rays and other radiological studies, it may be caused by normal exhalation or by various medical conditions. Although frequently

described as a collapse of lung tissue, atelectasis is not synonymous with a pneumothorax which is more specific condition  
List features atelectasis-

### Signs & Symptoms:

Atelectasis may have no signs & symptoms or they may include;

- Cough, but no prominent
- Chest pain (not common)
- Breathing difficulty (fast & shallow)
- Low oxygen saturation
- pleural effusion (transudate type)
- Cyanosis (Late sign)
- Increased heart rate

It is a common mis-conception and pure speculation that atelectasis causes fever.

### Causes:-

The most common cause is post surgical atelectasis-

Characterized by splinting  
i.e. restricted breathing after  
abdominal surgery. Another  
common cause is tuberculosis.

## Diagnosis:-

Atelectasis of the right  
lower lobe seen on chest x-ray.  
Finding can include lung opacifi-  
cation and loss of lung  
volume. Chest C-T or bronch-  
scopy may be necessary if the  
cause of atelectasis is not  
clinically apparent. Direct signs  
of atelectasis include displacem-  
ent of interlobar fissures by  
mobile structures within the  
thorax, overinflation of the  
unaffected ipsilateral lobe or  
contralateral lung, and opacifi-  
cation of the collapsed lobe.

## \* Bronchiectasis:-

Bronchiectasis is a disease, in which there is permanent enlargement of parts of the air ways of the lung.

Symptoms typically include a chronic cough with mucus production. Other symptoms include shortness of breath, coughing up blood and chest pain. Wheezing and nail clubbing may also occur. Those with the disease often get frequent lung infection.

Bronchiectasis may result from a number of infectious and acquired causes, including pneumonia, tuberculosis, immune system problems as well as the genetic disorder cystic fibrosis. Cystic fibrosis eventually results in severe bronchiectasis in nearly all cases. The cause in 10-50% of those without cystic fibrosis



DATE \_\_\_\_\_  
MONTH \_\_\_\_\_  
YEAR \_\_\_\_\_

39  
(21)

is unknown - The mechanism of disease is breakdown of the airways due to an excessive inflammatory response - Involved airways (bronchi) become enlarged and thus less able to clear secretions - These secretions increase the amount of bacteria in the lungs, resulting in disease and asthma - The diagnosis is suspected based on symptoms and confirmed using computed tomography - Cultures of the mucus produced may be useful to determine treatment in those who have acute worsening and at least once a year.

Periods of worsening may occur due to infection.

In these cases antibiotics are recommended - Common antibiotic used include amoxicillin, erythromycin or doxycycline -

## \* Pneumonia:-

Pneumonia is a bacterial or viral infection of the lungs. Symptoms can include fever, chills, shortness of breath, coughing that produces phlegm and chest pain.

Pneumonia can usually be treated at home with antibiotics but some cases may require time in hospital and can result in death.

Vaccines are available against some of the more common infectious agents that cause pneumonia.

### Causes:

Pneumonia is an infection of the air sacs in the lungs. It is caused by bacteria, viruses or rarely, fungi.

Most cases of pneumonia are caused by bacteria.

usually <sup>caused by</sup> streptococcus pneumoniae (bacterial) disease but viral pneumonia is more common in children.

### Diagnosis:

If pneumonia is suspected - It is important to seek medical attention promptly so that an accurate diagnosis can be made and appropriate treatment given. A chest x-ray is usually taken to confirm the diagnosis, it will show the areas of the lung affected by pneumonia -

### Treatment:-

Most cases of pneumonia can be treated at home. However, babies, children to people with severe pneumonia may need to be admitted in hospital for treatment.

The End