# **Endocrinology. Final tests.**

# **Variant 9**

**1. After secretion by the beta cell, insulin reaches the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ first before being carried in the circulation to other insulin target organs.**

A. muscle

B. adipose tissue

**C. liver**

D. kidney

E. brain

**2. Which of the following is a direct effect of parathyroid hormone (PTH)?**

**A. increased osteoclast activity**

B. reduced 1-hydroxylase activity

C. increased intestinal synthesis of calcium-binding protein

D. increased renal tubular phosphate reabsorption

E. reduced 25-hydroxylase activity

**3. Which of the following hormones is LEAST likely to have a nocturnal peak?**

**A. thyroxine (T4)**

B. ACTH

C. cortisol

D. prolactin

E. growth hormone (GH)

**4. In the United States, the most common form of diabetes is characterized by:**

A. lack of C-peptide

B. autoimmune attack on the beta cells

C. less than 50% concordance in twins

**D. obesity**

E. ketosis

5**. Fasting for 4 days would be most likely to**:

1. decrease plasma reverse T3 (rT3)
2. increase plasma thyroxine (T4)
3. **decrease plasma triiodothyronine (T3)**
4. increase plasma thyroglobulin
5. increase 5'-deiodinase activity

6**. Treatment of a healthy individual with excess thyroxine (T4) is most likely to:**

A. increase thyroid size

**B. decrease thyroidal radioactive iodine uptake**

C. increase the TSH response to TRH

D. decrease liver synthesis of thyroid binding globulin (TBG)

E. increase the thyroidal coupling reaction

7**. A decrease in renin is most likely to be caused by:**

A. hemorrhage

B. hypotension

C. constriction of the right renal artery

D. treatment with a drug that inhibits angiotensin converting enzyme

**E. eating licorice**

8**. Which of the following hormones inhibits protein synthesis while stimulating protein breakdown?**

A. insulin

B. glucagon

C. epinephrine

**D. cortisol**

E. growth hormone

9**. Which of the following hormones is least likely to increase during stress?**

**A. calcitonin**

B. glucagon

C. growth hormone

D. cortisol

E. epinephrine

10**. An exaggerated TSH response to TRH administration is most likely to be found in a person who has:**

A. thyroid stimulating immunoglobulins (TSI)

B. pituitary insufficiency

**C. primary hypothyroidism**

D. secondary hypothyroidism

E. elevated plasma thyroxine (T4)

11**. A patient, 35 years old, a week later after thyroidectomy for thyroid gland** cancer has paraesthesia, muscle fbrillations, convulsions in extremities. **What is the possible diagnosis?**

1. **Primary hypoparathyroidism**
2. Secondary hypoparathyroidism
3. Hypothyroidism
4. Myeloma
5. Distant metastases

12. A patient, 59 years old, consult a doctor with complaints of fast fatigue, muscular weakness, pain in muscles, spine, thirst, poliuria, loss of teeth. A leg fracture has occurred 10 months ago after damage and bad syn­ostosis. The patient has gastric ulcer and nodular goiter in her life history. Menopause has been obtained at 53 years. Complete blood count: erythro­cytes - 3x1012/L, Hb - 100 g/L, leucocytes - 4,4x109/L, ESR - 28 mm/h, se­rum calcium - 2,9 mmol/L, serum phosphate - 0,4 mmol/L. Bone X-ray ex­amination: systemic osteoporosis, subperiosteal resorption of bones, cysts, spine deformation. **Determine possible diagnosis.**

1. **Primary hyperparathyroidism**
2. Secondary hyperparathyroidism
3. Postmenopausal osteoporosis
4. Thyroid cancer with metastases in bones
5. Pedjet disease

13. A patient 40 years old, having urolithiasis for 10 years, has coral calculus in right kidney and multiple calculi in left kidney. Laboratory fndings: serum calcium - 2,85 mmol/L, serum phosphate - 0,3 mmol/L, creatinine, urea are normal. **What is the diagnosis?**

1. **Primary hyperparathyroidism**
2. Secondary hyperparathyroidism
3. Tertiary hyperparathyroidism
4. Pseudohyperparathyroidism
5. Primary hypoparathyroidism

14. A patient, 52 years old, consult a doctor with complaints of general weakness, insomnia, decreasing memory, vertigo, cardiac pain, palpitation, periodic vomiting, diarrhea, following constipation, paraes-thesia, muscle fbrillations, turning to cramps in upper extremities. Cramps occur after stress, infectious diseases. There are no endocrine diseases in family history. Laboratory fndings: glycemia - 4,8 mmol/L, serum cal­cium - 2,0 mmol/L, serum phosphates - 1,1 mmol/L. ECG: prolongation of QT interval. X-ray: increased density of bones. **What is the diagnosis?**

1. **Hypoparathyroidism**
2. Pseudohypoparathyroidism
3. Insulinoma
4. Epilepsy
5. Malabsorption syndrome

15. A 38-years-old patient M. has been operated on for toxic mul­tinodular goiter, II gr. For 2 weeks after the operation cramps in upper extremities had appeared, which persisted for 1-2 min. and accompanied with numbness in face. Cramps occur 1-2 times a day, commonly at a daytime. Pulse is 82 st/min, rhythmic; blood pressure is 110/70 mmHg. Visceral organs are not damaged. Trousseau’s, Hvostek’s I symptoms are positive. **What is the diagnosis?**

1. **Post-operative hypoparathyroidism**
2. Post-operative hypothyroidism
3. Pseudohypoparathyroidism
4. Epilepsy
5. Insulinoma

16. **The first step in treating hyperglycemia in patient with type 2 diabetes mellitus is usually:**

1. Insulin therapy
2. Oral hypoglycemics
3. A combination of insulin and oral medications
4. **Lifestyle and diet changes**
5. Only diet

17. **Which of the following is not correct for oral hypoglycaemic drugs?**

1. Stimulation of insulin release
2. Anorexigenic effect
3. Reduction of carbohydrate absorption
4. **Inhibition of gluconeogenesis**
5. Stimulation of insulin synthesis

18. **Mechanism of biguanides’ action includes**

1. **Inhibiting insulin resistance**
2. Stimulating beta cells to synthesise insulin
3. Inhibiting beta cell to secrete insulin
4. Stimulation beta cells to secrete insulin
5. Beyond pancreatic activity

19. **Mechanism of sulphonylureas’ action includes**

1. Beyond pancreatic activity
2. Stimulating beta cells to synthesise insulin
3. Inhibiting beta cell to secrete insulin
4. **Stimulation beta cells to secrete insulin**
5. Inhibiting insulin resistance

20. **Which of the following drugs may precipitate cardiovascular complications?**

1. **Glyburide**
2. Gliclazide
3. Glimepiride
4. Acarbose
5. Nateglinide

21. A 28 year old woman with recent tiredness and difficulty concentrating had experienced a decline in memory over the last several months. She also noted decreased frequency of bowel movements and an increased tendency to gain weight. She felt chilled without light sweater, even in warm weather. In the anamnesis - hypothyroidism in her mother and older sister. Objectively: She had a slightly puffy face and her eyebrows were sparse, especially at the lateral margins. The thyroid gland is not palpated. Heart rate – 58 beats/min, BP is 100/60 mmHg. Tones of heart of low sonority. The deep tendon reflexes were normally contractive, but showed delayed relaxation. What laboratory tests would you order to evaluate this patient?

1. Ultrasound thyroid gland
2. Test for anti-thyroid antibodies (anti-thyroglobulin and anti-microsomal)
3. Blood tests: levels T3, T4 and TSH
4. ECG
5. **All methods**

**22.** A female, 62 years old, suffers from pernicious anaemia for which she has received 1 mg cyanocobalamine intramuscularly every 3 month for the last 10 years. At a routine visit the patient is found with a puffy swollen face due to a non-pitting edema. Her skin is dry and cold, the heart rate is 55 beats/ min, her hair is sparse, and she complains of constipation and fatigue. A series of blood tests reveals the following: high levels of microsomal autoantibodies against the thyroid gland and autoantibodies against her parietal cells. The TSH concentration in the plasma is high, whereas the T3, T4 are low. The haematological variables are satisfying. ***What is the probable diagnosis?***

1. **Hypothyroidism**
2. Cardiac insufficiency
3. Pernicious anaemia
4. Autoimmune (Hashimotos) thyroiditis, hypothyroidism
5. Nephrotic syndrome

**23.** A 53 year old woman came to the polyclinic. She had no symptoms but gave a history of a lump in her neck being noticed by her primary care physician during a routine ‘well-woman’ check. There was no family history of thyroid disease and she had a blameless past medical history. She had not noticed any change in her voice, or difficulty swallowing or breathing. Examination was entirely normal, except thyroid gland enlarged II grade, normal texture, homogenous for a 3 × 2 cm single nodule in the left lower thyroid gland. Blood tests showed that her total T4, free T3, TSH - normal, and thyroid autoantibodies were not present in serum. ***What is the probable diagnosis?***

1. **Nodular goiter**
2. Endemic diffuse nontoxic goiter
3. Diffuse nontoxic goiter
4. Sporadic diffuse nontoxic goiter
5. Diffuse euthyroid goiter

**24.** Patient V., 26 years old, during 3 months was ill diffuse toxic goiter III, to treatment – thyrozol 30 mg per day. After grippe the patient complaints: palpitations, tremor, high fever, diarrhea. Objective review: thyroid gland enlarged, smooth, normal texture homogenous. Abdominal pain, vomiting. Tachycardia – 140 beats/min, blood pressure 140/50. Fever – 40 ° C. ***Establish your diagnosis?***

1. **Diffuse toxic goiter in decompensation. Thyrotoxic crisis.**
2. Nodular goiter Toxic goiter in pregnancy
3. Adenoma of thyroid gland
4. Diffuse toxic goiter in compensation

**25.** A 50 year old man presents with enlargement of left anterior neck. He has noted increased appetite over past month with no weight gain, and more frequent bowel movements over the same period. Physical examination: temperature of 37,4 °С, the heart rate is 92 and the blood pressure is 110/50. There is an ocular stare with a slight lid lag. The thyroid gland is enlargement of 3 grade and asymmetric to palpation, nodule in left lobe of the thyroid gland. Result of ultrasound examination: a thyroid gland is increased, total size is 40 cm³, there is a 3 x 2.5 cm firm nodule in left lobe of the thyroid. Level of thyroid hormones are abnormal: high level of T3 and T4, undetectable TSH. ***Which diagnosis is most likely?***

1. Adenoma of thyroid gland
2. **Nodular goiter 3 grade, thyrothoxicosis**
3. Multinodular goiter
4. Diffuse toxic goiter
5. Nodular goiter

**26.** A 41-year-old patient with Addison’s disease had influenza. After that he developed adynamia, depression, nausea, vomiting, diarrhea and hypoglycemia. BP is 75/50 mm Hg. Blood test: decreased content of corticosterone, hydrocortisone, 13-oxycorticosteroids, 17-oxycorticosteroids. What condition has developed in the patient?

1. **Acute adrenal gland insufficiency**
2. Acute gastritis
3. Acute enterocolitis
4. Collapse
5. Diabetes mellitus

**27.** A 23-year-old woman after stress has developed thirst, polydipsia, polyuria, weight loss, increasing fatigue. Later she developed nausea and somnolence, lost consciousness and was hospitalised. Glycemia is 27 mmol/l, acetone in urine is sharply positive. Treatment for ketoacidotic coma was initiated. When would it be advisable to start preventive treatment of hypoglycemia by introduction of 5% glucose solution?

1. 2 hours after beginning of insulinotherapy
2. When patient becomes conscious
3. **After glycemia rate drops to 13-14 mmol/l**
4. After glycemia rate becomes normal
5. **E.** If glycemia decreases with the rate over 5 mmol/l per hour

**28.** A patient complains of weight gain, chill, edemas, xeroderma, somnolence, difficulties with focusing. Objectively: height is 165 cm; weight is 90 kg; body proportions are of female type, *to*- 35*,*8*oC*, heart rate - 58/min, BP 105/60 mm Hg. Heart sounds are weakened, bradycardia is observed. Other internal organs have no changes. Thyroid gland cannot be palpated. Milk secretion from mammary glands is observed. Hormone investigation revealed increased levels of thyroid-stimulating hormone (TSH) and prolactin, and decreased level of thyroxine (T4). Which one is the cause for obesity?

1. Secondary hypothyroidism
2. Prolactinoma
3. Hypopituitarism
4. **Primary hypothyroidism**
5. Adiposogenital dystrophy

**29.** A 35-year-old female patient has gained 20 kg weight within a year with the normal diet. She complains of chill, sleepiness, dyspnea. The patient’s mother and sister are corpulent. Objectively: height - 160 cm, weight - 92 kg, BMI - 35,9. Obesity is uniform, there are no striae. The face is amimic. The skin is dry. The tongue is thickened. Heart sounds are muffled. Heart rate - 56/min, BP - 140/100 mm Hg. The patient has constipations, amenorrhea for 5 months. TSH - 28 mkME/l (normal rate - 0,32-

5). Craniogram shows no pathology. What is the etiology of obesity?

1. **Hypothyroid**
2. Hypo-ovarian
3. Hypothalamic-pituitary
4. Alimentary and constitutive
5. Hypercorticoid

**30.** A 40-year-old female patient complains of having a bulge on the anterior surface of neck for 5 years. Objectively: Heart rate - 72 bpm, arterial pressure - 110/70 mm Hg, in the right lobe of thyroid gland palpation reveals a mobile 4x2 cm node, the left lobe is not palpable, the basal metabolic rate is 6%. What is the most likely diagnosis?

1. **Nodular euthyroid goiter**
2. Nodular hyperthyroid goiter
3. Riedel’s thyroiditis
4. Mixed euthyroid goiter
5. The median cervical cyst

**31.** A 22-year-old patient complains of 8-months-long delay of menstruation. Anamnesis: menarche since the age of 12,5. Since the age of 18 menstruations are irregular. No pregnancies. Mammary glands have normal development; when the nipples are pressed, milk drops are discharged. On gynecological examination: moderate uterus hypoplasia. On hormonal examination: prolactin level exceeds the norm two times. On computed tomogram of the sellar region: a space-occupying lesion 4 mm in diameter is detected. The most likely diagnosis is:

1. Lactation amenorrhea
2. Stein–Leventhal syndrome (Polycystic ovary syndrome)
3. **Pituitary tumor**
4. Sheehan’s syndrome

**E.** Cushing’s disease

**32.** A 15-year-old patient complains of excessive body weight, headache, irritability, rapid fatigability. Significant increase of body weight occurred at the age of 14. Objectively: weight is 90 kg; height is 160 sm, proportional body built. Fatty tissue is distributed evenly. There are thin pink striae (stretch marks) on the thighs, abdomen and mammary glands. BP - 145/90 mm Hg. Provisional diagnosis is:

1. Alimentary constitutive obesity
2. Somatoform autonomic dysfunction
3. Itsenko-Cushing’s disease
4. **Pubertate dyspituitarism**
5. Cushing’s syndrome

**33.** A 30-year-old woman complains of infertility during her 10-year-long married life. Menstruations occur since she was 14 and are irregular, with delays up to a month and longer. Body mass is excessive. Hirsutism is observed. On bimanual examination: uterine body is decreased in size; ovaries are increased in size, dense, painless, and mobile. The most likely diagnosis is:

1. Follicular cyst of ovaries
2. **Stein–Leventhal syndrome (Polycystic ovary syndrome)**
3. Genital endometriosis
4. Genital tuberculosis
5. Inflammatory tumor of ovaries

**34.** A 14-year-old girl has been presenting with irritability and tearfulness for about a year. A year ago she was also found to have diffuse enlargement of the thyroid gland (II grade). This condition was regarded as a pubertal manifestation, the girl did not undergo any treatment. The girl’s irritability gradually gave place to a complete apathy. The girl developed puffy face, soft tissues pastosity, bradycardia, constipations. Skin pallor and gland density progressed, the skin developed a waxen hue. What disease can be suspected?

1. **Autoimmune thyroiditis**
2. Diffuse toxic goiter
3. Thyroid carcinoma
4. Subacute thyroiditis
5. Juvenile basophilism

**35.** A 48-year-old patient was found to have diffuse enlargement of the thyroid gland, exophthalmia, weight loss of 4 kg in 2 months, sweating. Objectively: HR- 105/min., BP140/70 mm Hg. Defecation act is normal. What kind of therapy is recommended in this case?

1. Radioiodine
2. Propranolol
3. **Mercazolil**
4. Lugol’s solution
5. Thyroxine

**36.** A 32-year-old woman complains of dizziness, headache, palpitation, tremor. For the last several months she has been under outpatient observation for increased arterial pressure. Since recently such attacks have become more frequent and severe. Objectively: the skin is covered with clammy sweat, tremor of the extremities is present. HR110/min., BP- 220/140 mm Hg. Heart sounds are muffled. Blood test results: WBCs- 9*,*8 · 109/l, ESR- 22 mm/hour. Blood glucose - 9,8 millimole/l. What disease is the most likely cause of this crisis?

1. Essential hypertension
2. Preeclampsia
3. Primary hyperaldosteronism
4. **Pheochromocytoma**
5. Diabetic glomerulosclerosis

**37.** A 16-year-old girl has primary amenorrhea, no pubic hair growth, normally developed mammary glands; her genotype is 46 ХY; uterus and vagina are absent. What is your diagnosis?

1. **Testicular feminization syndrome**
2. Mayer-Rokitansky-Kuster-Hauser syndrome **C.** Cushing’s syndrome
3. Sheehan syndrome
4. Cushing’s disease

**38.** A 24-year-old patient complains of gaining body mass and increased appetite. Objectively: built of hypersthenic type, body mass index is 33,2 kg/m2, waist circumference is 100 cm. Waist to hips circumference ratio is 0,95. What is the provisional diagnosis?

1. Itsenko-Cushing hypothalamic obesity, II stage, gynoid type
2. Alimentary constitutive obesity, III stage, gynoid type
3. Alimentary constitutive obesity, II stage, android type
4. Itsenko-Cushing hypothalamic obesity, I stage, android type
5. **Alimentary constitutive obesity, I stage, android type**

**39.** A 35-year-old female patient has gained 20 kg weight within a year with the normal diet. She complains of chill, sleepiness, dyspnea. The patient’s mother and sister are corpulent. Objectively: height - 160 cm, weight - 92 kg, BMI- 35,9. Obesity is uniform, there are no striae. The face is amimic. The skin is dry. The tongue is thickened. Heart sounds are muffled. Heart rate - 56/min., BP- 140/100 mm Hg. The patient has constipations, amenorrhea for 5 months. TSH- 28 mkME/l (normal rate - 0,32-5). Craniogram shows no pathology. What is the etiology of obesity in this case?

1. **Hypothyroid**
2. Hypo-ovarian
3. Hypothalamic-pituitary
4. Alimentary and constitutive
5. Hypercorticoid

**40.** A 40-year-old female patient complains of having a bulge on the anterior surface of neck for 5 years. Objectively: Ps- 72/min., arterial pressure - 110/70 mm Hg, in the right lobe of thyroid gland palpation reveals a mobile node 4x2 cm in size, the left lobe is not palpable, the basal metabolic rate is 6%. What is the most likely diagnosis?

1. Nodular hyperthyroid goiter
2. **Nodular euthyroid goiter**
3. Riedel’s thyroiditis
4. Mixed euthyroid goiter
5. Median cervical cyst

**41.** A 64-year-old woman has been suffering from diabetes mellitus for the last 14 years. Approximately 3 days ago the skin on the distal phalanx of the I toe on the left foot became cold and bluish-black in color. Mild pain is observed in the affected area. Pulse on the pedal arteries cannot be detected, pulse on the popliteal artery is retained. Glycemia is 12,4 mmol/l. US scan: stenosis of the shin arteries, collateral compensated blood flow. Ankle-brachial pressure index is 0,7. Foot Xray: destruction of the distal phalanx of the I toe. Determine the grade of diabetic foot according to Wagner:

1. **IV**
2. I
3. II
4. III
5. V

**42.** A 25-year-old woman complains of menstruation retention lasting for 3 years. The patient explains it by a difficult childbirth complicated with profuse hemorrhage, weight loss, brittleness and loss of hair, loss of appetite, depression. Objective examination reveals no pathologic changes of uterus and uterine appendages. What pathogenesis is characteristic of this disorder?

1. Hyperproduction of estrogen
2. Hyperproduction of androgen
3. Decreased production of progesterone
4. Hyperproduction of prolactin
5. **Decreased production of gonadotropin**

**43.** A 32-year-old patient complains of excessive appetite, excess weight, dyspnea during physical exertion. There are fat deposits in the area of abdomen and shoulder girdle. The skin is pale-pink, adult male pattern of hair distribution is observed on the torso, no stretch marks. Heart rate is 90/min., BP is 120/80 mm Hg, body build index equals 35. Blood sugar is 4,9 mmol/l, cholesterol is 6,2 mmol/l. On ophthalmoscopy: fundus of the eye without changes. What provisional diagnosis can be made?

1. **Primary alimentary constitutive obesity, android type**
2. Primary alimentary constitutive obesity, gynoid type
3. Secondary hypothalamic obesity
4. Secondary neuroendocrine obesity
5. Secondary endocrine hypo-ovarian obesity

**44.** A child is 10 years old. The weight is 46 kg. Since birth the child has been gaining excessive weight. The parents are fullbodied. The child has undergone the following tests: carbohydrate tolerance, level of 17-ketosteroids, blood electrolytes, US of adrenal glands, cranium X-ray. The tests revealed no pathologies.The diagnosis of exogenic constitutive obesity has been made. What direction of therapy should be prioritized?

1. Sanatorium-and-spa treatment
2. Anorectic drugs
3. Dehydration therapy
4. **Reducing diet and exercise**
5. ”Fat-burning” methods

**45.** An 8-year-old child with a 3-year history of diabetes was hospitalized in hyperglycemic coma. Specify the initial dose of insulin to be administered:

**A. 0,1-0,2 U/kg of body weight per hour**

**B.** 0,05 U/kg of body weight per hour

1. 0,2-0,3 U/kg of body weight per hour
2. 0,3-0,4 U/kg of body weight per hour
3. 0,4-0,5 U/kg of body weight per hour
4. The patient 39 year old cannot get pregnant for 8 years. She was advised to go to an endocrinologist. The examination revealed proptosis, tremor of eyelids, tachycardia. What endocrine gland has been damaged?
   1. **The thyroid**
   2. Pancreas
   3. Genital
   4. The adrenal gland
   5. Epiphysis
5. The patient 30 years old complains of the severe thirst, dry mouth, which appeared after a strong nervous shock. Laboratory examination revealed an increase of blood sugar to 10 mmol / l. What endocrine gland has struck?

A. **Pancreas**

B. The thyroid

C. Genital

D. The adrenal gland

E. Epiphysis

1. The patient 30 year old was diagnosed the diabetes insipidus by the physician. What gland does not function?
   1. **The pituitary gland**
   2. The thyroide
   3. The genital
   4. The adrenal gland
   5. The epiphysis
2. The mother whose son grew up to 18cm over the summer was admited to the doctor. The examination of a boy of 12 years: height is 180 cm, weight is 68 kg. What endocrine gland is functioning poorly?
   1. **Pituitary gland**
   2. The thyroid
   3. Genital
   4. The adrenal gland
   5. Epiphysis
3. The mother of the 9 years old girl came to the endocrinologist. Her daughter complains of mammary glands enlargement, bloody vaginal discharge, the increased of hair growth on the body and around genitals. What endocrine gland inhibits the precocious puberty?
   1. **Epіphysіs cerebrі**
   2. Hypophysіs cerebrі
   3. The thyroіd gl.
   4. The suprarenal gl.
   5. The parathyroіd gl.