Diseases of the Kidney

Lecturer Dr Zina Hasan; FICMS Chemical Pathology

Objectives:
• List the major functions of the kidney.
• Classify major diseases affecting the kidney.
• Differentiate between Acute Renal failure & Chronic Renal failure.
• Evaluate proteinuria, nephrotic syndrome, & renal stones.
Functions of the Kidney:
1. Excretion of waste products.
3. Hormone synthesis.

Normal function of the kidney depends on the following:
1. An adequate blood supply (20% of cardiac output)
2. Normal secretion & feedback control of hormones acting on the kidney.
3. The integrity of glomeruli & tubular cells.
Function of the nephron

Function of the glomerulous

- Filtration
  - Passive

Function of the tubules

- Concentration & dilution of urine
  - Active
Classification of Kidney diseases:

1. Acute renal dysfunction (failure)
2. Chronic renal dysfunction (failure)
5. Renal stones.
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1. **Acute renal dysfunction (failure)**
   - Oliguria is urine output < 400 ml/day, it is an indicator of low GFR and ARF.

1. **Acute oliguria with decreased GFR (Pre-renal).**
   - It is due to renal circulatory insufficiency caused by:
     a. Intravascular depletion (hemorrhage, GIT loss, etc…)
     b. decreased pressure by vascular dilatation (shock).
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2. Acute oliguria due to intrinsic renal damage (Renal).
   - Oliguric phase.
   - Polyuric phase.

3. Acute oliguria due to renal outflow obstruction (Post-renal).
   - Intra-renal obstruction.
   - Extra-renal obstruction.
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2. Chronic renal dysfunction (failure)

- It is renal damage persisting for more than 3 months, it has two main phases:
  - Polyuric phase.
  - Oliguric or anuric phase → dialysis.
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3. Proteinuria:

• Detection of protein in urine > 300 mg/day.

• Nephrotic syndrome: proteinuria > 5 gm/day characterized by:

1. Proteinuria.

2. Hypoproteinemia.

3. Oedema.
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- A group of renal diseases that are characterized by pathological changes in the glomeruli with an immunological basis.
- It may present as ARF or CRF or NS.
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5. Renal stones:

- Products of metabolism present in normal glomerular filtrate.
  - Causes:
    1. Increased urinary concentration of a substance because:
      a. Decreased urinary volume.
      b. Increased excretion of the substance.
    2. Changes in pH of urine caused by bacterial infection.
    3. Urinary stagnation.
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- Types of renal stones:

1. Calcium stones. 80%
2. Magnesium, ammonium, phosphate stones. 10%
3. Uric acid stones. 8%
4. Xanthine, cystine, etc.. 2%
References

