**Clinical case 1**

Patient A, 39 years old, admitted to the therapy department with the following complaints: headache, decreased work capacity, chest pain, nausea, polydipsia, itching, edema localized in the face, periorbital region. History of frequent angina.

**Objective:** pale, dry skin, decreased turgor. BP - 190/100 mm Hg. Blood: Hb - 90 g/L, erythrocytes - 3.2x10^12/L, leukocytes - 10.2x10^9/L, pH - 7.3, plasma osmolality > 290 mOsm/kg H2O. Total protein 50 g/L (65-85 g/L). Diuresis - 500 ml/24 h, nocturia. Zimnitsky test - urine density in all samples - 1010-1012. Creatinine clearance - 40 ml/min (norm 120 ml/min).

**Blood:** urea concentration - 17 mmol/L, creatinine - 50 mg/% (N - 0.5-1.2).

**Urine:** pink color (meat washing water), protein – 1,9 g/L with molecular mass > 70,000 (selectivity index - IgG/transferrin ratio > 0.1), leukocytes 2-3 per HPF, modified erythrocytes - many per HPF. Cylinders: hyaline - 2-4 per HPF, erythrocyte - 2-4 per HPF.

**Antistreptolysin O titer** - increased.

**Renal biopsy**: diffuse glomerular permeability, cellular infiltration with neutrophils and monocytes; endothelial and mesangial cell proliferation, interstitial edema in tubules, blood cells.

**Immunofluorescent investigations**: IgG and C3 deposits in mesangium and basement membrane.

**Diagnosis of post-streptococcal glomerulonephritis was established.**

**Questions:**

1. Considering the clinical symptoms and laboratory data, in which syndrome are they included? List the characteristic symptoms of the syndrome.
2. What is pathogenetic mechanism of this renal disorder?
3. What is the mechanism of pale skin?
4. What are changes of diuresis? Explain.
5. What changes are attested in urine of patient? Explain modification.
6. What type of syndrome is present – nephritic or nephrotic in this patient? Argument answer.
7. What is the pathogenesis of edema in this patient?

**Clinical case 2**

Patient J, 46 years old, suffers from lipoid nephrosis. Admitted to the therapeutic department with the following complaints: pronounced edema, weakness, low appetite.

**Objective:** pale, pasty skin, ascites, heart rate - 90 per minute, heart enlarged, heart sounds muffled. **Blood:** albumins - 15 g/L, dysproteinemia, hyperlipidemia, hypercholesterolemia, decreased antithrombin III, transferrin, gamma-globulins.

**Urine:** protein - 20 g/L with molecular mass < 70,000, selectivity index < 0.1. Cylinders - hyaline, waxy, epithelial, granular - up to 10 per HPF.

**Questions:**

1. Considering the clinical symptoms and laboratory data, in which syndrome are they included? List the characteristic symptoms of the syndrome.
2. What is pathogenetic mechanism of this renal disorder?
3. What is the pathogenesis of albuminuria in this syndrome?
4. What is the pathogenesis of hyperlipidemia, hypercholesterolemia?
5. What is the pathogenesis of pronounced edema in this patient?
6. What is the pathogenesis of decreased antithrombin III, transferrin, gamma-globulins and what are the consequences?
7. What changes are attested in urine of patient? Explain modification.

**Clinical case 3**

Patient K, 48 years old, is being treated in the therapeutic department with a diagnosis of chronic glomerulonephritis. The patient's condition has worsened dynamically: complaints of headache, dyspnea, nausea, vomiting, diarrhea, itching, hypersalivation, polydipsia, bone pain.

**Objective:** patient is apathetic, skin dry, gray-earthy color with hemorrhagic eruptions. BP 210-120, HR - 100, ECG - left ventricular hypertrophy, conduction disturbances, extrasystole, deep rare noisy breathing, signs of pulmonary congestion.

**Blood:** Hb - 80 g/L, erythrocytes - 4.0x10^12/L, creatinine - 6 mg/%, urea - 22 mmol/L, pH - 7.25, BE - -11 mmol/L, hyperkalemia, hypermagnesemia, hypocalcemia, hyponatremia, hypochloremia. Diuresis - 300 ml/24 h, isosthenuria, non-selective proteinuria, leukocyturia, hematuria.

**Questions:**

1. What is the pathogenesis of hyponatremia and hyperkalemia in chronic kidney disease?
2. What is the pathogenesis of hyperazotemia in chronic kidney disease?
3. What is the pathogenesis of bone pain in this patient?
4. What are the stages of chronic kidney disease?
5. What is the pathogenesis of changes attested on ECG, as conduction disturbances and extrasystoles?
6. What is the pathogenesis of deep rare noisy breathing, signs of pulmonary congestion?
7. What acid-base imbalance is attested in this patient?
8. What changes of diuresis is attested in this patient? Explain.