MINISTRY OF HEALTH PROTECTION OF UKRAINE
ODESA NATIONAL MEDICAL UNIVERSITY

International faculty
Department of Internal Medicine №1

CONFIRMED:
Acting vice-rector for research and educational work
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«05» September 2023

METHODOLOGICAL DEVELOPMENT TO THE INDEPENDENT WORK OF HIGHER EDUCATION APPLICANTS FROM EDUCATIONAL DISCIPLINE

Faculty, course: international faculty, 4th course

Educational discipline: Actual problems of endocrinology (elective discipline)

Confirmed:
Meeting of the department of Internal Medicine No. 1 of the Odessa National Medical University
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Topic 1. Diabetes mellitus: etiology, pathogenesis, classification, clinic, diagnosis. Diabetes mellitus type 1: modern methods of treatment

The main goals: to indicate the relevance of the topic, know the etiopathogenetic classification of diabetes mellitus, know the risk factors for the development of diabetes mellitus types 1 and 2, know the etiopathogenesis of type 1 and 2 diabetes mellitus, know the diagnostic criteria for diabetes, be able to determine the type of diabetes and the severity and compensation criteria

Key words: autoimmune process, insulin resistance, obesity, hyperglycemia, diet, hypoglecemic therapy, physical activity, psycho-emotional state.

Plan

I. Theoretical questions for the lesson:

1.https://www.dec.gov.ua/wp-content/uploads/2019/11/2014_1021_ykpmd_cd1_dor.pdf
2.https://www.acc.org/latest-in-cardiology/articles/2020/03/09/13/11/2019-esc-guidelines-on-diabetes-pre-diabetes-and-cvd
3. Harrison's Principles of Internal Medicine, Twentieth Edition (Vol.1 & Vol.2) 20th Edition
4. Davidson's Principles and Practice of Medicine: With Student Consult Online Access (Principles & Practice of Medicine (Davidson's)) 21st Edition.

Questions for self-control:

1) Etiology and pathogenesis of type 1 and 2 diabetes mellitus.
2) Etiopathogenetic classification of diabetes mellitus, stage, development of type 1 2 diabetes mellitus.
3) Diagnostic criteria for diabetes mellitus, severity of the disease and compensation criteria.
4) Requirements for the diagnosis: main, complications and accompanying.
5) Main clinical symptoms.
6) Instrumental research methods
7) Differential diagnosis of 1 and 2 types of diabetes mellitus.
8) The most common complications of diabetes mellitus: micro-macroangiopathy, polyneuropathy, cardiovascular complications, nephropathy and diabetic osteoarthropathy.

Approximate tasks for the study of theoretical material:

Make a dictionary of basic concepts on the topic:

Term	Definition
Hyperglycemia	
Diabetes	
Type 1 diabetes mellitus	
Type 2 diabetes mellitus	
Gestational diabetes mellitus	
Glucose Tolerance Test	
Glycosylated hemoglobin	
Disorders of glucose tolerance	
Glucosuria	
Ketone bodies	
Ketonuria	

Insulin resistance	
Antibodies to gamaglutamyltranspeptidase	

II. Practical work (tasks) that will be performed in class:

1. A 40-year-old woman was admitted to the admission department of the hospital, diagnosed with an acute abdomen. From the anamnesis it is known that 3 weeks ago she began to feel strong thirst, took a lot of fluids, excreted a significant amount of urine, lost weight, complained about the absence of menstruation (which until that time was regular). During the examination: leukocytes in the blood are 15.6x10! / L, glycemia - 13.2 mmol / l, glucosuria - 37 g / l, a positive reaction to acetone in urine. Determine the reason for this condition of the patient:

2. Male 56 years old. Obesity degree 3 (height 174cm, weight 108 kg.) No complaints. Fasting blood glucose levels are in the range of 7.8-10.6 mmol / l. Within 8 years, arterial hypertension. Currently BP 140/90, 130/85 (taking reserpine). No abnormalities were found on the part of internal organs.

QUESTION:

1.Diagnosis

2.Therapeutic tactics

III. Test tasks for self-control:

1.In a patient 56 years of age, with obesity, with an active examination of glucose in plasma of venous blood onset glycemic index 9 mmol / l. Diagnose:

A Front David

B Type 1 diabetes mellitus

C Type 2 diabetes

D Influenza glycemic control

E Transient hyperglycemia

2.In a boy of 12 years during glucose tolerance test, the following glucose indicators were found: onset - 4,5 mmol / l, after 1 hour. - 7.5 mmol / l, after 2 hours. - 5.6 mmol / liter. Your conclusion?

A Glucose tolerance is not affected

B Glucose tolerance is disturbed

C It is necessary to further examine glucose in plasma of venous blood onset

D It is necessary to further examine glucose in plasma of venous blood against the background of nutrition

E. Define glycosylated hemoglobin

3.A patient, 39 years old, for 20 years suffering from bronchial asthma. During the past 5 years, due to frequent sting attacks, prednisone was prescribed. During the hospitalization, he complained to the polydipsia, dry mouth, increased appetite and polyuria. Blood glucose levels were detected - 10.9 mmol / l. Your previous diagnosis:

A Type 1 diabetes mellitus

B Type 2 diabetes mellitus

C Steroid Diabetes Mellitus

D Kidney Diabetes

E Diabetes mellitus associated with a genetic defect insulin

4.The patient, 22 years old, suffers from diabetes the 2nd year. Diabetic complications were not detected in her. Glycemia is onset in the range of 6.0-7.0 mmol / l. Married. Try to have ahealthy baby. To prevent fetal disease, choose the most informative diagnostic method for fertilization permission:

A Glycemic Profile

B Glycosylatedhemoglobin

C Glucosuric profile
DC peptide
EPostrandial glycemia

5.Mother complains about the child's lag in growth and sexual development, frequent urinary defecation, bad healing of morning on the skin. Objectively: flush on the cheeks, dry skin and mucous membranes. What kind of examination do you want to assign to a child to clarify the diagnosis?
A Blood test for glucose and glycosylated hemoglobin
B General analysis of blood
C Total urinalysis
D Determination of liver blood samples
E Determination of blood electrolytes

6.At the age of 20, there were complaints of dry mouth, thirst, diuresis - 5-6 l / day, significant weight loss. The examination revealed dry skin, pyoderma, bleeding gums, enlargement of the liver 3 cm below the costal arch. Glucosuria 15-20 g / l. Make a preliminary diagnosis:
A non-diabetes mellitus
B Psychogenic polydipsia
C Renal glucosuria
D Type 1 diabetes mellitus
E Disorders of glucose tolerance

7.At the reception of the endocrinologist - a boy 15 years old with diabetes, type 1 of 5 years. Physical development corresponds to 10 years. In an objective examination -hepatosplenomegaly. Laboratory indices indicate decompensation of diabetes mellitus. What advice should a doctor give you?
A Compensate for diabetes mellitus
B Determine thyroid-stimulating hormone
C Determine the bone age
D Appoint vitamin therapy E improve nutrition

8.The patient, 62 years old, suffers from diabetes mellitus type 2. Diabetes is compensated by diet and gliclazid 60 mg per day. The patient should have surgery for inguinal hernia. What should be the tactics of hypoglycemic therapy:
A Leave the previous treatment plan
B Cancel gliclazide
C Inject short-acting insulin
D To prescribe long-acting insulin
E Replace gliclazidmetroformin

9.In a patient, 22 years old, after the flu was first detected diabetes mellitus. Glucose in plasma of venous blood onset - 10.2 mmol / l, glucosuria - 20 g / l, glycosylated hemoglobin - 8%. What treatment should be prescribed:
A Insulin therapy
B Sulphonylurea derivatives
C ACarbose
D Metform
E Inhibitors of PPP-4

IV. Individual tasks for students on the topic of the lesson:

Variant 1.

Task 1.
Fill in the classification table for diabetes

Categories	Classification signs
Type 1 diabetes mellitus	
Type 1 diabetes mellitus	

Task 2.
Fill in the table of mandatory laboratory tests for a patient with diabetes, depending on the type of disease

№	Method	Aims
1	Glycosylated hemoglobin	
2	Glycemic profile	
3	Ketonuria	
4	Determination of creatinine plasma blood	
5	Determination of activity of liver transaminases	
6	Definition of lipidogram	
7	Calculation of velocity of glomerular filtration	
8	BMI calculation	
9	Measurement of blood pressure	

Task 3.
List the main directions of non-drug therapy for diabetes mellitus

- _____
- _____
- _____
- _____
- _____

Task 4.
Fill in the table. Optimal combinations of sweeteners

Groups of drugs	Combination with preparations of other groups

Task 5.
Fill in the table of treatment for patients with diabetes mellitus

Drug	Method of use, dose	Indication

Variant 2.

Task 1. Fill in the classification table of diabetes

Categories	Classification signs

Hyperglycemia	
Diabetes	
Type 1 diabetes mellitus	
Type 2 diabetes mellitus	
Gestational diabetes mellitus	
Other types of diabetes	

Task 2.
Fill in the table of the main symptoms or clinical signs of damages of organs and systems in diabetes mellitus.

Organ/system	Signs of damages of organs and systems
Insulin apparatus of the pancreas	
Body weight of the patient	
Changes in the drinking regime of the patient	
Violation of diuresis	
Infringement of carbohydrate metabolism	
Changes in hemoglobin digestion	
Infringement of lipid metabolism	

Task 3.
Fill in the table of mandatory laboratory tests for a patient with diabetes mellitus.

№	Type of tests	Aims
1	Definition of glucose in plasma of venous blood	
2	Definition of glucose in capillary blood	
3	Definition of glycosylated hemoglobin	
4	Determination of creatinine well plasma blood	
5	Determination of activity of liver transaminases	
6	Definition of lipidogram	
7	Calculation of velocity of glomerular filtration	
8	BMI calculation	

9	Measurement of blood pressure	

Recommended reading list:
Basic:
Annual Review of Diabetes 2021, Author(s): American Diabetes Association Managing Diabetes and Hyperglycemia in the Hospital Setting Author(s): Boris Draznin, MD, PhD 2021-22
Additional:
DR. SEBI'S TREATMENT BOOK: Dr. Sebi Treatment For Stds, Herpes, Hiv, Diabetes, Lupus, Hair Loss, Cancer, Kidney Stones, And Other Diseases. Paperback – June 1, 2021

Topic 2. Type 2 diabetes: modern methods of treatment. Emergency conditions of diabetes. Hypoglycemic coma, hypoglycemic conditions. Ketoacidotic states and coma, hyperosmolar diabetic coma

Purpose: to avoid acute decompensation, prevent or delay the appearance of late disease complications, decrease mortality, and maintain a good quality of life.
Key words: diet, hypoglecemic therapy, physical activity, psycho-emotional state, ketoacidosis, hyperosmolarity, lactic acidosis, hypoglycemia.

Plan
I. Theoretical questions for the lesson:
1.https://www.dec.gov.ua/wp-content/uploads/2019/11/2014_1021_ykpmd_cd1_dor.pdf2.https://care.diabetesjournals.org/content/diacare/suppl/2018/12/17/42.Supplement_1.DC1/DC_42_S1_2019_UPDATED.pdf
3. Davidson's "Principles of Practice of Medicine" 23rd edition, 2018
4. Harrison's "Principles of internal medicine", 19th edition, 2019.

Questions for self-control:
1) General principles of treatment of diabetes mellitus types 2.
2) Algorithm of stepwise therapy for type 2 diabetes mellitus.
3)Principles of rational diet therapy and dosed exercise.
4)Drug therapy: characteristics of the main groups of drugs and indications for their appointment according to the protocols for the provision of medical care for patients with type 2 diabetes mellitus.
4)The pathogenesis of ketoacidosis, and causes.
5)Stages of development of ketoacidotic coma (mild ketoacidosis, expressed, and actually coma).
6)Clinical variants of ketoacidotic coma.
7)Syndrome of hyperglycemia, acidosis, dehydration, hypoglycemia.
8)Pathogenesis, clinic, treatment and prevention of hypoglycemia, hypoglycemic coma.
9)Diseases accompanied by hypoglycemia (insulinoma, functional hyperinsulinism).
10)Mechanism and causes of lactic acidosis, pathogenesis of lactic acidotic coma.
11)Mechanism and causes of hyperosmolar condition, pathogenesis hyperosmolar coma.

Approximate tasks for the study of theoretical material:
1. Make a dictionary of basic concepts on the topic:

Cultivation sulfonylamide preparations	
Inhibitors of dipeptidyl peptidase-4	
Glucagon-like polypeptide	

Acarbose	
Insulin sensitizers	
The energy value of a daily ration	
Natural Food Fibers	
Diabetes mellitus in a state of decompensation	
Diabetes mellitus in a state of compensation	
Self-control of diabetes	
Glucometers	

II. Practical work (tasks) that will be performed in class:

1.Male 56 years old. Obesity degree 3 (height 174cm, weight 108 kg.) No complaints. Fasting blood glucose levels are in the range of 7.8-10.6 mmol / l. Within 8 years, arterial hypertension. Currently BP 140/90, 130/85 (taking reserpine). No abnormalities were found on the part of internal organs.
QUESTION
1.Diagnosis
2.Therapeutic tactics

2. Patient M., 24 years old, diagnosed with type 1 diabetes 8 months ago. He has a negative attitude to insulin therapy, misses injections, does not control glycemia, and does not follow a diet. Deterioration of well-being within 10 days, when it appeared weakness, severe thirst, polyuria. Objectively: A state of moderate severity. Answers questions late, in monosyllables. The skin is dry. Smell of acetone in exhaled air. There are no wheezing in the lungs. BP 100/70 mm Hg Pulse 90 / min.
Questions:
1. Make a preliminary diagnosis.
2. Make a differential diagnosis.
3. Prescribe treatment.

III. Test tasks for self-control:

1.In a woman 45 years old, with obesity 1 item. glycemia was detected on the surface of 10 mmol / l, after eating - 14.8 mmol / l, glucosuria 3%, acetone in urine absent. The sick brother's brother suffers from diabetes mellitus. What type of diabetes is a patient?
A Hereditary Diabetes Mellitus
B Type 1 diabetes mellitus
C Type 2 diabetes
D Diabetes associated with the disease of the exocrine part of pancreas
E Diabetes associated with endocrinopathies

2.In a patient, 52 years old, during prophylaxis glycemia was discovered on the nose - 7.2 mmol / l, glucosuria - 0.5 g / l. Height - 167 cm, weight - 92 kg Determine the primary treatment tactic:
A Insulin therapy
B Diet therapy and metered physical activity
C derivatives sulfonylureas
DMetformin
Eglucagon-like polypeptide

3.The patient, 48 years old, has a height of 162 cm, weight is 90 kg. He suffers from diabetes mellitus type 2 for 2 years, on diet therapy. Glycemia onset - 12.4 mmol / l, glucosuria 21.5 g / l. Identify the tactics of further treatment:
A Insulin therapy
B Diet therapy and metered physical activity
C derivatives sulfonylureas
D Methformin
E Acarboza

4.A woman, 72 years old, suffers from type 2 diabetes mellitus, concomitant pathology - hypertonic disease of the second century, heart failure of the second grade. Uses metformin. The day before suffered a hypertensive crisis, after which there was a sharp weakness, myalgia, increased thirst, dry mouth, polyuria. BP - 140/95 mm Hg, heart rate - 98 per minute, swelling and smell of acetone absent. What measures should be taken for the patient?
A Additionally, prescribe glimepiride
B Increase metformin dose
C Definify the PPP-4 inhibitor
D Adjunct to long-acting insulin
E To cancel metformin and prescribe insulin preparations

5.Patient M., 28 years old, suffers from diabetes mellitus for 3 years. It receives 54 IU insulin overnight. After a ten days postponement of the sore throat, the condition worsened. Increased general weakness, increased thirst, appeared, nausea, vomiting, drowsiness, fatigue. Hospitalized. At inspection: In an unconscious state, breathing is liquid and noisy, the smell of acetone from the mouth. Skin, tongue dry, skin turgor is lowered. Pulse 114 per minute, small, AT 85/50 mm Hg The lower edge of the liver is 3 cm below the costal arch. Blood glucose is 32 mMol / L. The reaction to acetone is abruptly positive. Which of the following measures should you start treatment for?
A Rehydration therapy
B Correction of electrolyte balance
C Warning of iatrogenic hypoglycemia
D Recovery of acid-base balance
E Prevention of infectious complications

6.A woman 59 years old suffering from diabetes 20 years. Treated with oral hypoglycemic agents, last year insulin therapy. Diabetes is in a state of compensation. Disturbing abdominal pain, bloating, unformed fecundity, imperative defecation in the dream. Can a diagnosis be?
A Chronic hepatitis
B Chronic cholecystitis
C Diabetic hepatoses
D Chronic gastritis
E Diabetic enteropathy

7.In a patient 21 years of age who suffers from diabetes for 8 years, glycemia is 10.2 mMol / l, prandial 14.3 mMol / l, daily glucosuria 41.1 g / l, albuminuria 230 mg per day, AT 110 / 70 mmHg Determine the diagnosis?
A Type 1 diabetes mellitus in a state of decompensation, chronic diabetic kidney disease
B Type 1 diabetes mellitus, diabetic kidney disease, microalbuminuria of moderate severity
C Type 1 diabetes mellitus in a state of decompensation, severe microalbuminuria
D Diabetes mellitus type 1 in a state of decompensation,
E Type 1 diabetes mellitus in a state of decompensation, chronic renal insufficiency

8.A woman 21 years old with diabetes mellitus with a 2 year age, complicated by progressive diabetic retinopathy and nephropathy, is advised on the possibility of pregnancy. What is the appropriate recommendation for a sick person?
A Pregnancy is not desirable
B Pregnancy is possible with stable compensation of sugar diabetes
C Pregnancy is possible after photocoagulation retina
D Pregnancy is possible with a decrease in proteinuria
E Pregnancy contraindicated

9. antihypertensive drugs are most appropriate in the treatment of patients with diabetes mellitus with nephropathy?
A Lockers ACE
B Petlevidiuretics
C β-blockers
D Blockers of calcium channels
E Thiazidodiouretics

10. A patient with type 1 diabetes has a diagnosis of "syndrome of a diabetic foot of a neuropathic form". Which of the following drugs is best for the patient?
A Derivatives of pentoxifylline
B Static
C derivatives of thiocticacids
D Antiagregant
E Antiplatelet drugs

IV. Individual tasks for students on the topic of the lesson:

Task 1.

Fill in the classification table for diabetes.

Categories	Classification signs
Type 1 diabetes mellitus	
Type 1 diabetes mellitus	

Task 2.

Fill in the table of mandatory laboratory tests for a patient with diabetes, depending on the type of disease.

№	Method	Aims
1	Glycosylated hemoglobin	
2	Glycemic profile	
3	Ketonuria	
4	Determination of creatine well plasma blood	
5	Determination of activity of liver transaminases	
6	Definition of lipidogram	

7	Calculation of velocity of glomerular filtration	
8	BMI calculation	
9	Measurement of blood pressure	

Task 3.

List the main directions of non-drug therapy for diabetes mellitus.

- _____
- _____
- _____
- _____
- _____

Task 4.

Fill in the table. Optimal combinations of sweeteners

Groups of drugs	Combination with preparations of other groups

Task 5.

Fill in the table of treatment for patients with diabetes mellitus.

Drug	Method of use, dose	Indication

Recommended reading list:

Basic:

-Zheng Y, Ley SH, Hu FB. Global aetiology and epidemiology of type 2 diabetes mellitus and its complications. Nat Rev Endocrinol. 2018 Feb;14(2):88-98. [PubMed]

-Malek R, Hannat S, Nechadi A, Mekideche FZ, Kaabeche M. Diabetes and Ramadan: A multicenter study in Algerian population. Diabetes Res Clin Pract. 2019 Apr;150:322-330. [PubMed]

-Picke AK, Campbell G, Napoli N, Hofbauer LC, Rauner M. Update on the impact of type 2 diabetes mellitus on bone metabolism and material properties. Endocr Connect. 2019 Mar 01;8(3):R55-R70. [PMC free article] [PubMed]

-Carrillo-Larco RM, Barengo NC, Albitres-Flores L, Bernabe-Ortiz A. The risk of mortality among people with type 2 diabetes in Latin America: A systematic review and meta-analysis of population-based cohort studies. Diabetes Metab Res Rev. 2019 May;35(4):e3139. [PubMed]

Additional:

-Cepeda Marte JL, Ruiz-Matuk C, Mota M, Pérez S, Recio N, Hernández D, Fernández J, Porto J, Ramos A. Quality of life and metabolic control in type 2 diabetes mellitus diagnosed individuals. Diabetes Metab Syndr. 2019 Sep - Oct;13(5):2827-2832. [PubMed]

-Steffensen C, Dekkers OM, Lyhne J, Pedersen BG, Rasmussen F, Rungby J, Poulsen PL, Jørgensen JOL. Hypercortisolism in Newly Diagnosed Type 2 Diabetes: A Prospective Study of 384 Newly Diagnosed Patients. Horm Metab Res. 2019 Jan;51(1):62-68. [PubMed.

-Qin Z, Zhou K, Li Y, Cheng W, Wang Z, Wang J, Gao F, Yang L, Xu Y, Wu Y, He H, Zhou Y. The atherogenic index of plasma plays an important role in predicting the prognosis of type 2

diabetic subjects undergoing percutaneous coronary intervention: results from an observational cohort study in China. Cardiovasc Diabetol. 2020 Feb 21;19(1):23. [PMC free article] [PubMed]
-Nowakowska M, Zghebi SS, Ashcroft DM, Buchan I, Chew-Graham C, Holt T, Mallen C, Van Marwijk H, Peek N, Perera-Salazar R, Reeves D, Rutter MK, Weng SF, Qureshi N, Mamas MA, Kontopantelis E. Correction to: The comorbidity burden of type 2 diabetes mellitus: patterns, clusters and predictions from a large English primary care cohort. BMC Med. 2020 Jan 25;18(1):22. [PMC free article] [PubMed]

Topic 3. Chronic complications of diabetes: macroangiopathy, microangiopathy, neuropathy , diabetic foot syndrome. Iodine deficiency diseases of the thyroid gland. Nodular forms of goiter. Thyroid cancer. Diseases of the parathyroid glands.

Purpose: Vascular injuries are the one of the leading syndromes in diabetes mellitus. In most cases their intensity determines patient's capacity for work, prognosis and duration of his life. In this regard the timely and accurate diagnostics as well as treatment of diabetic angiopathies becomes the leading value in diabetology. The problem of angiopathies has an interdisciplinary character and isn't a purely diabetologic issue. This problem has multiple links to ophthalmology, neurology, and surgery. The knowledge of clinical peculiarities and therapeutical tactics at different stages of angiopathies of different localization allows maintaining the patient's capacity for work for longer time.

Key words: microangiopathies, macroangiopathies, retinopathy, neuropathy, the iodine deficiency diseases, thyroid cancer, parathyroid glands.

Plan

I. Theoretical questions for the lesson:

1. https://www.endocrinepractice.org/article/S1530-891X(20)43030-7/fulltext
2. https://www.endocrine.org/topics/thyroid-disorders-and-cancer
3. Davidson's "Principles of Practice of Medicine" 23rd edition, 2018
4. Harrison's "Principles of internal medicine", 19th edition, 2019.

Questions for self-control:

1)Standards for the diagnosis of angiopathy and neuropathy
2)General principles of treatment and prevention of chronic complications of patients with diabetes mellitus type 1 and 2.
3) Promising methods of treating diabetes.
4)General pathophysiological mechanisms of comatose state development.
5) Main clinical syndromes of comatose states, coma stages.
6)Criteria for differential diagnosis of comatose states.
7)Methods of providing emergency care, intensive care at the stages of treatment of precomatose and comatose states.
8)Peculiarities of anatomy and physiology of endocrine system
9)Anamnesis of endocrine patients
10)Objective investigation
11)Methods of instrumental and laboratory diagnosis
12)Differential diagnosis of cancer of thyroid gland and diseases of parathyroid gland with other diseases

Approximate tasks for the study of theoretical material

1. Make a dictionary of basic concepts on the topic:

Microangiopathy	
Neuropathy	

Peripheral diabetic neuropath	
Vegetative diabetic neuropathy	
Diabetic retinopathy	
Chronic diabetic kidney disease	
Gestational diabetes, diagnosis	
Diabetic fetopathy	
Iodine prophylaxis is individual	
Iodized salt	
Hypothyroidism	
Subclinical hypothyroidism	
Postprocedural hypothyroidism	
TTG	
Thyroxine	
Thyroglobulin	
Antibodies to thyroglobulin	
Antibodies to thyroid peroxidase	
Autoimmune thyroiditis	

II. Practical work (tasks) that will be performed in class:

Clinical task №1.

Patient, 49 years old, was admitted unconscious. Skin, chewing sclera. Ascites. The edge of the liver is compacted, +4 cm, spleen +2 cm. Deep noisy breathing, respiratory rate - 20 min. with a fruity odor from the mouth. Tongue dry. The eyeballs are soft palpation. According to relatives, the patient abuses alcohol. Recently, the patient felt thirsty, often urinated, lost 5 kg. 3 days ago, the amount of urine decreased, nausea and vomiting appeared. In the analysis of urine rel.pl.-1032, the reaction is acidic, a positive reaction to acetone. Your preliminary diagnosis:

Clinical task №2.

A 28-year-old patient underwent surgery for diffuse toxic goiter. One month before the operation she was treated in the therapeutic department, receiving mercazolyl. Compensated discharged home. She did not receive outpatient treatment. Before surgery: Ps - 96 beats / min., Blood pressure - 125/70 mm Hg. On the second day after surgery, the condition deteriorated sharply. The patient is excited. Complains of palpitations, sweating, vomiting. Ps - 165 beats / min., Arrhythmic, small, atrial fibrillation. Blood pressure - 85/40 mm Hg Heart tones are loud. Vesicular respiration, in the lower parts of moist medium- and fine-bubble rales. The abdomen is soft, not painful. T- 39□C.

1.What is the most likely diagnosis?

2.Plan of investigations?

3.Treatment plan?

III. Test tasks for self-control:

1.Select one correct answer:

A patient K., suffering from diabetes 12 years old, is in a coma. Ob-ve: the skin is dry, breathous

noisy, the smell of acetone with exhalation. BP 105/60 mm Hg Pulse 100 per min, blood pH 7.0. What kind of coma is possible in a patient?
A hypoglycemic
B Ketoacidotic
C Hyperosmolar
D Lactic acid
E Brain (stroke)

2.Patient A., 58 years old, suffers from diabetes 7 years. After a postponed food poisoning the state deteriorated. Ob-o: the skin is dry, the tongue is dry, is covered with white layers, breathing is superficial, the smell of acetone in the air is not felt. In sick nausea, diarrhea. Blood glucose is 41 mMol / L. Probable diagnosis?
A Cerebral coma
B Ketoacidtic coma
C Lactocidal Coma
D Hypoglycemic Coma
E Hyperosmolar Coma

3.Patient S., 32 years old, delivered unconscious in the intensive care unit. The patient has a card of a patient with diabetes mellitus. Insulin not found. Breathing is noisy, Kussmaul like, the smell of acetone from the mouth, the skin is dry, the turgor is lowered, facial features are sharpened, periosteal reflexes are absent, the tone of the eyeballs is lowered. In the blood, the content of lactic acid is 1.2 mMol / L (norm 0.62-1.3 mMol / L), glycemia is 29 mMol / L. Who can be suspected of?
A Hyperosmolar
B Brain
C Cathodic
DHypochloric
E Lactatedemic

4.A patient 49 years old was taken to the hospital in an unconscious state. Skin, yellow sclera. Ascites The edge of the liver is compacted, +4 cm, the spleen +2 cm. Deep noisy breathing, BD - 20 / min. with a fruit smell from the mouth. The tongue is dry. 5.Eyeballs are palpated soft. According to relatives, the patient abuses alcohol. Recently, the patient felt thirsty, there were a lot and empty urine, lost weight by 5 kg. 3 days ago the amount of urine decreased, there was nausea, vomiting. In urine analysis, the density is 1,032, the acid reaction, a positive reaction to acetone. Your previous diagnosis?
A liver coma.
B Ketoacidtic coma.
C Uremic Coma.
D Cerebral coma.
E Alcoholic Coma.

6.Patient M., 28 years old, suffers from diabetes mellitus for 3 years. It receives 54 IU insulin overnight. After a ten days postponement of the sore throat, the condition worsened. Increased general weakness, increased thirst, appeared, nausea, vomiting, drowsiness, fatigue. Hospitalized. At inspection: In an unconscious state, breathing is liquid and noisy, the smell of acetone from the mouth. Skin, tongue dry, skin turgor is lowered. Pulse 114 per minute, small, AT 85/50 mm Hg The lower edge of the liver is 3 cm below the costal arch. Blood glucose is 32 mMol / L. The reaction to acetone is abruptly positive. Which of the following measures should you start treatment for?
A Rehydration therapy
B Correction of electrolyte balance
C Warning of iatrogenic hypoglycemia

D Recovery of acid-base balance
E Prevention of infectious complications

6. Patient D., 40 years old. 2 months after the surgical treatment for diffuse toxic goiter complains of chilliness, drowsiness, apathy, decreased appetite, constipation. Objectively: the skin to the touch is dry, cold, pale, the face is somewhat puffy, dense lips swelling. The thyroid gland is not palpable, the heart sounds are muffled. Pulse - 53 per minute, blood pressure - 100/65 mm Hg.
What is the cause of this condition of the patient?
A Hypoparathyroidism
B Heart failure
C Recurrence of toxic goiter
D Nephrotic syndrome
E with hypothyroidism

7. A patient of 45 years, 2 months after the subacute thyroiditis transferred, complained of progressive general and muscular weakness, fatigue, chilliness, drowsiness, weight gain against the face and limb edema, constipation, dry skin, hair loss. The GCS was treated. On examination: the patient is flaccid, adynamic, the skin has a pale yellow color, a cold color. The face is puffy, the eyelids are swollen, the lips are thickened. Body temperature 35,8 ° C. Pulse 58 per minute. An. Blood total: Hb 100 g / l, Er - 3,5 * 1012 / l, L - 3,5 * 109 / l, ESR 25 mm / hour. The blood levels of thyrotropin are increased, and T3 and T4 are reduced. Your diagnosis?
A DM
B Primary hypothyroidism
C Central hypothyroidism
D Autoimmune thyroiditis
E Adverse effects of medication

8. Patient 40, operated for a pituitary tumor. Complains of adynamia, drowsiness, constipation, decreased blood pressure, pain in the heart, amenorrhea. Blood content of T4 free. - 3, 3nMol / l (norm 11, 8 -24, 6 nmol / l), TTG - 0.3 mIU / l.b What hypothyroidism can there be?
A. Initial
B. Central
C. Peripheral
D. Transit
E. Postoperative

9. Patient D., 40 years old. 2 months after the surgical treatment for diffuse non-toxic goiter complains of chilliness, drowsiness, constipation. Objectively: the skin feels pale, the face is puffy. The sonority of heart sounds is low. Pulse - 56 minutes per minute, blood pressure - 100/65 mm Hg.
What caused this condition of the patient?
A Hypoparathyroidism
B Heart failure
C Relapse of toxic goiter
D Nephrotic syndrome
E hypothyroidism

10. The patient N., 55 years old, complained of an enlargement of the thyroid gland, was observed during the last two years. Objectively: signs of hypothyroidism, palpation of the thyroid gland is densified. Regional lymph nodes are not enlarged. In the serum of the patient, a high titer of antibodies to thyroid peroxidase. Indicate the preliminary diagnosis.
A Autoimmune thyroiditis. Hypothyroidism
B Diffuse goiter. Hypothyroidism
C Endemic goiter. Hypothyroidism
D Chronic thyroiditis. Hypothyroidism

E Primary hypothyroidism

IV. Individual tasks for students on the topic of the lesson:

Variant 1.

Task 1.

Fill in the table classification of goiter, hypothyroidism, thyroiditis.

Categories	Classification features
Goiter	
Goiter Diffuse	
Goiter non-toxic	
Goiter nodal	
Goiter endemic	
Hypothyroidism	
Hypothyroidism subclinical	
Hypothyroidism postprocedural	
Hypothyroidism compensated	
Thyroiditis autoimmune	
Thyroiditis chronic	
Thyroiditis postpartum	
Thyroiditis subacute	
Thyroiditis acute	

Task 2.

Complete the table of the main symptoms or clinical signs of organ and system damage in hypothyroidism.

Organ / system	Signs of damage to organs / systems
Cardiovascular	
Digestion	
Hemorrhage	
Musculoskeletal	
Reproductive	
Nervous	
Endocrine	
Skin	

Task 3.

List the main directions of non-drug therapy:

- _____
- _____
- _____
- _____
- _____

Task 4.

Fill the table. Preparations for the treatment of goiter, hypothyroidism, thyroiditis.

Preparations	Purpose of treatment

Task 5.
Fill in the table of differentiated treatment of patients with goitre, hypothyroidism, thyroiditis.

Preparation	Mode of administration, dose	Indication
Iodides		
L-thyroxine		
Glucocorticoids		
Non-steroidal anti-inflammatory drugs		
Anti-anemic drugs		
Means for strengthening intestinal motility		

Variant 2.

Task 1.
Fill in the classification table for acute and chronic complications of diabetes mellitus.

Category	**Classification characteristics**
Ketonuria	
Diabetic precomal	
Diabetic coma	
Hypoglycemic condition	
Lactate acydosis	
Hyperosmolar Coma	
Rehydration therapy	
Method of small doses of insulin	
Glucagon hump	
Diabetic microangiopathy	
Diabetic neuropathy	
Peripheral sensory-motor polyneuropathy	
Diabetic autonomic neuropathy of the heart	
Diabetic gastroenteropathy	
Vegetative neuropathy of the excretory organs and reproductive system	
Diabetic maculopathy	
Diabetic neuropathy	

Albuminuria	
Chronic diabetic kidney disease	
Non-alcoholic fatty liver dystrophy	

Task 2.
Fill in the table of main symptoms or clinical signs of lesions of organs and systems with acute and chronic complications of diabetes mellitus.

Organ/system	**Signs of lesions of organs and systems**
Cardiovascular system	
Peripheral nervous system	
Central nervous system	
Vegetative nervous system	
Kidney	
Liver	
Eyes	
Lower limbs	
Reproductive system	
Skin	
Musculoskeletal system	

Task 3.
Fill in the table of mandatory laboratory tests for a patient with diabetes mellitus with acute and chronic complications.

Method	Aim
Daily monitoring of glycemia	
Monitoring of glycosylated hemoglobin	
Determination of ketonuria	
Liver tests	
Kidney tests	
Calculation of velocity of glomerular filtration	
BMI calculation	
Definition of albuminuria	
Sonography of the kidneys	
Sonography and elastography of the liver	

Ophthalmoscopy	
Definition of all types of sensitivity	
Electrocardiography and cardiotyping	
Holter monitoring of ECG and AT	
Doplerometry of the vessels of the lower extremities with the calculation of the bone and shoulder index	
X-ray of bones and affected joints	
MRI of the spine, joints	
Densitometry of bones	

Task 4.

List the main directions of non-pharmacological treatment of chronic complications of diabetes.

- _____
- _____
- _____

Task 5.

Fill in the table. Optimal combinations of drugs in the treatment of acute and chronic complications of diabetes.

Group drug	Combination with other groups of drugs

Recommended reading list:

Basic:

1. Davidson's "Principles of Practice of Medicine" 20th edition 2021, Elsevier limited.
2. Harrison's "Principles of internal medicine" Volume 1,2, 2020, USA. - Cardiology
3. Williams Textbook of Endocrinology by Shlomo Melmed; Ronald Koenig; Clifford Rosen; Richard Auchus; Allison Goldfine , 2019.
4. Greenspan's Basic and Clinical Endocrinology, Tenth Edition by David Gardner; Dolores Shoback, 2018

Additional:

1.https://www.asn online.org/education/training/fellows/educationalresources.aspx#Guidelines
2. American Association of Clinical Endocrinologists and American College of Endocrinology - Clinical Practice Guidelines for Developing a Diabetes Mellitus Comprehensive Care Plan - © 2019

Topic 4. Thyroiditis. Thyrotoxicosis syndrome : clinical forms. Grave`s disease: treatment, complications. Hypothyroidism. Adrenal gland disease. Chronic adrenal insufficiency. Acute adrenal insufficiency.

Purpose: to explain the essence of the thyroiditis, thyrotoxicosis, hypothyroidism, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention.

Key words: thyroiditis, thyrotoxicosis, hypothyroidism, adrenal diseases process.

Plan:

I. Theoretical questions for the lesson:

1. https://www.endocrinepractice.org/article/S1530-891X(20)43030-7/fulltext
2. https://www.endocrine.org/topics/thyroid-disorders-and-cancer
3.Davidson's "Principles of Practice of Medicine" 23rd edition, 2018
4. Harrison's "Principles of internal medicine", 19th edition, 2019.

Questions for self-control:

1) Determination of thyrotoxicosis, hypothyroidism
2) Epidemiology of HT and T in the world
3) Risk factors for HT and T
4) The mechanism of hormonal and metabolic disorders in HT and T
5) Etiology and pathogenesis of HT and T
6) Clinical presentation of HT and T
7) Typical clinical presentation of HT
8) Multiple organ complications of HT
9) Diagnostic criteria for HT and T
10) The indications for use and analysis of results of hormonal assays
11) Peculiarities of anatomy and physiology of endocrine system
12) Anamnesis of endocrine patients
13) Objective investigation
14) Methods of instrumental and laboratory diagnosis
15) Differential diagnosis of chronic insufficiency of adrenal cortex
16) Treatment of chronic insufficiency of adrenal cortex

Approximate tasks for the study of theoretical material:

Make a dictionary of basic concepts on the topic:

Term	Definition
Thyrotoxicosis	
Toxic goiter	
Thyrotoxic crisis	
Thyroxine	
triiodothyronine	
Antibodies to thyrotropin receptors	
thionamides	
osteoporosis	
Hypocalcemic Crises	
17-hydroxyprogesterone	
Isenko-Cushing syndrome	
Conn syndrome	

II. Practical work (tasks) that will be performed in class:

1.The 45-year-old patient, after suffering from subacute de Kerven's thyroiditis, complained of progressive general and muscular weakness, fatigue, chills, drowsiness, weight gain on the background of swelling of the face and extremities, constipation, dry skin, hair loss. On examination: the patient is lethargic, adynamic, the skin has a pale yellowish tinge, cold. The face is puffy, the eyelids are swollen, the lips are thickened. Body temperature 35.8 ° C. PS 58 per minute.

An. blood total: Hb 100g / l, Er-3,5 * 1012 / l, L -3,5 * 109 / l, ESR 25 mm / h. The content of thyrotropin in the blood is increased, and T3 and T4 are reduced
1.What is the most likely diagnosis?
2.Plan of investigations?
3.Treatment plan?

2. Patient M., 32 years old, complains of muscle weakness, periodic cramps, attacks of severe general weakness, polyuria, nocturia, elevated blood pressure. Ill for 8 months. Heart tones are muted, accent II tone over the aorta, blood pressure - 170/100 mm Hg. Art., has no edema. In the blood: potassium - 3.0 mmol / l, glucose - 5.3 mmol / l. In the general analysis of urine: alkaline reaction of urine, protein - 0,066 g / l L - 3-5 in p.z. Hypoisostenuria is determined.
1.What pathogenetic mechanisms underlie cardiovascular dysfunction system in the patient?
2 Complications of this condition?
3.Pathogenetic treatment?

III. Test tasks for self-control:
1. At the patient of 30 years after the transferred or carried influenza constantly there is a delicacy, irritability, a sweating. The patient lost weight, appeared tremor, palpitations, exophthalmos. On examination: skin moist, exophthalmos, pulse - 120 in 1 min., Thyroid gland enlarged, soft, painless. Blood TSH - 0.2 mIU / l (N - 0.4-4 mIU / l). Your diagnosis?
A Endemic goiter
B Dysfunctional goiter
C Autoimmune thyroiditis
D Diffuse nontoxic goiter
E Thyroid cancer

2. In the first hours after subtotal resection of the thyroid in connection with a toxic goiter, the patient developed a marked mental and motor arousal. A sharp hyperemia of the face, neck, upper and lower extremities. t body - 40-41 ° C, increased sweating. Tachycardia is rapidly increasing, in 140-200 per minute, atrial fibrillation. What complication develops in the patient?
A Asphyxiation
B Anaphylaxis Shock
C Hypoparathyroidism
D Myocardial infarction
E throotoxic crisis

3. A 37-year-old woman is treated in a hospital due to thyrotoxicosis of a severe course, goiter 2, endocrine ophthalmopathy. takes Mercazolil in a dose of 60 mg / day. For 3 weeks of treatment, a feeling of zdushuvannya in the throat began to disturb. What is the possible cause of worsening of the patient's condition?
A Neurotic condition
B allergy to Mercazolil
C Medication hypothyroidism
D Ineffective treatment with Mercazolil
E goiter due to Mercazolilum

4. The patient is 40 years old, has an autoimmune thyroiditis, frequent ventricular extrasystoles have appeared. The doctor appointed amiodarone for a long time. What laboratory indicators are monitored once a year in a patient?
A complete blood count
B Ionogram
C Level of thyroid hormones
D Concentration of thyroid antibodies
E Level of uric acid in blood plasma

5. A woman, 32 years old, asked about an increase in the thyroid gland. With anamnesis it is known that during the accident at the Chernobyl NPP was in the zone of increased radioactive fallout. The enlargement of the thyroid gland marks within 1 year, it gradually progresses. Objectively: thyroid enlarged to 2 in. In it a dense knot is palpated, sedentary, painless. Submandibular lymph nodes are enlarged, painful. At US in thyroid gland the hypoechoic formation without precise borders with kaltsinatami is revealed. Blood pressure 120/70 mm Hg Pulse 78 in min.
Based on the data given, the patient can be suspected
A Thyroid cancer
B Diffuse nontoxic goiter
C Thyroid adenoma
D Pidgestriroiditis
E phylactic goiter

6. Patient S., 52 years old, delivered urgently to the clinic with complaints of severe weakness, dizziness, weight loss, lack of appetite, nausea, vomiting, severe pain in the epigastric region, diarrhea, increased pigmentation of the skin. The most likely diagnosis?
A Pellagra
B Addison's crisis
C Meningoencephalitis
D Acute gastroenteritis
E Scleroderma

7. A 47-year-old patient is on a survey due to frequent episodes of an increase in blood pressure to 280/140 mm Hg. In the last few months. Family history of hypertension is negative. In the morning he complains about an intense headache, palpitation, anxiety. AO 300/160 mm Hg, heart rate - 128 in 1 min. Previously, under similar conditions, hyperglycemia, leukocytosis were registered, after the quenching the crisis, pronounced polyuria was noted. Choose a class of drugs to eliminate this hypertensive crisis:
A α-blockers
B β-blockers
C antagonists of calcium
D ACE inhibitors
E Diuretics

8. At the 38-year-old woman after quarrel there was a giddiness, delicacy. In the history of anorexia, weight loss, nausea, diarrhea. Hypotension 50/30 mm Hg In an upright position. Pulse 110 in min., Small, rhythmic. Blood glucose - 3.3 mmol / l. Hyponatremia. Hyperkalemia. Hyperpigmentation of the skin. Excretion17-ACS with urine reduced. Preliminary diagnosis:
A Hidden internal bleeding
B pregnancy, hypotension
C Vegetative-vascular dystonia, hypotonic type
D Collapse with adrenal insufficiency
E Diabetes mellitus, hypoglycemia

9. Define an endocrine disease, always accompanied by a decrease in body weight:
A Insuloma
B Hyperparathyroidism
C Hypothyroidism
D Addison's Disease
E Type 2 diabetes mellitus

10. Patient 40, with primary adrenal insufficiency, constantly takes prednisolone up to 7.5 mg per day. In connection with the exacerbation of pulmonary tuberculosis, reduced the dose of

prednisolone to 5 mg per day. After 2 days the condition worsened, there was a sharp weakness, nausea, vomiting, blood pressure dropped to 80/40 mm Hg. The drug of choice for the treatment of a patient is currently:
A Prednisolone
B Ftivazide
C Dexamethasone
D Hydrocortisone
E Rifampicin

IV. Individual tasks for students on the topic of the lesson:

Variant 1.

Task 1.
Fill in the classification table for thyrotoxicosis.

Categories	Classification features
Thyrotoxicosis	
Thyrotoxicosis subclinical	
Thyrotoxicosis	
manifest	
Thyrotoxicosis complicated	
Diffusetoxic goiter	
Nodal Toxic Goiter	
Toxic adenoma of the thyroid gland	
Iodine-induced thyrotoxicosis	
Pretybial edema	
Ophthalmopathy	
Thyrotoxic crisis	
Thyroid cancer	
Hypercalcemia	
Hypocalcemia	

Task 2.
Fill in the table of the main symptoms or clinical signs of organ and system damage in thyrotoxicosis.

Organ / system	Signs of damage to organs / systems
Cardiovascular	
Digestive	
Musculoskeletal	
Reproductive	
Urinary	
nervous	
endocrine	
eyes	

Task 3.
Fill in the table of laboratory and instrumental examinations of patient thyrotoxicosis.

Method of examination	Purpose of examination
Determination of thyroid hormones	
Determination of thyrotropin concentration	
Determination of the concentration of antibodies to thyrotropin receptors	
The general or common analysis of a blood	
Determination of glycemia and glycated hemoglobin	
Sonography of the thyroid gland	
Energy echodoplerography of the thyroid gland	
MRI of neck and obstruction	
Determination of the concentration of blood parothormone	
Determination of the concentration of calcium and phosphorus	
Radiography of the bones of the skull and tubular bones	
Bonedensitometry	
Determination of vitamin D concentration in blood	
Thyroid scans	

Task 4.
List the main directions of non-drug therapy:
- _____
- _____
- _____
- _____
- _____

Task 5.
Fill in the table of drugs for the treatment of thyrotoxicosis.

The drug	The purpose of appointment

Task 6.
Fill in the table of differential treatment of patients with thyrotoxicosis.

Preparation	Way of administration, dose	Indication
Thionamides		
Iodides		
ß-adrenoblockers		
Glucocorticoids		
Calcium preparations		
Preparations of vitamin D		
L-thyroxine		
Calcium preparations		

Variant 2.

Task 1.
Fill in the table of classification of adrenal insufficiency and hormonally active adrenal tumors.

Categories	Classification features
Primary chronic adrenal insufficiency	
Secondary chronic adrenal insufficiency	
Aldosterome	
Corticosteroma	
Corticoestroma	
Androsteroma	
Ithenko-Cushing syndrome	
Pheochromocytoma	
Chromafinoma	
Congenital dysfunction of the adrenal cortex	
Salt loss syndrome	
Addisonian crisis	

Task 2.
Fill in the table of the main symptoms or clinical signs of damage to organs and systems for chronic adrenal insufficiency and hormone-active tumors of the adrenal glands.

Organ / system	Signs of damage to organs / systems
Cardiovascular	
Digestive	
Hematopoietic	
Skin	
Endocrine	
Reproductive	
Musculoskeletal	

Task 3.
Fill in the table of obligatory laboratory and instrumental examinations of the patient with chronic adrenal insufficiency and hormonal-active tumor of the adrenal glands.

Method of examination	Purpose of examination
Complete blood count	
Glycemia	
Corticotropin	
Cortisol of the blood	
Potassium, sodium blood	
Aldosterone	
renin	
testosterone	
17-Hydroxyprogesterone	
estrogens	
Adrenaline, norepinephrine of blood	
Urine Metanephryls	
Catecholamines of urine	
14 MRI of retroperitoneal organs	

Task 4.
List the main directions of non-drug therapy:

- _____
- _____
- _____
- _____
- _____

Task 5.
Fill the table.
Preparations for the treatment of chronic insufficiency of the adrenal cortex, hormonal-active tumors of the adrenal glands.

The drug	The purpose of treatment

Task 6.
Fill in the table of differentiated treatment of patients with chronic adrenocortical insufficiency, hormone-active tumors of the adrenal glands.

Preparation	Mode of administration, dose	Indications
Cortisone		
Deoxycorticosterone acetate		
Hydrocortisone		
Ascorbic acid		
ß-adrenoblockers		

α-adrenoblockers		
Dexamethasone		
Fludrocortisone		
Glucose		

Recommended reading list:

Basic:

1. Davidson's "Principle of Practice Medicine" 20th edition 2021, Elsevierlimited.
2. Harrison's "Principles of internal medicine" Volume 1,2, 2020, USA. Endocrinology
3. Williams Textbook of Endocrinology by Shlomo Melmed; Ronald Koenig; Clifford Rosen; Richard Auchus; Allison Goldfine , 2019.
4. Greenspan's Basic and Clinical Endocrinology, Tenth Edition by David Gardner; Dolores Shoback, 2017

Additional:

1.https://www.asn online.org/education/training/fellows/educationalresources.aspx#Guidelines
2. American Association of Clinical Endocrinologists and American College of Endocrinology - Clinical Practice Guidelines Comprehensive Care Plan - © 2019

Topic 5. Hormone-active tumors of the adrenal glands: primary hyperaldosteronism (Conn's syndrome). Pheochromocytoma . Androsteroma , cortiesteroma , corticosteroma.Diseases of the hypothalamic-pituitary system: Cushing's disease. Acromegaly. Hypopituitarism , diabetes insipidus. Diseases of the gonads.

Purpose: to explain the essence of the pituitary and hypothalamus diseases, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention.

Key words: pituitary and hypothalamus diseases, Cushing disease, acromegaly, hypopituitarism, diabetes insipidus, pheochromocytoma, androsteroma, corticoestroma, corticosteroma.

Plan

I. Theoretical questions for the lesson:

1. https://www.escardio.org/Guidelines
2. https://professional.heart.org/en/guidelines-and-statements
3. Davidson's "Principles of Practice of Medicine" 23rd edition, 2020
4. Harrison's "Principles of internal medicine", 19th edition, 2021

Questions for self-control:

1) Determination of concept of HPS diseases.
2) Epidemiology of HPS diseases.
3) Risk factors of HPS diseases.
4) Mechanism of hormonal and metabolic disorders at the diseases of HPS.
5) Etiology and pathogenesis of HPS diseases.
6) Classification of HPS diseases.
7) Clinical picture of HPS diseases.
8) Polyorganic complications of HPS diseases.
9) Diagnostic criteria of HPS diseases.
10) Choice of method of treatment of HPS diseases.
11) Treatment of chronic insufficiency of adrenal cortex.

Approximate tasks for the study of theoretical material:

Make a dictionary of basic concepts on the topic:

Term	Definition

Acromegaly	
Growth hormone	
Insulin- growth factor	
liberians	
Statins	
Tropin	
Dopamine agonists	
insufficiency of Growth hormone	
hypopituitarism	
hyperprolactinaemia	
Disease of Itenko-Cushing	
Diabetes insipidus	

II. Practical work (tasks) that will be performed in class:

1. The endocrinologist was urgently called to the urology department to a 46-year-old patient, M., who was admitted with an attack of renal colic. During the instrumental examination the patient lost consciousness. Blood pressure dropped to 40/20 mm Hg. Art. History of long-term (6 years) use of glucocorticoids in connection with rheumatoid arthritis. I stopped taking glucocorticoids 3 days ago. Objectively: inhibited, deaf heart tones, pulse - 100 / min., Weak filling, rhythmic. Lungs and organs of the abdominal cavity without features.

1.What is the most likely diagnosis?

2.Plan of investigations?

3.Treatment plan?

2. To the patient T. with disturbance of a cardial rhythm in cardiological the department is invited to consult an endocrinologist. From the anamnesis it is known that 3 months ago the patient gave birth to a full-term child. In the postpartum period there was heavy bleeding, further general concern weakness, weakness. There is no lactation. Paleness grew, appeared profuse diarrhea. She was hospitalized in the gastroenterology department, where she developed a heart rhythm disorder. During the examination: sick pale, dry skin, yellowish, swollen, cold to the touch. Language sluggish, tongue enlarged. Blood pressure - 60/40 mm Hg., bradycardia, arrhythmia.:

1. What is the most likely diagnosis?

2 Complications of this condition?

3.Pathogenetic treatment?

III. Test tasks for self-control:

1. Patient R., is treated for a septic condition, suddenly there was a significant weakness, adynamia, vomiting, diarrhea. Sopor. Pulse is threadlike, 110 is sutured, blood pressure is 60/40 mm Hg. On the ECG: tachycardia, a decrease in the voltage of all the teeth. Laboratory data: hyponatremia, hypochloraemia, hyperkalemia, hypoglycemia. Indicate the reason for the development of this state:

A Hypothalamic crisis

B Acute adrenal insufficiency

C Hypoglycemic coma

D Pangypopituitarism

E Acute myocardial infarction

2. Patient D., 42 years old, after physical exertion lost consciousness. BP decreased to 40/20 mm Hg. In the anamnesis, a long (5 years) use of glucocorticoids, due to the fact that he has bronchial asthma. In the last 4 days, glucocorticoids do not take. Objectively: inhibited, skin of normal color, normal humidity, heart sounds deaf, heart rate 100 per minute., Weak filling, rhythmic. The level of

glucose in the blood is 3.0 mmol / l, sodium - 117 mmol / l, potassium - 6.0 mmol / l. Establish a preliminary diagnosis.
A Cardiogenic shock
B Adrenal crisis
C Acute adrenal insufficiency
D Hypovolemic shock
E Hypoglycemic coma

3. Patient K., 29, with satisfactorily compensated type 1 diabetes mellitus, developed frequent hypoglycemia, nausea, intestinal disorders, hyperpigmentation of the skin (bronze color), blood pressure - 70/50 mm Hg, Hb 100 g / l . What can cause a decrease in pressure?
A Chronic adrenal insufficiency
B Diabetic enteropathy
C Diabetic gastropathy
D Overdose of antidiabetic drugs
E Development of diabetes insipidus

4. Patient V., 18 years old, was taken to the hospital by an ambulance car without consciousness. From additional studies: increased potassium levels in the serum up to 8 mmol / l, the level of cortisol - 18 μg in 100 ml of plasma. On the ECG - high pointed tars T. At CT - signs of calcification of the adrenal glands. What is the most likely diagnosis?
A Insufficiency of the adrenal cortex
B Hyperosmolar coma
C Hyperlactacidemic coma
D Thyrotoxic crisis
E Hypoglycemic coma

5. The patient is 43, taken in serious condition. According to the man, he is sick with Addison's disease. Constantly took 5 mg of prednisolone. During the week the drug did not take, as there was pain in the stomach, appetite worsened, yesterday did not eat due to nausea and vomiting. Patient in a co-morbid state. Skin and mucous hyperpigmented. Turgor of the skin and muscles is reduced. Heart tones are muffled, accelerated, blood pressure is 60/40 mm Hg, heart rate is 96 / min. Sodium blood - 130 mmol / l, potassium - 5.5 mmol / l. What hormone deficiency plays a leading role in the development of complications?
A aldosterone
B Corticotropin (ACTH)
C Adrenaline
D Norepinephrine
E Cortisol

6. A 15-year-old patient complains of excessive body weight, headache, irritability, fatigue. A significant increase in body weight occurred at the age of 14 years. Body weight - 90 kg, height 160 cm, the correct constitution. The distribution of fatty tissue is uniform. On the hips, abdomen and mammary glands are pink thin striae. AO - 145/90 mm Hg.
Your diagnosis?
A Vegetosovascular dystonia
B Alimentary-constitutional obesity
C Pubertal-youthful dyspituitarism
D Itenko-Cushing's disease
E Syndrome Itenko-Cushing

7. A 37-year-old patient turned to a doctor about overweight with the goal of losing weight. Objectively: height 160 cm, weight 125 kg. The distribution of fatty tissue is uniform. Which method of treatment will be most appropriate?

A Drug therapy
B Subconscious diet
C Subcultural diet and exercise
D bariatric surgery
E Psychotherapeutic correction of eating behavior

8. Patient S., 28 years of age, complained about the lack of sexual development, decreased potency, and infertility. Objectively: body proportions are eunuchoid, height 185 cm, weight 75 kg, gynecomastia. The external genitalia are formed correctly, in size correspond to the age. Eggs are reduced in size, compacted. Genital chromatin 32%. Karyotype 47XXY / 46XY. Possible diagnosis?
A "Clean" gonadal dysgenesis
B Klinefelter's Syndrome
C Shereshevsky-Turner Syndrome
D Initial hypogonadism
E Meyer-Rokytansky-Kyustner Syndrome

9. Patient V., 20 years old, was sent to the military registration and enlistment office for ascertaining his sex. At birth, the floor was defined as male. Objectively: height 174 cm, weight 75 kg, body intersexual proportions, mammary glands developed, sexual haemorrhage by female type, high voice, regular bloody discharge from age 15, external genitalia represented by penile 5 cm, urethra opens at scrotum, which is satisfactory Is developed, in the left part of it the testicle is palpated up to 2.5 cm. With ultrasound examination of the pelvic organs, a unicorn uterus with an ovary has been found. Karyotype of 46XY / 46XX. Possible diagnosis?
A Initial hypogonadism
B "Clean" gonadal dysgenesis
C Shereshevsky-Turner Syndrome
D Oriental hermaphroditism
E Meyer-Rokytansky-Kyustner Syndrome

10. Patient V., 18 years old, was sent to the military registration and enlistment office for determining fitness for military service. Objectively: the proportions of the male body, height 175 cm, weight 105 kg, obesity, the distribution of adipose tissue is relatively uniform, with predominant fat deposition on the face, abdomen, and extremities, bilateral gynaecomastia is determined, on the skin of the thighs of the shoulders, the abdomen a significant number of pale pink stretch marks . Heart rate is 78 per min., BP - 155/90 mm Hg. Internal organs without changes. The external genitalia are correctly formed, corresponding to the age, on the roentgenogram of the Turkish saddle - without destructive changes. Prolactin, cortisol, LH, FSH, testosterone is within normal limits. What is the cause of obesity in a patient?
A Adiposo-genital dystrophy
B Prolactinoma
C Itzenko-Cushing's disease
D Alimentary-constitutional type
E Hypothalamic syndrome

IV. Individual tasks for students on the topic of the lesson:
Task 1.
Fill in the classification table for diseases of the hypothalamic-pituitary system.

Categories	Clinical features
Acromegaly	
Insufficiency of Growth hormone	
Hypopituitarism	

Hypogonadism	
Menopause syndrome	
Andropenia Syndrome	
Cushing's Disease	
Hyperprolactinemia	
Diabetes insipidus	
Obesity	

Task 2.
Fill in the table of the main symptoms or clinical signs of organ and system damage in diseases of the hypothalamic-pituitary system.

Organ / system	Signs of damage to organs / systems
Musculoskeletal	
Nervous	
Digestive	
Cardiovascular	
Urinary	
Endocrine	
Reproductive	
Skin	

Task 3.
Fill in the table of obligatory laboratory and instrumental examinations of the patient with lesions of the hypothalamic-pituitary system.

Method of examination	Purpose of examination
Definition of somatotropin	
Determination of insulin-growth factor	
Definition of glycemia	
Definition of vasopressin	
Determination of corticotropin	
Determination of gonadotropins	
Determination of cortisol	
Definition of thyrotropin	
Determination of parathyroid hormone	
Determination of calcium, blood phosphorus	
Determination of the nitrogen excretory function of the kidneys	
BloodOsmolarity Study	
Analysis of urine according to Zimnitsky	
Definition of prolactin	
Determination of anti-Muller's hormone	
MRI of the hypothalamic-pituitary region of the brain	
MRI of retroperitoneal organs	
Sonography and MRI of the pelvic organs	

Radiography of bones	
Calculation of BMI	
Calculation of insulin resistance	
Measurement of waist circumference and thighs	
Determination of bone age	

Task 4.
List the main directions of non-drug therapy:
- _____
- _____
- _____
- _____
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Task 5.
Fill the table.
Drugs in the treatment of lesions of the hypothalamic-pituitary system.

Medicine	Purpose of treatment

Task 6.
Fill in the table of differentiated treatment of patients with lesions of the hypothalamic-pituitary system

Medicine	The method of administration, dose	indication
Growth hormone		
Dopamine agonists		
Synthetic analogues of vasopressin		

Recommended reading list:

Basic:

1. Davidson's "Principles of Practice of Medicine" 20th edition 2020, Elsevier limited.
2. Harrison's "Principles of internal medicine" Volume 1,2, 2021, USA. Endocrinology
3. Williams Textbook of Endocrinology by ShlomoMelmed; Ronald Koenig; Clifford Rosen; Richard Auchus; Allison Goldfine , 2019.
4. Greenspan's Basic and Clinical Endocrinology, Tenth Edition by David Gardner; Dolores Shoback, 2018

Additional:

1.https://www.asn online.org/education/training/fellows/educationalresources.aspx#Guidelines
2. American Association of Clinical Endocrinologists and American College of Endocrinology - Clinical Practice Guidelines Comprehensive Care Plan - © 2019