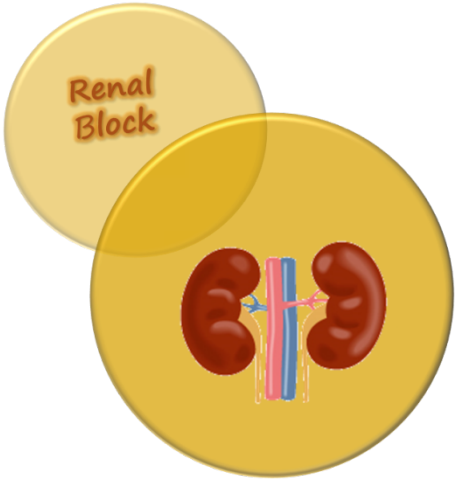



Problem Based Learning

## Second case:

# Painful micturation!

Color Index

## Key points from the Scenario:

- 35 years old female, married , has 2 children
- Presented with one day history of Right flank pain
- Fever
- she vomited once in the morning
- She feels painful to pass urine ( dysuria )
- She has no past medical history ( healthy )
- She took paracetamol at home ( wasn't effective )

## Examination :

1. CVS examination : Normal 1st and 2nd heart sounds + no murmurs
2. Respiratory examination : normal ( clear lungs to percussion and auscultation )
3. Abdominal examination : percussion produces pain over right flank
4. Vital signs showed : *Tachycardia *Fever *nothing significant with BP.

## Investigation :

### 1. Complete blood count ( CBC )

Hemoglobin : normal . WBCs : Raised 13.0 Platelet count : normal.
RBCs : slightly reduced. Neutrophils : Elevated (87%)

### 2. Urine analysis and urine culture :

| Examination Made | Result | Normal values | Clinical significance |
|---|---|---|---|
| Color | Yellow | Amber yellow | Normal |
| Character | turbid | clear | Infection |
| PH | 6.0 acidic | 4.8-8.0 | Normal |
| Specific gravity | 1.020 | 1.015-1.025 | Normal |
| Protein | ++ | (-) | Infection |
| Sugar | (-) | (-) | Normal |
| Red blood cells | 0-3 hpf | (-) | Infection |
| Pus cells | Many (> 100/h pf) | (-) few (3-4/hpf) | Infection |
| Epithelial cells | few | (-) | Infection |
| Amorphus phosphate | few | (-) | Infection |
| Bacteria | Many; (+) E.coli | (-) | Infection |

Urine turbidity

### 3. Renal function test :

Serum creatinine : normal Urea : normal
Potassium : normal Sodium : normal $H_2Co_3$ : normal

## Other investigation the doctor may request :

- Urine Dipstick: (mid-stream urine sample)
  => If it shows positive Nitrates or Leukocyte or Leukocyte esterase then the diagnosis of UTI is confirmed

- We should Exclude the presence of congenital anomalies
  By Renal Ultra Sound - Bladder Angiography

### Organisms Causing UTI :

Bowel organisms: **Escherichia coli** (70-80%) most bacterial causes
Hospital-acquired infections may be due to coliforms & enterococci.
Haematogenous spread: is rare. (Staph aureus & mycobacterial tuberculosis)
E-coli is fructose fermentative and Oxidase-negative)

### # In urinary microscopy:

Multiple bacilli (rod-shaped bacteria, here shown as black bean-shaped) shown between white blood cells.
This is called: **Bacteruria & Pyuria.**
And these changes are indicative of a UTI.

*If there is a high bacterial presence of load without the leukocytes, it's more likely .due to contamination

### Diagnosis:

Urinary tract infection **(acute pyelonephritis)**

### Management & Treatment:

In general whith patients suspected of having UTI we should:

- ✓ Do urine culture. (**To confirm the Diagnosis**)
  Urine analysis: Presence of >$10^5$ organisms\ml indicate Bacteruria)
- ✓ Perform antibiotic sensitivity test. (The main treatment of UTI is by antibiotics.)
- ✓ Initial or **empiric therapy** : ( ciprofloxacin and diclofennac )

### # In our case The treatment as follow:

Hospital admission. | Intravenous fluids. | **IV ceftriaxone (3rd G cephalosporins).**

## URINARY TRACT INFECTION ( UTI )

### Definition

**is a bacterial infection that affect any part of the urinary tract.**

when bacteria get into the bladder or kidney and multiply in urine, they cause a UTI.

### Types

* **upper UTI:** Acut\Chronic pyelonephritis *(more serious type)*

* **lower UTI:** cystitis *(most commen type)*

# Symptoms

| | |
|---|---|
| **General symptoms** | Frequency<br>Nocturia , Urethritis , Pain in midline suprapubic region , Pyuria , Hematuria, Pyrexia<br>Cloudy and foul-smelling urine<br>increased confusion and associated falls are common presentations to emergency departments for elderly patients with UTI |
| **Some UTI are asymptomatic.** | |
| **Special symptoms for kidney infection** | Emesis , flank pain , abdominal pain or pressure<br>Shaking chills and high spiking fever<br>Night sweats , extreme fatigue |

# Route of infection

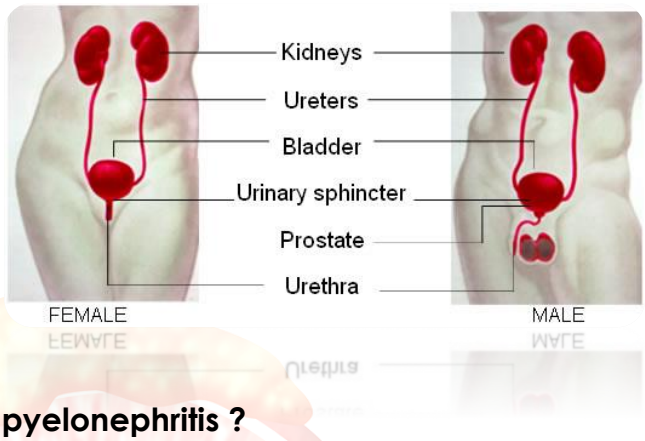
- ***Ascending infection***

This is the most common route of infection. By external entry of organisms through the urethra into the bladder and in this case infection can spread upward from the bladder into the ureters and through the ureters to the kidney

- ***Hematogenous infection*** # **Recurrent infections need preventive therapy** *

| | **Uncomplicated UTIs** | **Acute Pyelonephritis** |
|---|---|---|
| **Route of Administration** | Most of them can be treated with Oral antibiotics. | If the patient has symptoms consistent with pyelonephritis, IV antibiotics may be indicated. |
| **Examples** | 1.Trimethoprim.*(**TRI** or **TMP**)<br>2. Cephalosporins.<br>3. Nitrofurantoin. *<br>4. Fluoroquinolones (ciprofloxacin). | Regimens vary and include quinolones (e.g. ciprofloxacin). |
| **Course Duration** | The single dosage is best complimented by the traditional 3-7 day treatment. | • continued for 48 hrs after fever subsid<br>• The patient may then be discharged home on oral antibiotics for a further 10-14 days. |
| **Others** | A single 2-3 MG dosage of oral antibiotics (e.g. tetra-cycline or amoxicillin) is often used to treat UTIs that may be passed back & forth between partners. | In the past, they've included aminoglycosides (e.g. gentamicin) in combination with a β-lactam (e.g. ampicillin or ceftriaxone). |

**The incidence of infection of the urinary tract and kidney is greatly increased in women**
because of the shorter length of the female urethra and the incidence is **increased during pregnancy** because of pressure by the uterus




**what are the additional finidings acute pyelonephritis ?**

**fever – flank pain - nausea – vomting**

## New terms :

- **Flank:** part of the abdomen between the last rib and the hip (the lateral side).
- **Voiding or micturition:** urination (Passing urine).
- **Dysuria:** Burning sensation during urination = (urethritis: irritation at the urethral meatus).
- **Bacteriuria:** presence of bacteria in urine.
- **Pyuria:** Pus in the urine or discharged from the urethra.
- **Heamatoria:** Blood in urine.
- **Nocturia:** Need to urinate during the night.
- **Nocturnal hyperhidrosis:** night-time excessive sweating.
- **Pyrexia:** Mild feaver.
- **Emesis:** Vomiting.
- **Percussion:** *med* the act of percussing (tapping or hitting) a body surface.
- **Leukocyte esterase (LE):** is a urine test for the presence of white blood cells and other abnormalities associated with infection.
- **Specific gravity:** relative density of urine with respect to water.
- **Urinalysis Amorphous phosphate:** a granule precipitate contains phosphate and calcium in an alkaline urine. The main cause of this is the alkaline pH decreases the solubility of the calcium phosphate ( as a result of the infection).
- **Turbid urine:** cloudy not clear.
- **Empiric therapy:** A medical term referring to the initiation of treatment prior to determination of a firm diagnosis (derived from the scientific method, but derived from practical experience or observation).

**The difference between frequent & urgent urination:**

- **Urgent urination is feeling of having to urinate even though there may be very little urine to pass**
- **frequent urination is Going to the toilet repeatedly.**