

*Pathophysiology lab exam questions*

**Laboratory evaluation of kidney diseases**

1. Some weeks after having a sore throat and high fever, the patient has developed edema. His blood pressure is increased.

Urinalysis:

volume: 450 ml/day  
protein: +++ (3 g/day)  
sediment: 50–100 erythrocytes/HPF, leukocytes rarely  
creatinine clearance: 30 ml/min

What is the presumable diagnosis?

2. Laboratory findings of a patient with massive edemas:

serum total protein: 40 g/l  
serum cholesterol: 10 mmol/l  
ESR: 28 mm/h  
blood pressure: 125/80 mmHg

*Urinalysis:*

quantity: 1800 ml/day  
protein: +++++ (12 g/day)  
sediment: 1–2 leukocytes/HPF, erythrocytes rarely, a lot of hyaline casts

What is the presumable diagnosis?

3. A febrile patient complains of lumbar pain.

*Urinalysis:*

protein: ++  
pus: +++  
sediment: a lot of leukocytes, some erythrocytes, epithelial cells,  
a lot of bacteria  
GFR: 100 ml/min  
ESR: 38 mm/h

What is the presumable diagnosis?

4. Laboratory findings of a patient include the following:

*Urinalysis:*

sediment: 3–5 erythrocytes/HPF, rarely leukocytes;  
the erythrocytes are isomorphic;  
there is a minimal proteinuria;  
the urinary protein electrophoresis does not show selectivity in the  
proteinuria;  
GFR: 120 ml/min

What can be the probable diagnosis: glomerular hematuria or urinary tract bleeding?

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5. After receiving a massive dose of aminoglycoside antibiotic, a patient with no prior symptoms of kidney disease develops a body weight gain of 3 kg over a period of 3 days. He does not void urine spontaneously. The total volume of urine collected by catheterization is 200 ml/day. Other laboratory results:

serum creatinine: 440  $\mu\text{mol/l}$   
serum urea: 28.5 mmol/l  
plasma  $\text{K}^+$ : 6.2 mmol/l

What is the most likely diagnosis?

6. The serum glucose level is 15 mmol/l in a diabetic ketoacidosis. GFR is markedly decreased (20 ml/min). Tubular function tests are negative. No glucose can be detected in the urine (by repeated tests).  
How is this possible?

7. Laboratory findings of a patient:

*Urinalysis:*

|                   |                                  |            |      |
|-------------------|----------------------------------|------------|------|
| color:            | straw-yellow                     | pus:       | +++  |
| transparency:     | turbid (nubecula)                | blood:     | +    |
| quantity:         | 400 ml (present),<br>1600 ml/day | glucose:   | neg  |
| specific gravity: | 1022                             | acetone:   | neg  |
| protein:          | 50 mg/day                        | ubg:       | norm |
|                   |                                  | bilirubin: | neg  |

*Urinary sediment:*

20–30 epithelial cells, 30–40 WBC, 3–4 RBC, per high power field

*Further data:*

body temperature: 38°C, WBC: 12 G/l, RBC: 4.5 T/l, ESR: 2 mm/h  
creatinine clearance: 120 ml/min, cultivation of *E. coli*: positive

What is the most likely diagnosis?