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Department of Internal Medicine No. 3

GUIDELINES FOR PERFORMING INDEPENDENT (EXTRACURRICULAR) WORK) WORKS

on clinical THERAPY

the main professional educational programs of higher education – bachelor's degree programs in the specialty 31.05.01 General Medicine, confirmed 30.03.2022

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Methodological recommendations are intended for extracurricular independent work of students of 5,6 courses (9,10,11,12 semesters) of the Faculty of Medicine FGBOU VO SSMU of the Ministry of Health of the Russian Federation on the discipline " clinical therapy"»

Compilers:
D. Bestaeva. V., MD, Associate Professor, Head of the Department.
Butsaeva Z. S., Associate Professor
Katsoeva S. A., Associate Professor
Dmitrieva L. M., Associate Professor
O. T. Kotsoeva, Associate Professor
Burduli N. N., Associate Professor

Introduction

Chronic heart failure (CHF) is still one of the most common progressive and prognostically unfavorable diseases of the cardiovascular system. Heart failure has become an important medical, social and economic problem. The last decade has been marked by dramatic changes in the views on the pathogenesis and treatment of CHF. The creation of the neurohormonal theory of pathogenesis and the development of this concept to the myocardial model of the pathogenesis of decompensation of cardiac activity led to the main practical conclusions, according to which artificially (with the help of medications) supporting the hyperactivation of neurohormones in CHF, the doctor will be able to slow down the development of changes in target organs and prevent the progression of this disease.
Studying the complexity of the problem, practical doctors, and even more so, students, need to constantly improve their knowledge and skills in this area. This manual is intended for independent preparation of students for practical classes on the topic: "Chronic heart failure".
The methodological development includes six tasks:
1. Introduction to the goals and objectives of the practical lesson;
P. Restoring the baseline values, monitoring the initial level;
Sh. Study of literature on the topic of the lesson, the main provisions of the topic;
1U. Introduction to the practical training plan;
U. Mastering the OOD scheme in practical classes;
U1. Schemes of control application of OOD

TASK 1.
Get acquainted with the goals and objectives of the classes:
Goal: to deepen and improve knowledge and practical skills in the diagnosis, treatment of patients with chronic heart failure, VTE, clinical examination of patients, primary and secondary prevention.
Target tasks:
Student career:
The concept of chronic heart failure syndrome, etiology, classification, pathogenesis, clinic, indications for hospitalization, treatment of chronic heart failure
Student career:
1. During the initial examination of the patient, collect complaints, anamnesis, conduct an external examination and physical examination, and make a preliminary diagnosis of chronic heart failure;
2. Assign special (laboratory and instrumental) studies to clarify the diagnosis and correct their interpretation;
3. Formulate a detailed diagnosis indicating the stage and functional class of CHF;
4. develop an individual treatment plan for the patient
* diet
• physical activity mode
* psychological rehabilitation
* drug therapy
5. Evaluate the effectiveness of the therapy
6. Evaluate medical and social factors and conduct an assessment of working capacity
7. make a chart of dispensary monitoring of patients with CHF

8. It has the properties of prevention (primary and secondary) of CHF.

TASK P. Restoration of basic values, control of the initial level..
You are offered a list of questions for the sufficiency of your basic knowledge.
1. Definition of chronic heart failure
2. Causes of CHF
3. Pathogenesis of CHF
4. Clinical picture of CHF
5. Treatment

You will be able to check your initial level by completing a number of test tasks.

1. What sign is pathogenic for left ventricular failure?
A) swelling of the cervical veins
B) ascites
C) takeaway cookies
D) orthopnea
D) What to do in the room

2. Heart failure is characterized by all the symptoms characteristic of chronic:
A) increase in the size of the heart
B) the rhythm of the gallop
C) the rhythm of the quail
D) pendulum-like rhythm
E) reduced rhythm

3. Which of the following does not correspond to the signs of right ventricular failure?
A) takeaway cookies
B) reduction of venous pressure
C) slowing down the speed of blood flow
D) cyanosis
D) edema

4. Diagnosis of chronic heart failure N B st. at
A) severe shortness of breath. occurs in the presence of orthopnea, attacks of suffocation;
B) with repeated attacks of cardiac asthma; with post-traumatic peripheral edema, the presence of abdominal edema
C) severe subjective disorders that occur with minimal exercise or at rest, episodes of cardiac asthma that are unbearable for a week, dystrophic changes in organs and tissues

5. Which parameter is the first to respond to the functional inferiority of the left ventricle?
A) peripheral vascular resistance
B) the level of "jamming" pressure in the pulmonary artery
C) radiological signs of stagnation
D) all of the above

6. Which of the listed drugs, according to modern data, greatly prolong the life of a patient with CHF:
A) cardiac glycosides;
C) antagonists;
C) diuretics;
D) ACE inhibitors

7. What is a contraindication for the appointment of betblokatorov?
A) sinus tachycardia
B) ventricular tachycardia
C) paroxysmal supraventricular tachycardia
D) obstructive bronchitis
E) arterial hypertension

8. The diagnosis of heart failure 2 FC is made when:
A) when signs of SN appear when walking quickly on a flat place or when climbing a steep slope
B) the appearance of symptoms of HF with moderate exercise (back pain) with other people of their age on an even place at the usual pace)
C) the appearance of signs of SN with minor loads that make you stop when walking on a flat place at a normal pace or with an unprecedented rise of one floor).

If you find it difficult to answer, study the following literature:
1. Makolkin V. I., Ovcharenko S. I. Internal diseases. Moscow.: Meditsina, 1987.
2. Smetnev A. S. Eto Kuk.G. . Internal diseases. Moscow.: Medicine, 1981.
3. Vasilenko. Propaedeutics of internal diseases.

TASK Sh. Study of literature on the topic of the lesson. The main provisions of the topic. Read the following literature on the topic of the lesson:
BASIC
1. Bokarev I. N., Smolensky V. S. Internal diseases. Differential diagnosis and therapy. - M.: type.: Publishing House of ROE, 1996.
2. Pomerantsev V. P., Tskipuri Yu. I. Fundamentals of rational diagnosis and treatment in the clinic of internal diseases. - Tula, 1992.
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1. Diagnosis and treatment of internal diseases (A guide for doctors in 3 volumes).Under the editorship of N. F. I. Komarov. - M.: tip.: Meditsina, 1991-92.
2. Internal diseases / Edited by N. E. Braunwald et al. It's in 10 books. Trans. from English-M.: type: Medicine, 1993-97.
3. Diseases of the heart and blood vessels / / Manual in 4 tt.Edited by N. E. I. Chazov. - M.: tip.: Meditsina, 1992-93.
4. Metelitsa V. I. Handbook of clinical pharmacology of cardiovascular drugs. - Moscow: type.: Izd-vo Medpraktika, 1996.
5. Lepakhin V. K., Belousov Y. B. Moiseev V. S. Clinical pharmacology and pharmacotherapy. - Moscow: type.: Universum, 1993.
6. Shevchenko N. M. Rational cardiology. Reference guide. Moscow: publishing house "start", 1997.

MAIN PROVISIONS OF THE TOPIC

Heart failure (HF) is a condition in which the heart is unable to provide adequate blood flow to organs and tissues, despite normal venous flow.
Currently, CHF is considered as a syndrome that develops as a result of various pathological changes in the heart, disorders of neuroendocrine regulation and is a complex of circulatory reactions as a result of systolic or diastolic cardiac dysfunction.
THE MAIN CAUSES OF CHRONIC CIRCULATORY FAILURE
According to Mukharyamov (1978)
1. Heart muscle damage, myocardial insufficiency
* Primary (myocarditis, dilated cardiomyopathy)
* Secondary (atherosclerotic and post-infarction cardiosclerosis, hypo or hyperthyroidism, heart damage in DBST, toxic-allergic myocardial damage)
2. Hemodynamic overload of the heart muscle
• Under pressure (stenosis of the mitral valve, tricuspid, aortic and pulmonary artery mouths, hypertension of the small or large circulatory circle)
• Obm (valve insufficiency, intracardiac shunts)
• Combined
3. violation of diastolic filling:
* adhesive pericarditis
* restrictive cardiomyopathies
* hypertrophic cardiomyopathy
* severe myocardial hypertrophy
* amyloidosis of the heart
* sarcoidosis of the heart

Items 1-2 contribute to the development of systolic insufficiency in the patient, item 3 – diastolic. The division into systolic and diastolic CH is conditional, although in most cases there is a mixed form of CH.
Systolic heart failure is characterized by a decrease in the contractility of the myocardium, UO, MO, and EF by less than 40%, dilation of the heart cavities, and increased OPSS.

This methodological development is devoted to the peculiarities of the work of the district therapist with patients of different population groups: adolescents, elderly patients, pregnant women with somatic pathology

Methodological development includes the following tasks:
I. Introduction to the purpose and objectives of the practical lesson
II. Restoration of basic knowledge, control of the initial level
III. Study of the literature on the topic of the lesson, the main provisions of the topic
IV. Introduction to the practical lesson plan

Task I
This lesson aims to improve the theoretical knowledge and practical skills when working with patients of different population groups in the polyclinic of students of the 6th year of the Faculty of Medicine

Target tasks:
The student should know:
* The role and tasks of the district therapist in monitoring the health of adolescents
* Features of the course and treatment of somatic diseases in the elderly and senile age
* Features of somatic pathology in pregnancy

The student must be able to:
• In a limited time, conduct a qualitative examination of the patient, determine the diagnosis and prescribe treatment, taking into account the peculiarities of working with different groups of patients

Task II.
The list of questions to check the initial level of knowledge:
1. Physiological features of adolescence, norm and pathology.
2. Age gradation
3. Changes in the cardiovascular system in elderly patients
4. Somatic health of a pregnant woman

Task III

Literature on the topic of the lesson:

1. Polyclinic therapy: A textbook for students. Higher. Educational institutions / B. Ya. Bart, V. F. Benevskaya, S. S. Solovyov, etc. ; Edited by B. Ya. Barta. - M..: Publishing Center "Academy", 2005 – - 544 p.

2. Handbook of the district therapist. - M.: Eksmo, 2007 – - 896 p.
3. Handbook of diagnosis and treatment of diseases in the elderly /Ed..The butler,, L..B..Lazebnika. - M.: OOO "Publishing House New Wave":: ZAO "Publishing House ONYX" 2000. - 543 p.

O S N O V N S E P O L O W E N I I T E M S

The role and tasks of the district therapist for monitoring the health of adolescents.
Adolescents represent the closest reproductive, intellectual, economic, social and cultural reserve of society.
Adolescence, according to WHO experts, covers the period of life from 10 to 17 years inclusive. In our country, age periodization based on social principles has become widespread: pre – school age – up to 3 years, preschool - 3 – 7(6) years, school (junior – 7 – 10 years, middle – 11-14 years), adolescent – 15-17 years inclusive.
At the adolescent stage, the formation of morphological, physiological and mental functions that significantly distinguish a teenager from children and adults is completed. This period in the process of maturation of the body is a turning point. There is an intensive growth and increase in body size, growth and differentiation of organs and tissues.
One of the most important features of adolescence is the activity of the endocrine system. These are the central glands (hypothalamus and pituitary gland) and peripheral (thyroid, adrenal cortex, testes in boys and ovaries in girls). The production of pituitary growth hormone increases from the age of 10, reaching a maximum level by 12-14 years. It is with these that the maximum growth jump in adolescents is associated. Further, the production of this hormone gradually decreases, which is associated with an increase in the activity of sex hormones. At the adolescent stage, due to accelerated development, the normal intra-secretory activity of the thyroid gland, which doubles its mass during this period, is of great importance. The increased need for thyroid hormones in adolescence often leads to an increase in its size, the development of juvenile struma (especially in girls).
The activity of the heart and blood vessels in adolescence also has its own characteristics. During this period, there is an intense growth of the heart in length and width. The volume of cavities increases. The growth of the arterial system lags behind the growth rate of the heart. Features of the growth and development of the heart are largely determined by the gender and age of adolescents. The rapid increase in heart volume in girls, which is observed in 10-15 years, ends earlier than in boys (16 years). In young men, the growth of the heart is less rapid and continues until the age of 17-18. With age, the heart rate decreases, amounting to 68-75 per minute in 15-18 years against 80-85 in 8-11 years and 75-80 in 12-14 years. The level of blood pressure is in a certain dependence on age, gender, indicators of physical development, etc. The onset of puberty is a powerful factor affecting blood pressure levels.
In adolescence, the development of the respiratory system continues. Due to the intensive development of the chest, respiratory muscles, the growth of zones and segments of the lungs, the volume, pulmonary ventilation, and vital capacity of the lungs significantly increase. BDD by 17-18 years corresponds to that in adults, sexual differences in the type of breathing are established: in boys – abdominal, in girls – thoracic. This age is characterized by low resistance to hypoxia.

In adolescence, the structural and functional development of the digestive system is completed. The peculiarities of the digestive system in adolescents cause its high vulnerability with prolonged emotional and physical stress, violation of the diet, work, and rest, which contributes to an increase in the frequency of gastrointestinal pathology.
The nervous system, functioning in an indissoluble connection with the endocrine system, differs significantly from adults in adolescence. The peculiarities of the nervous system of adolescents lead to the peculiarity of motor and mental activity. Motor skills of adolescents can be characterized by impetuous movements, increased motor activity, a tendency to overcome obstacles in the absence of sufficient caution in assessing their strength and capabilities. Adolescents are characterized by increased emotional excitability, reactivity, manifested in mental instability, sudden mood changes, transitions from exaltation to depression and back, an increase in general excitement and a weakening of all types of inhibition. This age period is considered critical, presenting special difficulties for both the teenager and the caregivers.
The main problems of adolescence are recognized by WHO experts: socio-economic deprivation, unemployment or underemployment, alcohol abuse, drug addiction, smoking, accidents, suicide, sexual problems, mental disorders, mental retardation.
In our country, a number of other social and medical problems are added to them: poor quality and diet, abnormalities in growth and development, disorders of the function and diseases of the musculoskeletal system (posture disorders, flat feet, scoliosis, etc.), iron deficiency anemia, depression, dental diseases, gynecological problems, etc.
In the Russian Federation, monitoring of adolescents is carried out in the adolescent office of the polyclinic, which is usually organized as part of the therapeutic department. For 25,000 people, the rate of a teenage GP is 0.25 (1,500 teenagers) and the rate of a nurse is 1.0. In order to improve the dispensary monitoring of adolescents in a number of republics and regions of the Russian Federation at large multidisciplinary hospitals, adolescent departments or independent medical and preventive institutions-polyclinics, working on the principle of a multidisciplinary dispensary, which monitor all adolescents – sick, healthy.
Features of the course and treatment of somatic diseases in the elderly and senile age.

In the structure of the population of developed countries, the share of elderly and senile people is constantly increasing. The number of requests for medical care among the elderly is twice as high as in the population on average. Currently, about half of the patients who go to a therapist in a polyclinic are elderly and senile people.
According to the WHO classification, the age group of older persons is as follows:
 60 to 74 years old-elderly
 75 to 89-senile
 90 years and older-centenarians
In today's developed society, longevity becomes the norm of life
Aging and the accumulation of diseases are parallel processes. Aging is considered as a destructive process that develops as a result of the increasing damaging effects of exogenous and endogenous factors with age, leading to a lack of physiological functions of the body. Aging is associated with changes occurring at all levels of organized living matter-molecular, subcellular, cellular, systemic, and whole organism.
There are different types of aging according to the rate of onset: natural, premature and delayed. Changes in neurohumoral regulation are of leading importance in the mechanism of aging of the body. Many of the main manifestations of aging – changes in

the psyche, emotional sphere, muscle performance, coordination of movements, reproductive ability, changes in the reactions of the main vegetative systems of the body (blood circulation, respiration, etc.), shifts in the level of hormonal regulation are a direct consequence of neurohumoral control.

From a physiological point of view, aging is the depletion of the adaptive capabilities of the body. Age-related changes begin after the age of 20 and gradually progress, but their speed and severity differ both in different organs and tissues of one person and in different people, and nutrition, environment and habits affect them no less than heredity.

The modern elderly patient is a clinical and psychological phenomenon in terms of the presence and combination of various pathologies occurring against the background of involutional changes.

The main features of elderly and senile patients are:

* The presence of involutional functional and morphological changes on the part of various organs and systems
* Frequent presence of two or more diseases in the same patient (polymorbidity)
* Mainly chronic course of diseases
* Atypical clinical manifestations of diseases
* The presence of "senile" diseases
* Change in socio-psychological status

Changes in the structure and metabolism of tissues that occur as the body ages inevitably affect the function of a number of organs and systems to some extent. It is known that with age, there is a narrowing of the vital capacity of the lungs, bronchial patency, cardiac output, glomerular filtration. In the elderly, elimination processes are limited. It tends to increase the ESR.

As you age, there is a relative increase in the mass of fat and a decrease in the mass of muscle tissue, including a decrease in the mass of the respiratory muscles (diaphragm), which can be one of the factors for the development of respiratory failure and a decrease in the vital capacity of the lungs with age.

These and a number of other age-related involutional changes on the part of various organs and systems can be mistakenly regarded as a manifestation of a certain pathology.

The morphological and functional changes of organs and tissues occurring with age (decrease in hormonal activity, decrease in bone mass, clouding of the lens, deposition of amyloid in the heart, blood vessels, osteoporosis, benign prostatic hyperplasia, senile dementia, etc.) are interpreted as manifestations of age-related physiology and are the basis of the so-called "senile diseases", which are observed along with diseases occurring in all age groups (arterial hypertension, peptic ulcer disease, pneumonia, etc.).

In the process of aging, changes in the digestive system are noted. Due to atrophy of the esophageal mucosa with a decrease in the number of secretory cells, a decrease in the number of muscle cells, a decrease in the tone of the walls and sphincters develops (hypomotor dyskinesia) and in some cases – esophagospasm.

As a result of the reduction in the area of the capillary bed, a tendency to hypoxia develops. There is atrophy of the nervous system, degeneration of nerve fibers. In the composition of gastric juice, the content of acidic components decreases. There is an external secretory insufficiency of the pancreas. Due to a violation of the concentration function of the gallbladder, the lithogenic properties of bile increase.

With increasing age, the weight of the liver decreases, steatosis is observed, a decrease in its glycogen-forming, antitoxic function and a decrease in the activity of microsomal oxidation.

In the intestine, parietal digestion and absorption of food components are disrupted, and the motor function of the large intestine is weakened.

Elderly and senile patients are characterized by polymorbidity, i.e. the presence of two or more diseases in most of them. In conditions of polymorbidity, a complex interweaving of many symptoms occurs, their usual diagnostic value may decrease, and at the same time, various manifestations of diseases potentiate each other, increasing clinical symptoms (moderate anemia in an elderly patient with concomitant coronary heart disease may weigh down the functional class of angina or cause clinical manifestations of heart failure). Due to polymorbidity, individual symptoms may correspond to not one, but many diseases. In addition, the development of a disease often causes the elderly to decompensate concomitant pathology (decompensation of diabetes mellitus with pneumonia or injuries, etc.). An equally important clinical problem of geriatrics is the difficulty of diagnosis due to the peculiarities of the course of the disease in the elderly. Often, such acute diseases as pneumonia, pyelonephritis, appendicitis, sepsis, abscesses of various localization occur with erased manifestations or manifest various nonspecific symptoms. As a result, the main symptoms of these diseases in elderly patients are not pain and fever, but agitation, anxiety, confusion or weakness.

One of the features of the period of old age and senility, both in relatively healthy and sick people, is the onset of socio-psychological maladaptation. The change in the social status of an elderly person is associated with various factors, including retirement, the loss of close relatives and friends, limited mobility, difficulties in self-service, and the deterioration of the economic situation. All this violates the usual life stereotypes, requires the mobilization of their own physical and mental reserves, which are significantly reduced at this age. The inability to adapt to constantly changing socio-economic conditions and independently cope with everyday worries leads to dependence on other members of society, which causes many old people to feel inferiority, powerlessness, and hopelessness of further existence. As a result, disorders such as anxiety, depression, and hypochondriacal syndromes may develop. These violations are often transient and disappear after the elimination of adverse factors, but in some cases they require medical intervention

The degree of adaptation of an old person to his new social status is determined to a large extent by the state of his somatic and mental health.

The elderly often suffer from diseases that require long-term treatment and constant care:

* Arterial hypertension,
* CHD and heart failure
* Depression
• Diabetes mellitus
* Dementia
* Osteoarthritis
* Prostate diseases
* Urinary incontinence
* Polyneuropathy
• Ataxia
* Intermittent claudication
* Trophic ulcers of the lower legs and other diseases

The manifestations of diseases in the elderly are often atypical. Violations of one system can contribute to the manifestation of other hidden disorders. Regardless of the nature of the underlying disease, the elderly are dominated by stereotypical manifestations in the

form of confusion, behavior changes, depression, urinary incontinence, episodes of loss of consciousness, falls, general decline in activity, refusal to eat.
Due to the lack of compensatory mechanisms, diseases in the elderly usually manifest themselves in earlier stages. Some signs that are regarded as pathological in the young are detected in the elderly, without causing a painful condition (bacteriuria, extrasystoles, impaired glucose tolerance, decreased vibration sensitivity of the fingers, involuntary contractions of the bladder).
The peculiarities of the course of diseases in the elderly cause difficulties in diagnosis. For example, a number of acute diseases occur with erased manifestations or manifest various nonspecific symptoms. At the same time, the usual local signs of organ damage may be absent.
EXAM
At the first treatment, a detailed medical history is collected, a thorough physical examination and the necessary tests are carried out. In the future, such a survey is periodically repeated.
Anamnesis
When collecting anamnesis, pay attention to the patient's ability to communicate, evaluate his mental status, speech, vision, hearing, and mood. During the survey, specify the following:
Complaints about the main systems: respiratory system, CCC, gastrointestinal tract, musculoskeletal system, nervous system
* Past illnesses and treatment, circumstances of hospitalizations
* Immunization
* Medications taken, including over-the-counter medications
• Power features
• Alcohol consumption, smoking
* Mental status, including signs of depression.
* The need for outside care, the ability to move independently.
* Housing conditions
* Number and composition of the family, family conflicts
Physical examination
Complaints and anamnesis can tell the doctor what to pay attention to during a physical examination. It must necessarily include the determination of weight, the determination of weight and orthostatic changes in blood pressure. In addition, it is necessary to check the vision and hearing; if the hearing is reduced, first of all, you should remove the sulfur from the external auditory canal. The oral cavity and teeth are examined. The neck (especially the area of the thyroid gland) is examined and palpated. Respiratory organs, cardiovascular system are examined, blood pressure, heart rate, pulse and other physical data are measured.

TREATMENT OF ELDERLY AND SENILE PATIENTS

The developed standards of treatment are dangerous to automatically transfer to the elderly; it requires extremely careful selection of the type and dose of medicines(drugs), control over their intake.
The treatment of elderly and senile patients is based on modern ideas about the features of pharmacokinetics, pharmacodynamics, distribution and elimination of drugs in persons of this category.

Changes in pharmacokinetics and pharmacodynamics in the elderly.

The absorption of drugs from the gastrointestinal tract with increasing age changes under the influence of a number of physiological characteristics of the elderly and senile age: reducing the level of gastric acid, blood flow through the mesenteric arteries, reducing the area of the suction surface, inhibiting the mechanisms of active transport, the general tendency to reduce absorption. These features can lead to a decrease in the concentration of drugs administered orally in the blood. Since the absorption of drugs is associated with their dissociation, under conditions of increasing the pH of the intraluminal contents, drugs with acidic properties will be absorbed less, and with alkaline properties – more completely. On the other hand, a decrease in the motor activity of the gastrointestinal tract causes a more complete absorption. As a result, in elderly patients, it is difficult to accurately predict the level of orally taken drugs in the blood serum.

In the process of aging, the amount of fat in the body increases relatively, and the water content decreases. This contributes to an increase in the concentration of water-soluble drugs in the blood serum when taking them in standard doses (since the volume of their distribution decreases) and a decrease in the concentration of fat-soluble drugs in the tissues (since their volume of distribution increases).

In elderly patients, there is often a decrease in the level of serum albumin, so that many substances transported by proteins in the bloodstream become more active and pose a greater risk of developing toxic effects.

In addition, at this age, in most cases, the activity of microsomal liver enzymes involved in the oxidation of drugs decreases, the activity of hydrolysis, on the contrary, increases. In this regard, many drugs have a longer half-life and slower clearance.

With age, the reserve functions of nervous processes decrease and cognitive function may decrease.

Given the above, the elderly are highly likely to develop adverse reactions; it is recommended to select treatment for them with lower doses and strive to prescribe the necessary minimum of drugs with the lowest frequency of administration during the day.

Distribution. In the elderly, the minute heart rate decreases and, thus, the blood supply to the most important elimination organs – the liver and kidneys-decreases. In parallel, there is a decrease in the amount of water in the body, muscle atrophy, an increase in adipose tissue, and a decrease in the concentration of albumins in the plasma. At the same time, disease, nutrition, and physical activity have a more pronounced effect on distribution than age.

Elimination. An elderly person from a pharmacokinetic point of view in most cases should be considered as a person with renal insufficiency, because renal elimination decreases with age. The drug should be dosed carefully. Due to limited tubular reverse resorption, the elderly are prone to increased sodium loss. They feel less thirsty, so they are more prone to dehydration and impaired excretion. The concentration of creatinine in the plasma depends on the muscle mass and therefore it decreases in the elderly.

Hepatic elimination decreases with age, but genetic factors, the environment, and existing or past illnesses seem to have a more pronounced effect than calendar age.

In the management of elderly and senile patients, the practical doctor faces the following questions: who should be treated? where to treat? who and when to start? how to treat it?

Most of the problems associated with the diagnosis, treatment and rehabilitation of the elderly have to be solved by a general practitioner, who in this regard should have a broad general clinical training, be able to solve many related, interdisciplinary issues. Constant, professional contact and constructive interaction of the therapist with narrow

specialists is not excluded, since joint management of the patient in specific situations should contribute to the professional enrichment of each of the doctors and bring maximum benefit to the patient.

Taking into account current trends in geriatrics, the main emphasis in the organization of medical and preventive care for elderly and senile patients should be placed on out-of-hospital forms of patient management, mainly in polyclinics, at home, in day hospitals, etc. Placing an elderly patient in a hospital in itself is a stressful situation for him, since it violates the established life stereotypes. There are often situations when patients in the first days begin to refuse food, are poorly oriented in the surrounding environment, some have episodes of confusion, urinary incontinence, unexplained falls. Another hospital problem among elderly and senile patients is nosocomial infections. Unfortunately, due to poorly developed out-of-hospital forms of medical and social care for the elderly in our country, hospitalization of late-aged patients is carried out mainly for social reasons.

A serious problem in geriatric practice is the decision to prescribe treatment. The most important thing when making a decision is to focus on the assessment of the degree of influence of the identified pathology on physical activity, socio-psychological adaptation and other indicators of the quality of life. A cautious and balanced approach to prescribing medications to the elderly is justified by the high risk of developing drug complications. When explaining and justifying the need for drug treatment, the most effective arguments for the patient are the arguments regarding drug complications, which can disrupt the patient's condition to a much greater extent than the underlying disease.

When managing an elderly patient, the doctor should set realistic goals for himself. The main strategic goal of geriatrics is to preserve and improve the quality of life of the patient. Current trends – "treat, not always cure".

The main problems of drug therapy in the elderly and senile age:

 The need to prescribe more than one drug

 The need for frequent long-term use of medications

Нарушение Violation of pharmacodynamics and pharmacokinetics of drugs

Insufficient or incorrect implementation of the prescribed medication regimen.

The combined use of several drugs can both enhance and weaken their pharmacological effect.

Pharmacokinetic disorders are associated with age-related changes in various organs and systems, existing geriatric pathology. There is evidence of changes in the sensitivity of the receptors in the elderly.

For timely detection of side effects of drug therapy, it is necessary to focus on the changes detected by the doctor, information received from the patient himself, his relatives about the quality of life of the patient.

Currently, due to the destruction of the institution of the traditional multi-generational family, the role of various forms of medical and social assistance to the elderly is significantly increasing. It is important not only to provide sympathy or specific assistance to the elderly, but also to create a special geriatrically adapted environment in society, psychological support, restoration of rights, and provision of a decent place and participation in society. When communicating with an elderly patient, the doctor should show genuine interest, attention, avoid unnecessary jokes and explain in detail the meaning of each of his recommendations.

FEATURES OF DRUG THERAPY DURING PREGNANCY AND LACTATION

The result of the action of drugs on the fetus can be miscarriages, prematurity, postponement, malformations, death of the fetus and newborn, intrauterine hypotrophy, hemorrhagic syndrome,respiratory depression and cardiac activity, cardiac arrhythmia, neurological disorders, acute renal failure, impaired thyroid function, adrenal glands, tumors in the long term.

Medical indications for termination of pregnancy are indicated in Order No. 736 of December 3, 2007 and provide, in general, for performing an artificial abortion within a period of up to 22 weeks for the reason of:

Ухудш Deterioration of the health status and threat to the life of a woman in the event of continued pregnancy

Выявления Detection of fetal abnormalities or detection of non-viability of the fetus through prenatal diagnosis.

The main medical indications for termination of pregnancy include active forms of tuberculosis, HIV infection, syphilis, rubella, cancer, leukemia, congenital heart defects, physiological immaturity of a woman. Absolute indications for abortion are severe forms of heart failure, hypertension, diabetes mellitus, organic lesions of the myocardium and heart valves, as well as if the woman, the father of the child or one of the children has a severe hereditary disease.

Indications for abortion include chronic degenerative and inflammatory changes in the kidneys, bilateral nephrolithiasis, and chronic liver damage with impaired liver function.

It is not recommended to carry a pregnancy if the pregnant woman has thyrotoxicosis, malignant anemia, retinitis, optic neuritis, severe corneal disease, significant deformity of the pelvic bones.

Relative recommendations for termination of pregnancy are: severe course of chronic lung diseases, non-specific ulcerative colitis, malignant breast diseases, some mental illnesses.

For abortion for medical reasons, the patient's consent to the specified intervention is required.

If the disease is not in the list of indications, and it threatens the health and life of the woman and child, the decision is made by a commission by an obstetrician-gynecologist, a doctor-specialist in this field and the head of the relevant department.

Extragenital diseases in pregnant women are one of the main causes of serious complications during pregnancy and childbirth, as well as diseases of the fetus and newborn.

Medical supervision of pregnant women is carried out by a general practitioner together with an obstetrician-gynecologist, pediatrician and other "narrow" specialists in the conditions of the obstetric-therapeutic-pediatric section.

The intrauterine fetus needs an ever-increasing amount of oxygen, proteins, fats, carbohydrates, salts, vitamins and other substances during development. The mother's blood receives the final products of fetal metabolism, which are excreted by the excretory organs of the pregnant woman. The body of a pregnant woman performs additional work that requires strengthening or restructuring the activities of the most important systems and organs. Under these conditions, numerous and complex physiological changes occur in the body of a woman during pregnancy.

In pregnant women, the excitability of the brain and spinal cord changes. The excitability of the cerebral cortex decreases until the first month of pregnancy, and then remains elevated until the end of pregnancy. The excitability of the underlying parts of the central nervous system and uterus during pregnancy is reduced.

During pregnancy, there are changes in the autonomic nervous system (at the beginning of pregnancy, there is an increase in the tone of the vagus nerve), in connection with which there are often changes in taste and smell, nausea, increased saliva, constipation, a tendency to dizziness, drowsiness, unbalanced mood. There is an increase in the excitability of the peripheral nerves, sometimes there are neuralgic pains in the sacrum and lower back, cramps in the calf muscles.

From the very beginning of pregnancy, the yellow body develops in the ovary, the hormone of which (progesterone) creates the conditions for the proper development of pregnancy. The yellow body in the second half of pregnancy undergoes reverse development and its function is performed by the placenta. The placenta produces estrogenic hormones: estriol, estrone, estradiol.

During pregnancy, the pituitary gland significantly increases the production of gonadotropins, especially luteinizing and prolactin. These hormones enhance the development and endocrine function of the corpus luteum and, together with estrogens and progesterone, contribute to the preparation of the mammary glands for lactation. Increases the production of TSH and ACTH, the somatotropic hormone. Formed in the hypothalamus, oxytocin accumulates in the posterior pituitary gland and contributes to the contractile activity of the uterus at the end of pregnancy and during childbirth. ADH also accumulates in the posterior pituitary lobe.

In the first months of pregnancy, there is a slight increase in thyroid function, and in the second half – a decrease.

The parathyroid glands, which affect calcium metabolism, function during pregnancy with great tension. Sometimes, during pregnancy, there is a tendency to convulsions and spasms, associated with a decrease in the amount of calcium salts in the body due to the weakening of the parathyroid glands.

The metabolism during pregnancy changes significantly. In the second half of pregnancy, assimilation processes significantly increase. The number of metabolic products to be eliminated from the body increases.

The basic metabolism and oxygen consumption during pregnancy increase. The increase in oxygen demand is compensated by increasing the respiratory rate, pulmonary ventilation, and bronchial patency.

During pregnancy, there is an accumulation of protein substances in the body of a woman. The blood of a pregnant woman receives proteins formed in the body of the fetus (fetoproteins), as well as in the placenta and fetal membranes. When consuming a large amount of protein food, there is an accumulation of products of incomplete protein breakdown, which are harmful to the body.

In the blood of pregnant women, the amount of neutral fat, cholesterol, phospholipids and other lipids is increased. In the case of a violation of the nutrition of a pregnant woman, especially with excessive fat intake, the process of their breakdown may change. In such cases, harmful acidic products of incomplete fat combustion accumulate in the body of a pregnant woman.

During pregnancy, there is a delay of calcium salts in the body due to their expenditure on the construction of the fetal skeleton.

From the mother to the fetus passes iron, which is an integral part of hemoglobin. With insufficient iron intake from food, anemia occurs in a pregnant woman, and development is disrupted in the fetus.

The accumulation of inorganic substances in the body of a pregnant woman affects water metabolism, during pregnancy, a tendency to water retention in the body develops. With

a pathological course (late toxicosis), the release of fluid slows down, the accumulation of water and chlorides increases and edema occurs.
The need of the body of a pregnant woman for vitamins is increased due to the need to supply them to the fetus. With insufficient administration of vitamins with food, pregnant women have a pathological condition-hypovitaminosis. The course of pregnancy is disturbed.
By the end of pregnancy, a woman's weight increases by 10-12 kg.
During pregnancy, increased demands are made in the cardiovascular system due to the increase in the vascular network of the uterus, an increase in blood mass, and the emergence of a new placental circle of blood circulation.
There is a physiological hypertrophy of the left ventricle, an increase in the functional capacity of the heart, an increase in the MO of the heart, a slight increase in vascular tone and an increase in the pulse rate. In connection with the high standing of the diaphragm in the last months of pregnancy, the heart is located more horizontally and closer to the chest, its borders expand and the cardiac impulse moves outward. Inflections of large vessels can cause the appearance of unclear vascular noises. These changes are functional and will disappear completely after delivery.
Blood pressure in the first half of pregnancy does not change or decreases slightly. In the second half, there is a tendency to hypertension. A rise in systolic blood pressure above 12-130 mm Hg and a decrease to 100 mm Hg or less indicate the occurrence of pregnancy complications.
Heart rate in the second half of pregnancy increases by 10-25 beats per minute from the 24th week.
During pregnancy, hematopoiesis increases, the number of red blood cells, hemoglobin, blood plasma and BCC increases. Most healthy pregnant women often have a small leukocytosis (due to neutrophils). ESR during pregnancy increases to 20-30 mm per hour.
During pregnancy, the activity of the lungs increases. Sometimes there is congestion in the larynx and bronchial mucosa. This increases the sensitivity of the body of pregnant women to the flu and other common infectious diseases.
Many women in the first 2-3 months of pregnancy experience nausea, often vomiting, especially in the morning. Changes in taste and olfactory sensations, attraction to certain products and sometimes to unusual substances. Due to changes in metabolism and the need to neutralize the metabolic products of not only the mother, but also the fetus, the load on the liver during pregnancy increases. In healthy women, during the physiological course of pregnancy, the liver copes with an increased load.
During pregnancy, the kidneys function with great tension, removing the metabolic products of the woman and the growing fetus from the body. In the last months of pregnancy, traces of protein may appear in the urine. This indicates toxicosis of pregnant women.
During pregnancy, serous impregnation and loosening of the articular ligaments, cartilage and synovial membranes of the pubic and sacroiliac joints occur. These physiological changes occur under the influence of relaxin formed in the placenta. Changes in the posture of the pregnant woman. Conclusions about the use of drugs during pregnancy
The main principle is to limit the prescribing of medicines to pregnant women. Along with the dangers to the developing child, there may be undesirable effects on the mother's health. For example, after prolonged use of salicylates, there is an increase in the number of anemia, bleeding and other complications in childbirth. If drug therapy is necessary during pregnancy, you should avoid taking medications that harm the fetus. In any case,

it is recommended to limit the intake of absolutely necessary medications and use first of all drugs that have been tested for a long time.
Principles of drug therapy during lactation.
For the use of medicines during lactation, the same recommendations apply as during pregnancy, i.e. they can be used only in cases where it is impossible to do without it. It is recommended not only to refuse medicines, but also to reduce the load of foreign substances in general, if drug therapy is not a vital event for a nursing mother, since no one can be sure that the undesirable consequences will not manifest later.
The transition of the drug substance to milk is facilitated by the good solubility of the drug in fats, a small molecular weight, an alkaline reaction, a low degree of ionization and a low level of binding to the mother's proteins. Not all substances contained in milk are absorbed in the baby's intestines.
Difficulties in feeding may be due to the fact that the drug changes the taste of milk. The content of most drugs in milk is significantly lower than the therapeutic doses for the child. However, with prolonged use of the drug by the mother, these insignificant concentrations may increase as a result of an increase in the half-life of the substance in infants, and the child may develop appropriate symptoms.
In some cases, it is advisable to take a break from feeding after taking the drug.
The main medicines or methods of their use during lactation that pose a danger to the child include:
 Cytostatics
 Radionuclides
Combination therapy with many psychotherapeutic drugs or antiepileptics
Й Iodine-containing contrast agents and expectorants, as well as disinfection of large areas of the body surface with iodine-containing compounds

If it is necessary to conduct this type of therapy in each specific case, the question of whether it is advisable to interrupt breastfeeding for a while or to completely abandon it should be decided.

IY. Introduction to the practical lesson plan

This lesson aims to deepen students' knowledge and develop practical skills in the issues of diagnosis, treatment, medical and labor expertise, medical examination of chronic pyelonephritis.

II. The purpose of students' activity in the classroom

The student should know:

• Epidemiology and social significance of acute and chronic pyelonephritis.

• Etiology and pathogenesis of acute and chronic pyelonephritis.

• * Classification of pyelonephritis.

• Diagnosis and differential diagnosis of acute and chronic pyelonephritis.

• Standards for the treatment of acute and chronic pyelonephritis.

• Examination of temporary disability.

• Medical examination of patients with chronic pyelonephritis.

The student should be able to:

• examine patients with acute and chronic pyelonephritis in a limited time and make a detailed clinical and expert diagnosis.

• Prescribe treatment for patients with acute and chronic pyelonephritis.

• To carry out an examination of disability for patients with the specified pathology.

• Make a plan for immediate and long-term rehabilitation.

III. Training content

The following questions are dealt with during the practical lesson:

1. Etiology of acute and chronic pyelonephritis.
2. Classification of pyelonephritis.
3. Pathogenesis of acute and chronic pyelonephritis.
4. Clinical picture.
5. Laboratory and instrumental research methods.
6. Differential diagnosis of pyelonephritis.
7. Treatment of acute and chronic pyelonephritis.

The practical lesson begins with a preliminary clarification of the basic knowledge obtained at the departments of the therapeutic profile on the topic under study. Then there is an analysis of the theoretical issues of the topic, prescribing recipes on the topic of the lesson. Next, a thematic analysis of patients with acute and chronic pyelonephritis. When analyzing a patient, the greatest emphasis is placed on the following points: a detailed clinical diagnosis and its justification; an examination plan, a treatment plan (detailed, indicating the diet regime, medicines); solving expert issues (temporary disability).

The next stage of work is independent work of students in the offices of district doctors (under the supervision of a teacher and a doctor).

The control of the acquired knowledge and skills is carried out when assessing the quality of solving situational problems, observing students during independent work, solving test tasks.

IV. List of visual aids and TSO tools

Tables with material on the topic of the lesson, test control, recipes, codoscope.

V. List of questions to check the initial level of knowledge

1. Etiology, pathogenesis of acute and chronic pyelonephritis.
2. Pyelonephritis clinic.
3. Diagnosis of acute and chronic pyelonephritis**.**

VI. List of questions to check the final level of knowledge

1. Definition of the concept of pyelonephritis.
2. Classification of pyelonephritis.
3. Clinical, laboratory and instrumental research methods for the diagnosis of acute chronic pyelonephritis.
4. Treatment, course, prognosis of acute and chronic pyelonephritis.

VII. Chronocard of the training session

Total time budget 180 minutes

№ i/i	The stages of the lesson	Educational and visual aids.	Equipment
1.	Roll call. Formulation of the topic and purpose of the lesson	Study room	10 min.
2.	Basic control of students' knowledge	Study room	30 min.
3.	Analysis of theoretical issues of the topic, solving situational problems	Учебная комната, таблицы, методические рек.	105 min.
4.	Determination of the final level of knowledge, prescribing	Test tasks	25 min.
5.	Summing up the lesson, homework	Study room	10 min.

List of educational literature on the topic of the lesson

1. Methodological materials prepared by the staff of the department.
2. Makolkin V.I., Ovcharenko S.I. "Internal diseases". M. "Medicine", 1987.
3. Tareev E.M. "Clinical nephrology", M. "Medicine", 1983.
4. Pankratov V.V., Savichkin A.I. "Therapy in nephrology".
5. Yesilevsky Y.M. Pathogenesis of pyelonephritis. – M.:Medicine, 2006.
6. Urology: textbook for medical university students/ under the general editorship of Yu.G.Alyaev.- M.:MIA, 2005.

THE MAIN PROVISIONS OF THE TOPIC:

Pyelonephritis is a microbial inflammatory disease of the kidneys and upper urinary tract. Among the risk factors for acute pyelonephritis, the following are the most significant: urinary tract diseases (nephrolithiasis, nephroptosis, neoplasms), bladder dysfunction, kidney and urinary tract abnormalities (dystopia, horseshoe kidney, doubling of the upper urinary tract, ectopia of the ureter's mouth, polycystic kidney disease), pregnancy. Hypothermia can provoke acute pyelonephritis in the presence of latent chronic inflammatory foci in the body (carious teeth, chronic tonsillitis, chronic prostatitis in men and chronic inflammation of the appendages in women, etc.). Acute pyelonephritis can occur after trauma, remote stone crushing in nephrolithiasis, urological operations on the kidney and urinary tract. Pyelonephritis is severe against the background of immunosuppressive therapy, against the background of radiation effects, in patients with diabetes mellitus, as well as in elderly and senile patients. In men, acute pyelonephritis can occur against the background of acute prostatitis, adenoma and prostate cancer, as a complication of instrumental and endoscopic manipulations and operations. In young women, great importance is attached to inflammatory diseases of the genitals, urogenital infections, defloration and recurrent cystitis. Pyelonephritis of pregnancy and early postpartum period (gestational) occupies a special place. People with risk factors need to be monitored by a urologist and a nephrologist.

If signs of acute inflammation of the kidneys and upper urinary tract appear (pain in the lumbar region, accompanied by chills, fever, frequent painful urination and progressive deterioration of the general condition), emergency hospitalization in the urological department is necessary. Special attention should be paid to the appearance of these signs in children, elderly and senile people, pregnant women. In acute pyelonephritis, complex treatment and dispensary supervision of a urologist and a nephrologist are necessary.

With timely diagnosis and proper treatment of acute pyelonephritis, the prognosis is favorable, but often acute pyelonephritis becomes chronic, which has the character of a progressive disease with an outcome in CRF. With proper treatment and dispensary supervision, the disease progresses slowly, proceeds favorably. Frequent outbreaks of the acute process, on the contrary, make the prognosis for kidney function and life less favorable.

Treatment of chronic pyelonephritis is conditionally divided into two stages: during the period of exacerbation (practically does not differ in its principles from acute pyelonephritis) and anti-relapse treatment.

Before starting therapy, it is necessary to clarify the complicating factors (obstruction, diabetes mellitus, pregnancy, etc.), establish the type of pathogen, its sensitivity to antibacterial drugs, the state of urodynamics (violations of urine outflow from the kidney), the activity of the infectious and inflammatory process, evaluate kidney function. Treatment of pyelonephritis is carried out in several directions: general principles (regimen, diet), antibacterial therapy, additional methods of treatment.

The main goal of the treatment of chronic pyelonephritis is to combat the pathogen, to stop inflammatory manifestations, to prevent relapses of the disease, its further progression and the development of CRF.

With the initial detection of signs of acute pyelonephritis, as well as with severe pain, severe fever and intoxication, emergency hospitalization to a specialized urological department is indicated.

Special indications for inpatient treatment of patients suffering from pyelonephritis:

- rapid progressive deterioration of kidney function;
- uncontrolled arterial hypertension;
- severe intoxication.

The mode is determined by the patient's condition and the activity of the process. During an exacerbation (a period of high temperature) — bed rest.

The diet of patients with chronic pyelonephritis in the absence of hypertension and CRF is close to physiological and does not differ from the usual diet. With hypertension, a diet with a reduced salt content is recommended, with CRF — with a limited amount of protein. Patients should receive a sufficient amount of fluid — 1.5-2 liters daily, with the exception of patients with impaired urine outflow and signs of congestive heart failure.

Medical treatment

Antibacterial drugs used to treat pyelonephritis should have high antibacterial activity, a wide spectrum of action, lack of nephrotoxicity, and be excreted in urine in high concentrations. In chronic pyelonephritis, they are prescribed in accordance with the sensitivity spectrum of the pathogen detected when sowing an average portion of urine. Cephalosporins, fluoroquinolones, protected penicillins are used, less often aminoglycosides, given their nephrotoxicity, as well as nitrofurans, derivatives of nalidixic and pipemidic acids, soluble sulfonamides, vegetable uroantiseptics.

Drugs specifically designed to treat infections caused by Pseudomonas aeruginosa (P. aeruginosa) — carbenicillin, ticarcillin, azlocyl-lin — are also prescribed for complicated forms of pyelonephritis.

Along with antibiotics in the treatment of chronic pyelonephritis, other antimicrobial agents are also used, which are prescribed after the withdrawal of antibiotics, sometimes in combination with them, more often for the prevention of exacerbations of chronic pyelonephritis, — nitrofurans (nitrofurantoin, furazidine), nalidixic acid (nevigramon *), co-trimoxazole (biseptol *), pipemidic acid preparations (palin*, pimidel*).

Urine pH can have a significant effect on the antimicrobial activity of some drugs. An increase in activity in an acidic medium (pH <5.5) was noted for aminopenicillins, norfloxacin, nitrofurans, nalidixic acid, in an alkaline medium — for aminoglycosides,

cephalosporins, carbenicillin, sulfonamides, erythromycin, clindamycin. With CRF, antibiotics metabolized by the liver can be prescribed in the usual dose: azithromycin (sumamed *), doxycycline, pefloxacin (abactal *), chloramphenicol (levomycetin*), cepha-clor (ceclor ®), cefoperazone (cefobid*, dardum*), erythromycin. It is not recommended to prescribe aminoglycosides, tetracyclines, nitrofurans, co-trimoxazole. It should be borne in mind that the nephrotoxicity of various drugs increases as their excretion decreases with CRF, as well as when combined with diuretics.

During the period of exacerbation, antibacterial therapy should be carried out until the pathogen disappears in the urine, the elimination of clinical and laboratory manifestations of exacerbation. Sometimes "step-by-step" therapy is justified, in which the drug is prescribed parenterally first, and then orally.

With an exacerbation of obstructive pyelonephritis, the patient should receive treatment in a urological hospital, with non-obstructive treatment in a nephrological department is possible, but with the indispensable participation of a urologist. The criteria for the effectiveness of the treatment are normalization of body temperature, disappearance of pain and dysuria, return to normal peripheral blood parameters (number of leukocytes, ESR), disappearance of bacteriuria, decrease or persistent absence of leukocyturia, proteinuria, improvement of functional parameters of the kidneys.

After the exacerbation of chronic infection is eliminated, preventive therapy with antibiotics is carried out, which are later replaced with herbal antibacterial drugs. One of these is the medicinal plant preparation Kanefron N*. The drug has a complex effect: anti-inflammatory, mild diuretic, antimicrobial, antispasmodic. As part of complex therapy, it increases the effectiveness of antibacterial drugs and reduces the number of repeated exacerbations of the disease.

Unfortunately, after the end of the prophylactic course of antibacterial therapy, 60% of patients may have a relapse of infection within 3-4 months. Patients with chronic pyelonephritis should be warned against self-medication, including traditional medicine.

All patients with chronic pyelonephritis need constant dispensary supervision with examination every 6 months. Inpatient treatment is carried out with an exacerbation of the disease, signs of deterioration of kidney function. It is necessary to monitor blood pressure, the concentration capacity of the kidneys, the amount of glomerular filtration, the concentration of nitrogenous metabolism products and blood electrolytes, indicators of general urine analysis.

In order to prevent relapses, phytotherapy is indicated. Climatic treatment is not used specifically for patients with pyelonephritis. Spa treatment (balneological treatment) is mainly indicated for patients with calculous pyelonephritis in remission in the presence of small stones and the absence of violations of urine outflow after their discharge, as well as after lithotripsy or surgical removal of concretions. Sanatorium treatment is contraindicated in patients with severe hypertension, severe anemia and CRF.

Management of patients with renal insufficiency caused by chronic pyelonephritis is carried out according to general rules in centers where, if necessary, substitution therapy is carried out.

When detecting chronic pyelonephritis, cooling, physical fatigue, colds, and urogenital infections should be avoided. The habit of regular emptying of the bladder, intestines, timely treatment of ICD, prostate adenoma, etc. has a positive value. The water regime, diet (with the development of renal insufficiency) should be determined together with the doctor. It is necessary to monitor blood pressure, timely medical examination, coordination of sanatorium treatment with a nephrologist.

Task V. Mastering the indicative basis of actions scheme in a practical lesson.

During the curation of the patient, as well as when solving situational problems, you need to make a detailed diagnosis of the disease, prescribe treatment, conduct medical and labor expertise, make a plan for dispensary observation, further rehabilitation of the patient. All this assumes a certain sequence of actions. In the form of a diagram, it is presented in this section.

The scheme of the indicative basis of actions in the curation of the patient

Stage 1. Initial interview and examination of the patient, as a result of which it is necessary to determine whether the patient has acute or chronic pyelonephritis based on the identified symptoms.

Stage 2. Make a preliminary diagnosis.

Stage 3. Determine the scope of additional research methods.

Stage 4. Perform differential diagnostics.

Stage 5. To make a well-founded and finally detailed diagnosis.

Stage 6. Determine the amount of therapy needed.

Stage 1. Initial survey and examination of the patient.

During this stage, you must determine whether the patient has:

1. A sharp and significant increase in body temperature (up to 39-400C, sometimes higher)
2. Disorders of urination (dysuria, pollakiuria)
3. Amazing chills, profuse sweating
4. Arthralgia, myalgia
5. The increase in symptoms of general intoxication – weakness, lethargy, weakness, nausea, vomiting
6. Pain in the lower back (dull to a significant intensity)
7. signs of dehydration, dry overlaid tongue, moderate bloating
8. increased tone of the lumbar muscles, forced flexion and bringing the leg to the trunk on the affected side
9. soreness when pressing in the costovertebral corner of the corresponding side, a positive symptom of Pasternatsky
10. bimanular palpation of the lumbar and subcostal regions determines local pain in the lower back and tension of the muscles of the anterior abdominal wall
11. increased pulse rate

Stage 2. Preliminary diagnosis
Based on the patient's complaints, which allow to establish the presence of pathological syndromes in the patient, anamnesis, which makes it possible to etiofactors of the disease, based on the data of physical examination, to make a preliminary diagnosis of "acute or chronic pyelonephritis". The next stage is necessary for differential diagnosis and final diagnosis.

Stage 3. Determination of the scope of additional research methods.
It is necessary to conduct the following studies in the patient to diagnose acute or chronic pyelonephritis
1. OAM (bacteriuria, leukocyturia, oliguria and high urine density, minor proteinuria, cylindrical, mainly due to hyaline, sometimes leukocyte cylinders, macrohematuria can be observed against the background of renal colic or papillonecrosis)
2. UAC (leukocytosis (often-hyperleukocytosis exceeding 20 × 109 / l and even 30 × 109 / l of leukocytes, with a shift of the leukocyte form to the left, the appearance of young forms of neutrophils, their toxic granularity, possible aneosinophilia, decreased hemoglobin, increased ESR)
3. Chromocystoscopy (assess the degree of violation of the passage of urine from the upper urinary tract, determine the indications for ureter catheterization)
4. Overview and excretory urography (allows localization of urinary tract obstruction, reveals signs of involvement of paranephral fiber in the process (on inhalation and exhalation))
5. Ultrasound (expansion of the calyx-pelvic system with impaired passage of urine, to detect a stone).

Stage 4. Differential diagnosis.
Acute pyelonephritis must be differentiated from sepsis, influenza, pneumonia, malaria, some intestinal infections, salmonellosis. Chronic pyelonephritis with tuberculosis of the kidneys.

Stage 5. Making a final detailed diagnosis.

Depending on the severity of clinical manifestations, anamnesis of the disease, laboratory and instrumental studies, dif. diagnostics, we make the final diagnosis.

Example of the formulation of the diagnosis:

• Chronic bilateral pyelonephritis, recurrent, acute phase, hypertensive form, chronic renal failure, intermittent stage.

Stage 6. Determination of the volume of necessary therapy.

Complex treatment of the patient includes:

• Etiotropic therapy
• Antibacterial therapy
• Antihypertensive drugs
• Herbal medicine
• Antispasmodic drugs
• Physiotherapy
• Restorative measures (rational nutrition, healthy lifestyle, physical therapy classes, hardening, etc.)
• Spa treatment

Introduction.

Respiratory diseases are one of the serious medical and social problems. In
the proportion of this pathology is 27.6% in adults, 39.9% in adolescents, and 61% in children. This is largely due to both the continuing increase in the number of smokers and the pollution of the environment with various airborne pollutants (dust, fumes, exhaust gases, emissions into the atmosphere of industrial enterprises, etc.). First of all, this applies to chronic respiratory tract diseases (DP) – chronic bronchitis, bronchial asthma. General practitioners are also often faced with the phenomena of acute bronchitis, the annual incidence of which ranges from 20 to 40% or more.

What is acute bronchitis (OB) and chronic bronchitis (CB) from the standpoint of modern therapy? What are the treatment tactics? Every doctor needs a clear understanding of modern methods of diagnosis and treatment of these diseases.

Methodological development includes the following tasks:

Task 1. Familiarization with the goals and objectives.
Task 2. Restoration of basic knowledge, control of the initial level of knowledge.
Task 3. Study of literature on the topic.
Task 4. Mastering the scheme of the indicative basis of actions (OOD).
Task 5. Control of the final level of knowledge.

Task 1. Familiarization with the purpose and objectives.

Goal. The student should be able to diagnose AB, CK, prescribe treatment, determine the fact of temporary disability, carry out primary and secondary prevention of this disease.

Target tasks.

1. The student should know:
2. Definition of AB, CB.
3. Etiology and pathogenesis of AB, CB.
4. The clinical picture of AB, CB
5. Diagnostics and dif. diagnostics of AB, CB
6. Treatment of AB, HB.

The student must be able to:

1. To collect complaints, anamnesis of the disease and the life of a patient with OB, CB
2. Make a preliminary diagnosis
3. Appoint the necessary examinations to establish a diagnosis
4. Prescribe the necessary therapy
5. Conduct an examination of disability
6. Own methods of secondary prevention

Task 2. Restoration of basic knowledge.

You are offered a list of questions to clarify the sufficiency of your basic knowledge. Check yourself if you are able to answer them.

Define ABOUT, HB
Name the etiological factors about, CB
Pathogenesis of AB, CB
What is the clinical picture of AB, CB
What is the prevention of AB, CB

Task 3. Study of literature on the topic. The main provisions of the topic.
To study this topic, you are offered the following educational literature.
Vasilenko V.H., Grebnev A.I. Propaedeutics of internal diseases. M. 1999.
Mukhin N.A., Martynov A.I., Moiseev V.S. Internal diseases in 2 volumes. M. 2004.
Clinical recommendations. GEOTAR.2004.

The main provisions of the topic.

Acute bronchitis

Acute bronchitis is an inflammatory disease of the bronchi, mainly of infectious origin, manifested by a cough (dry or with sputum) and lasting no more than 3 weeks.

Epidemiology.

The epidemiology of acute bronchitis is related to the epidemiology of influenza and other respiratory viral diseases. Typically, the increase in the frequency of the disease in late December and early March.

A number of factors predispose to acute bronchitis, to one degree or another reducing the general and local resistance of the body, among which the main importance are:

 climatic factors and working conditions, in particular hypothermia and dampness;
 smoking tobacco;
 abuse of strong alcoholic beverages;
 focal infection of the nasopharynx;
 violation of nasal breathing;

classification

Depending on the cause, viral and bacterial acute bronchitis are isolated. Other (rarer) etiological variants (toxic, burn) are also possible, but they are rarely observed in isolation, since they are usually a component of a systemic lesion and they are considered within the framework of the corresponding diseases.

The most common causes of OB are: influenza A and B viruses, parainfluenza, rhinoviruses, coronaroviruses, respiratory syncytial virus. In past years, great diagnostic importance was attached to typical bacterial pathogens of bronchopulmonary infections (S.pneumoniae, H.influenzae, S.aureus, M.catarrhalis), but now these pathogens are more likely to cause OB in people with suppressed immunity and children. Diseases caused by Mycoplasma pneumoniae, Chlamydia pneumoniae, and Bordetella pertussis have become more frequent.

According to the level of lesion , acute bronchitis can be divided into:

 tracheobronchitis,

bronchitis with a predominant lesion of the bronchi of medium caliber

 bronchiolitis.

According to functional features, acute bronchitis should be divided into non-obstructive (with a relatively good prognosis) and obstructive, usually accompanied by the involvement of small bronchi and bronchioles in the inflammatory process, with a relatively unfavorable clinical prognosis.

Acute lesions of small bronchi, which, as a rule, are obstructive, are more severe and unfavorable. Most acute bronchitis has a catarrhal character, purulent forms are rare, usually it is associated with streptococcal infection in combination with viruses (viral-streptococcal association).

diagnostics

The diagnosis of "acute bronchitis" should be assumed in the presence of an acute cough lasting no more than 3 weeks (regardless of the presence of sputum), in the absence of pathology of the nasal pharynx, symptoms of pneumonia and chronic lung diseases that may be the cause of cough. The diagnosis is made on the basis of the clinical picture by the exclusion method.

The clinical picture of acute bronchitis is determined by the features of the etiological factor, the nature, severity and prevalence of damage to the mucous membrane of the bronchial tree, the level of damage, the severity of intoxication and respiratory failure, the rate of development of the disease.

Acute tracheobronchitis can develop within a few hours, but it can also increase gradually over several days. In the most typical cases, when the cause of acute bronchitis is an infection, the symptoms of acute respiratory infections precede the manifestation of acute bronchitis, less often they develop simultaneously.

Common disorders of well-being are typical: malaise, weakness, chills, fever. There may be other manifestations of acute respiratory infections from the upper respiratory tract— runny nose, sore throat when swallowing, hoarseness of voice. The main and most persistent symptom of acute bronchitis is cough — initially dry. Cough appears at the very beginning of the disease, lasts throughout the disease and remains the last manifestation of the transferred disease in convalescents. With simultaneous damage to the larynx, the cough acquires a peculiar shade of barking. Cough with bronchitis occurs due to irritation or inflammation of the mucous membrane of the trachea and large bronchi due to irritation of sensitive nerve endings. Cough paroxysms usually end with the separation of scanty mucosal sputum. Often there is pain in the upper part of the abdominal wall, as well as in the lower parts of the chest, according to the place of attachment of the diaphragm, due to overstrain of the corresponding muscles during coughing attacks. After a few days of illness, the cough becomes softer and wetter, since mucus of a mucous or mucopurulent nature is more regularly separated. The appearance of shortness of breath, as a rule, indicates an associated bronchial obstruction associated with the involvement of small bronchi in the disease. In this sense, the presence of cough and sputum in one case and shortness of breath in the other may indicate the level of damage to the bronchial tree, i.e. the predominant lesion of large or small bronchi or their combination.

Changes from other organs and systems in acute bronchitis are usually absent or reflect the degree of general viral-bacterial and other intoxication. The same should be said about the picture of blood.

Radiological changes in acute bronchitis are usually absent. With a prolonged course of acute bronchitis, repeated X-ray examination is of great importance for the timely diagnosis of pneumonia that has joined.

DIFFERENTIAL DIAGNOSIS

The following are the main differential diagnostic signs of acute bronchitis.

Differential diagnosis of acute bronchitis

Disease	Main Signs	Comments
Pneumonia	Detection of local signs of lung damage: crepitation, increased vocal tremor	Diagnostic standard_ chest X-ray, however, since the study does not have 100% sensitivity,

		priority is given to the clinical picture
Whooping cough	| Persistent cough in previously immunized adults; the clinical picture may be nonspecific	Diagnostic standard_ positive result of bacteriological examination or PCR
Chronic sinusitis	bothered by the leakage of mucus into the respiratory tract and discomfort in the paranasal sinuses	Diagnostic standard_ CT of the paranasal sinuses
Bronchial asthma	Paroxysmal and undulating symptoms are characteristic, relief from agonists in 2-adrenergic receptors	Reversibility of bronchial obstruction in samples with beta2-adrenergic receptor agonists; the phenomena of bronchial hyperreactivity may persist for 8 weeks after acute bronchitis in smokers, as well as in atopic patients during palination
Gastroesophageal reflux	Cough occurs after a heavy meal, in a lying position and decreases with a change in body position	It is recommended to conduct FGDS, daily monitoring of the pH of the esophagus

Treatment

TREATMENT GOALS

- Relieving the severity and reducing the duration of cough.
- Restoration of working capacity.

INDICATIONS FOR HOSPITALIZATION

Hospitalization for acute bronchitis is not indicated.

NON-DRUG TREATMENT

Relief of sputum discharge.

It is necessary to explain to the patient the need to maintain adequate hydration. The patient is informed about the benefits of humidified air (especially in arid climates and in winter), since a decrease in hydration leads to an increase in the viscosity of bronchial secretions and disrupts its expectoration. Relieving the discharge of mucus can reduce the severity of the cough and its duration.

Pay attention to the need to eliminate the impact on the patient of environmental factors that cause coughing (smoke, dust).

MEDICAL TREATMENT

Cough suppressants (drugs containing dextromethorphan or codeine) are prescribed only in cases of debilitating cough.

Bronchodilators are indicated for debilitating cough and/or proven airway obstruction. The appointment of salbutamol in the form of a dosing individual inhaler is justified in

cases when non-pharmacological methods do not alleviate a debilitating cough, especially with signs of bronchial hyperreactivity (remote wheezing).
Antibiotic therapy is not recommended for uncomplicated acute bronchitis, since in most cases the disease has a viral etiology. Acute bronchitis is one of the most common causes of antibiotic abuse. Treatment with antibacterial drugs is indicated with obvious signs of bacterial damage to the bronchi (the release of purulent sputum and an increase in its amount, the occurrence or increase in shortness of breath and an increase in signs of intoxication). The drugs of choice are macrolides (azithromycin, clarithromycin), or amoxicillin.
If the cough continues with standard empirical therapy of the disease, it is necessary to assume other causes of prolonged cough. In more than 85% of patients with a normal chest X-ray, the cause of prolonged cough (more than 3 weeks) is sinusitis, bronchial asthma and gastroesophageal reflux.
Antitussive medicines are used for painful, unproductive cough.
Butamirate inside, syrup, 30 ml 3 r / day 7-10 days (adults);
or Dextromethorphan inside, syrup, 15 mg (1 teaspoon of syrup)
4 r / day 7-10 days (adults and children over 12 years old); or
Glaucin inside, in between meals, 50 mg 2-3 r / day 7-10 days (adults).
Bronchodilators and combined medications containing bronchodilators are used in the presence of signs of bronchial obstruction.
Scheme 1salbutamol in inhalations of 1-2 doses of 3 r / day 5-7 days or Phenoterol in inhalations of 1-2 doses of 3 r / day 5-7 days
Scheme 2 Phenoterol 50 mcg
Ipratropium bromide in inhalations of 21 mcg 1-2 doses of 3 r / day 5-7 days
Mucolytic drugs and combined drugs with mucolytic effect
They are used in the presence of viscous, difficult-to-separate sputum.
Ambroxol inside 30 mg 3 r / day for 2 days, then 30 mg
2 r / day 5-8 days (adults);
Acetylcysteine orally 400-600 mg 1-2 doses or 200 mg in 2-3 doses 7-10 days (adults); 10% solution in inhalations, 3 ml 1-2 r / day 7-10 days or
Bromhexine orally 8-16 mg
3 r / day 7-10 days (adults and children over 14 years old); or Carbocysteine orally 750 mg 3 r / day 7-10 days (adults)
Anti-inflammatory drugs with bronchodilatory effect
Fenspiride leads to a decrease in the amount of sputum secreted and a change in its nature, as well as to a decrease in the intensity of cough:
Fenspiride inside, tablets, 80 mg 2 r / day 10-14 days (adults); syrup, 15-30 ml 3 r / day 10-14 days (adults)
Antimicrobial drugs
They can be used in rare cases in patients with a suspected bacterial etiology of acute bronchitis — elderly people with concomitant somatic diseases; patients receiving immunosuppressants.
When choosing medicines, one should focus on the alleged etiological factor; preference is given to medicines active against gram-positive and atypical microorganisms (M. pneumoniae, C. pneumoniae). Macrolides, fluoroquinolones, cephalosporins of the second generation are prescribed. Oral medications are mainly used. Parenteral administration of antimicrobial drugs is indicated for malabsorption and severe condition of patients.

Medicines of choice:
Azithromycin inside 500 mg 1 r / day — 1 day, then 250 mg 1 r / day 4 days or Amoxicillin inside 500 mg 3 r / day 5-7 days or Amoxicillin / clavulanate in / in 1.2 g 3 r / day 5-10 days or Clarithromycin inside 250— 500 mg 2 r / day 5-7 days or Levofloxacin inside 500 mg 1 r / day 5-7 days; in / in 500 mg 1 r / day 5-10 days or Midecamycin inside 400 mg 3 r / day 5-7 days or Moxifloxacin inside 400 mg 1 r / day 5-7 days; in / in 400 mg 1 r / day 5-10 days
Forecast In most cases, the forecast is favorable. Symptoms of the disease usually disappear after 10-14 days. If the cough persists for several weeks, an additional examination is indicated in order to clarify its cause and identify the underlying disease.

Chronic bronchitis.

Chronic bronchitis is a chronic disease characterized by a productive cough for 3 months or more for 2 consecutive years, excluding other bronchopulmonary pathology. Patients with chronic bronchitis are considered to be people suffering from chronic cough with sputum, in which these symptoms cannot be fully attributed to other respiratory diseases, diseases of the cardiovascular system or psychosomatic disorders.
Primary CB is an independent disease that is not associated with any other bronchopulmonary processes or damage to other organs and systems. In primary chronic bronchitis, there is a diffuse lesion of the bronchial tree.
Secondary CB develops against the background of other diseases, both pulmonary (tuberculosis, bronchiectatic disease, etc.) and extrapulmonary (uremia, congestive heart failure, etc.). Most often, secondary CB is local in nature.
Exogenous and endogenous factors closely interact in the occurrence and development of CB. Among the exogenous factors, irritating and damaging pollutants (of a domestic and professional nature), as well as non-indifferent dusts, which have a harmful (chemical and mechanical) effect on the bronchial mucosa, play a significant role. Tobacco smoke inhalation should be put in the first place in terms of importance among exogenous factors. The importance of pollution of the air basin and unfavorable climatic factors (hypothermia and overheating) is great. A lesser role among the etiological factors is played by viral (influenza viruses, adenoviruses), mycoplasma and bacterial infection (pneumococcus, Hemophilus bacillus, moraxella), but its importance increases sharply with the exacerbation of chronic bronchitis.
Due to the fact that the disease does not occur in all persons exposed to the same adverse effects, there are also endogenous factors that cause the development of CKD: pathology of the nasopharynx, changes in breathing through the nose with a violation of cleansing, humidification and warming of the inhaled air; repeated acute respiratory diseases, acute bronchitis and focal infection of the upper respiratory tract, violation of local immunity and metabolism (obesity).
In the pathogenesis of CB, the main role is played by a violation of the secretory, cleansing and protective function of the bronchial mucosa, leading to a change in mucociliary transport. Under the influence of exogenous and endogenous factors, a number of pathological processes occur in the tracheobronchial tree.
The main pathogenetic mechanisms of the development and progression of CB
The structural and functional properties of the mucous membrane and submucosal layer change, which is expressed in hyperplasia and hyperfunction of goblet cells, bronchial glands, hypersecretion of mucus and changes in its properties (the mucous secret becomes thick, viscous and sucks the cilia of the ciliated epithelium). All this leads to

disruption in the mucociliary transport system. The effectiveness of mucociliary transport of the bronchi depends on two main factors: the mucociliary escalator, determined by the function of the ciliated epithelium of the mucosa, and the rheological properties of the bronchial secretion (its viscosity and elasticity), and is determined by the optimal ratio of its two layers – the outer (gel) and inner (sol).

Inflammation of the mucous membrane is caused by various irritating substances in combination with infection (viral and bacterial). The production of secretory IgA decreases, the content of lysozyme and lactoferrin in mucus decreases. Edema of the mucous membrane develops, and then atrophy and metaplasia of the epithelium.

Chemicals contained in the air cause damage to the respiratory tract, accompanied by swelling of the mucous membrane and bronchospasm. This leads to a violation of the evacuation and a decrease in the barrier functions of the bronchial mucosa. Catarrhal contents are replaced by catarrhal-purulent, and then purulent.

The spread of the inflammatory process to the distal parts of the bronchial tree disrupts the production of surfactant and reduces the activity of alveolar macrophages, which carry out phagocytosis of bacteria and other foreign particles.

Violation of the drainage function of the bronchi develops as a result of a combination of a number of factors:

• spasm of the smooth muscles of the bronchi, resulting from the direct irritating effects of exogenous factors and inflammatory changes in the mucous membrane;
• hypersecretion of mucus, changes in its rheological properties, leading to disruption of mucociliary transport and blockage of the bronchi with a viscous secret;
• metaplasia of the epithelium from cylindrical to multilayered flat and its hyperplasia;
• violations of surfactant production;
• inflammatory edema and infiltration of the mucous membrane;
• allergic changes of the mucous membrane.

Various ratios of changes in the mucous membrane, manifested in its inflammation, determine the formation of one or another clinical form of the disease. With catarrhal bronchitis, superficial changes in the structural and functional properties of the mucous membrane prevail; with mucopurulent (or purulent) bronchitis, the processes of infectious inflammation prevail. The transition of one clinical form of bronchitis to another is possible. So, catarrhal bronchitis, flowing for a long time, can become mucopurulent due to the addition of infection, etc.

With the involvement of mainly large-caliber bronchi in the process (proximal bronchitis), violations of bronchial patency are not pronounced. The lesion of small bronchi and medium-sized bronchi often occurs with a violation of bronchial patency, which, as a rule, is expressed with an exacerbation of CKD.

Ventilation disorders in chronic bronchitis are usually expressed slightly. At the same time, in some patients, violations of the drainage function of the bronchi are so pronounced that, by the nature of the course of CKD, it can be interpreted as obstructive. Obstructive disorders in chronic bronchitis, as a rule, appear only against the background of an exacerbation of the disease and may be caused by inflammatory changes in the bronchi, hyper- and dyscrinia, bronchospasm (reversible components of obstruction). With severe CKD and persistent inflammation, obstructive changes may persist permanently. The developed obstruction of the small bronchi leads to emphysema of the lungs. There is no direct relationship between the severity of bronchial obstruction and emphysema, since, unlike chronic obstructive pulmonary disease (COPD), emphysema is

not a symptom of CKD, but its complication. In the future, emphysema can lead to the development of respiratory failure with the appearance of shortness of breath, then to the formation of pulmonary hypertension.
The disease is based on an inflammatory lesion of the mucosa of the tracheobronchial tree, which develops as a result of prolonged irritation of the respiratory tract by harmful agents with the restructuring of the secretory apparatus and sclerotic changes in the bronchial wall.

Classification.

CB is divided into simple (non-obstructive) and obstructive. The incidence of non-obstructive bronchitis is 3 times higher than obstructive bronchitis.
By the nature of inflammation, catarrhal and mucopurulent bronchitis are distinguished.
According to the phase of the disease, exacerbation and remission are distinguished.

Clinical manifestations

The main manifestations of CB are cough and sputum discharge. In addition, general symptoms are detected (sweating, weakness, fever, fatigue, decreased ability to work, etc.), which may appear with an exacerbation of the disease or be the result of prolonged chronic intoxication (purulent bronchitis), or occur as manifestations of hypoxia with the development of respiratory failure and other complications.
At the beginning of the disease, the cough may be unproductive, often dry, sputum discharge usually in the morning (when washing). In the phase of persistent clinical remission, these patients do not complain, their performance for many years can be completely preserved. Patients do not consider themselves sick. Exacerbations of the disease are infrequent, in most patients no more than 2 times a year. The seasonality of exacerbations is typical – in early spring or late autumn, when changes in weather factors are most pronounced.
Cough is the most typical manifestation of the disease. By the nature of cough and sputum, one or another variant of the course of the disease can be assumed.
With catarrhal bronchitis, cough is accompanied by the release of a small amount of mucous sputum, more often in the morning, after exercise. At the beginning of the disease, the cough does not bother the patient. If in the future it becomes paroxysmal, this indicates a violation of bronchial patency. The cough takes on a barking hue and has a paroxysmal character with a pronounced expiratory collapse of the trachea and large bronchi.
Symptoms that are in remission (cough with constant sputum separation) do not significantly affect the quality of life. The reason for going to the doctor is usually an exacerbation of chronic bronchitis, which is characterized by:

- increased cough;
- an increase in the amount of sputum to be separated;
- changing the nature of sputum to purulent;
- the appearance or intensification of symptoms of bronchial obstruction;
- the appearance or intensification of signs of respiratory insufficiency (ranging from slight shortness of breath, not always noted by the patient, to severe ventilation disorders requiring intensive therapy up to the use of a ventilator);
- decompensation of concomitant somatic diseases (increase in heart failure in patients with coronary artery disease, hypoxia of the brain in dyscirculatory encephalopathy, increased blood glucose levels in diabetes mellitus, etc.);

• fever (does not relate to typical clinical manifestations; however, an increase in body temperature, usually to subfebrile figures, unrelated to other causes and combined with other symptoms of respiratory tract damage, may indicate an exacerbation of chronic bronchitis).

The main symptoms of bronchial obstruction:

• elongation of exhalation;

• "whistling" breathing;

• breathing through closed lips;

• swelling of the cervical veins on exhalation;

• dry wheezing wheezes (can often be heard only in a horizontal position or with forced exhalation).

The severity of exacerbation of chronic bronchitis is judged by the presence and severity of bronchial obstruction (the most objective indicator), respiratory failure, decompensation of concomitant diseases.

Simple uncomplicated chronic bronchitis is characterized by infrequent exacerbations (< 4 per year), accompanied by an increase in the amount of sputum, which can become purulent. There is no pronounced bronchial obstruction (FEV1 > 50% of the norm).

Obstructive chronic bronchitis occurs with more frequent exacerbations, characterized by an increase in the amount and appearance of purulent sputum, more pronounced violations of bronchial patency (FEV1 < 50% of normal). People over 65 years of age are mostly ill, who often have concomitant diseases.

Purulent chronic bronchitis occurs in patients of any age, is characterized by a constant discharge of purulent sputum, the presence of bronchiectasis (often), a decrease in FEV1 (< 50% of the norm). Often there are concomitant diseases. Exacerbations of purulent chronic bronchitis may be accompanied by the development of acute respiratory failure.

The evolution of bronchitis, as well as the accompanying complications, change the data obtained during the direct examination of the patient. In far-reaching cases, there are signs of emphysema of the lungs, respiratory failure. The development of the pulmonary heart in non-obstructive chronic bronchitis is extremely rare.

Diagnosis and recommended clinical trials

The objectives of the examination of patients with suspected chronic bronchitis:

• verification of the diagnosis;

• identification of the stage of the disease (exacerbation, remission);

• determination of the main cause of exacerbation.

Studies that need to be carried out in case of exacerbation of chronic bronchitis (to clarify the severity of the process):

• physical examination;

• a general blood test (leukocytosis, a shift of the leukocyte formula to the left, an increase in ESR are characteristic);

• serological tests (there is an increase in blood titers of specific antimicrobial antibodies);

• microscopic (including Gram staining) and bacteriological examination of sputum, which is characterized by the detection or increase in the number of bacteria, neutrophils and inflammatory mediators in sputum. If sputum collection is difficult in severe patients, bronchoalveolar lavage is indicated;

• examination of bronchial patency (using pneumotachometry);

• chest X-ray examination (to exclude pneumonia);

• computed tomography of the chest organs (if bronchiectasis is suspected).

In typical cases, CKD progresses slowly, shortness of breath usually appears 20-30 years after the onset of the disease, which indicates the development of complications (emphysema of the lungs, respiratory failure). Such patients almost never fix the onset of the disease (morning cough with sputum is associated with smoking and is not considered a manifestation of the disease). They consider the beginning of the disease to be the period when complications or frequent exacerbations appear.

In the anamnesis, it is possible to detect increased sensitivity to cooling and in the overwhelming number of patients – an indication of long-term smoking. In a number of patients, the disease is associated with occupational hazards at work. Men get sick 6 times more often than women.

When analyzing the cough history, it is necessary to make sure that the patient has no other pathology of the bronchopulmonary apparatus (tuberculosis, tumor, bronchiectasis, pneumoconiosis, systemic connective tissue diseases, etc.), accompanied by the same symptoms. This is an indispensable condition for attributing these complaints to manifestations of chronic bronchitis.

Some patients have a history of hemoptysis, which is usually associated with mild vulnerability of the bronchial mucosa. Recurrent hemoptysis indicates a hemorrhagic form of bronchitis. In addition, hemoptysis in chronic, long-term bronchitis may be the first symptom of lung cancer developing in men who have smoked a lot for a long time. Hemoptysis can also manifest bronchiectasis.

In the initial period of the disease, physical pathological symptoms may be absent. In the future, changes appear during auscultation: hard breathing (with the development of emphysema may become weakened) and dry wheezing of a diffuse nature, the timbre of which depends on the caliber of the affected bronchi. As a rule, rough buzzing dry wheezes are heard, which indicates the involvement of large and medium bronchi in the process. Wheezing, especially audible on exhalation, is characteristic of the lesion of small bronchi, which is evidence of the addition of bronchospastic syndrome. If wheezing is not heard during normal breathing, then auscultation should be performed with forced breathing, as well as in the patient's lying position.

Changes in auscultation data will be minimal with CKD in the remission phase and are most pronounced with an exacerbation of the process, when even unstable wet wheezing can be heard. Often, with an exacerbation of chronic bronchitis, an obstructive component may be added, accompanied by the appearance of shortness of breath. When examining the patient, signs of bronchial obstruction are revealed:

• prolongation of the exhalation phase with calm and especially with forced breathing;

• whistling wheezes, which are clearly audible during forced exhalation and in the supine position.

The evolution of bronchitis, as well as the accompanying complications, change the data obtained during the direct examination of the patient. In far-reaching cases, there are signs of emphysema of the lungs, respiratory failure. The development of the pulmonary heart in non-obstructive chronic bronchitis is extremely rare.

In the initial period of the disease or in the remission phase, there may be no changes in laboratory and instrumental indicators. However, at certain stages of the course of CKD, the data of laboratory and instrumental research methods become essential. They are used to identify the activity of the inflammatory process, clarify the

clinical form of the disease, identify complications, differential diagnosis with diseases having similar clinical symptoms.

X-ray examination of the chest organs is carried out by all patients with chronic bronchitis. In most of them, there are no changes in the lungs on the survey radiographs. In some cases, there is a mesh deformation of the pulmonary pattern due to the development of pneumosclerosis. With a long course of the process, signs of emphysema of the lungs are revealed.

X-ray examination of the chest organs helps in the diagnosis of complications (pneumonia, bronchiectasis) and in differential diagnosis with diseases in which symptoms of bronchitis may accompany the main process (tuberculosis, tumor, etc.). Computed tomography of the chest organs is not used to confirm CKD, but to diagnose bronchiectasis. Bronchography has been used somewhat less frequently for the same purpose in recent years.

Bronchoscopy is of great importance in the diagnosis of chronic bronchitis and its differentiation from diseases that manifest a similar clinical picture. Bronchoscopic examination pursues various goals:

• confirms the presence of the inflammatory process and assesses the degree of its activity;

• clarifies the nature of inflammation (diagnosis of hemorrhagic or fibrinous bronchitis is made only after bronchoscopic examination);

• reveals functional disorders of the tracheobronchial tree (bronchoscopic examination plays a leading role in detecting expiratory collapse – dyskinesia of the trachea and large bronchi);

• helps in detecting organic lesions of the bronchial tree (strictures, tumors, etc.).

In addition, with the help of bronchoscopic examination, you can get the contents of the bronchi or water washing for microbiological, serological and cytological studies.

The study of the function of external respiration is carried out in order to identify restrictive and obstructive pulmonary ventilation disorders. In modern conditions, various parameters of the flow-volume loop obtained by computer spirography are used. At the same time, two main indicators are taken into account: the Tiffno index (the ratio of forced expiratory volume in 1 s – OFV1 – to the vital capacity of the lungs – LF; the same ratio, expressed as a percentage, is the Tiffno coefficient) and the peak expiratory velocity index – PSV (the ratio of maximum ventilation of the lungs – MVL to LF). In addition, a modified Tiffno coefficient is calculated – OFV1 / FVC – for the purpose of differential diagnosis with COPD. COPD is characterized by a value of FEV1/FVC < 70%, and with CKD this value is always higher than 70%, even if there is a pronounced bronchoobstructive syndrome. To identify the reversibility of bronchial obstruction, the indicators of FVD are studied after a series of pharmacological bronchodilation tests. After inhalation of aerosols of bronchodilators, ventilation indicators improve in the presence of a reversible component of bronchial obstruction.

By studying the expiratory flow with a pulmonary volume equal to 75, 50 and 25% of the FVC, it is possible to clarify the level of bronchial obstruction of the peripheral parts of the bronchial tree: peripheral obstruction is characterized by a significant decrease in the flow–volume curve in a small volume area, and for proximal obstruction – in a large volume area.

At home, to monitor lung function, it is recommended to determine the peak exhalation rate using a pocket device – a peak flowmeter.

The study of blood gases and acid-base state is important for the diagnosis of various degrees of respiratory failure. Assessment of the degree of respiratory insufficiency is carried out taking into account the level of RaO2 and RaSO2.

Electrocardiography is necessary to detect hypertrophy of the right ventricle and right atrium developing with pulmonary hypertension. The most significant are the following signs: pronounced deviation of the QRS axis to the right; shift of the transition zone to the left (R/S < 1 in V4–V6); S-type ECG; high sharp prong P in the leads AVF, III, P.

A physical exercise test is recommended in cases where the degree of shortness of breath does not correlate with changes in FEV1. Usually a six-minute walking test is used.

The clinical blood test during the stable course of the disease has not been changed. In chronic bronchitis, secondary erythrocytosis is sometimes detected, resulting from chronic hypoxia with severe respiratory insufficiency. The activity of the inflammatory process reflects the general blood test to a lesser extent than in other diseases. "Acute phase" indicators are often expressed moderately: ESR can be normal or increased moderately (due to erythrocytosis, a decrease in ESR is sometimes noted); leukocytosis is usually small, as well as a shift of the leukocyte formula to the left.

A biochemical blood test is carried out to clarify the activity of the inflammatory process. Determine the content of total protein and its fractions, as well as CRP, sialic acids in blood serum. However, the decisive role in assessing the degree of inflammation activity in the bronchi belongs to the data of the bronchoscopic picture, the study of sputum and bronchial flushing waters.

Examination of sputum and bronchial contents helps to establish the nature and severity of inflammation. With severe inflammation, the contents are mainly purulent or purulent-mucous, there are many neutrophils, single macrophages, poorly represented dystrophically altered cells of the atrial and squamous epithelium. Moderate inflammation is characterized by contents closer to mucopurulent; the number of neutrophils is slightly increased. The number of macrophages, mucus and bronchial epithelial cells increases. Microbiological examination of sputum and bronchial contents is necessary to identify the etiology of exacerbation of chronic bronchitis (pneumococcus, Hemophilus bacillus, etc.) and to choose the tactics of antimicrobial chemotherapy.

All complications of chronic bronchitis can be divided into two groups:

1) directly caused by infection: a) pneumonia; b) bronchiectasis;

2) caused by the evolution of bronchitis: a) hemoptysis; b) emphysema of the lungs; c) diffuse pneumosclerosis; d) respiratory failure; e) pulmonary heart (rarely).

The formulation of a detailed clinical diagnosis of chronic bronchitis is carried out taking into account the following components: 1) the form of CKD; 2) the phase of the process (exacerbation-remission); 3) complications. The assessment of the nature of the course in the formulation of the diagnosis of chronic bronchitis is indicated only in the case of pronounced manifestations of bronchial obstruction.

Differential diagnosis

It is necessary to carry out differential diagnosis with diseases having similar clinical manifestations, such as:

- pneumonia;
- tumors of the respiratory tract;

• bronchial asthma;
• cystic fibrosis, etc.

Treatment of chronic bronchitis

The purpose of treatment is to reduce the rate of progression of diffuse bronchial damage, reduce the frequency of exacerbations, prolong remission, increase exercise tolerance, improve quality of life.

The main direction of treatment and prevention of the progression of CB is to eliminate the effects of harmful impurities in the inhaled air (prohibition of smoking, elimination of the effects of passive smoking, rational employment). The treatment of chronic bronchitis itself should be differentiated and depend on the form of the disease and certain complications.

Treatment of CB consists of a set of measures that differ somewhat in the periods of exacerbation and remission of the disease.

There are two main directions of treatment in the period of exacerbation: etiotropic and pathogenetic.

Etiotropic treatment is aimed at eliminating the inflammatory process in the bronchi and includes therapy with antibiotics, antiseptics, phytoncides, etc. Antibiotics are prescribed taking into account the sensitivity of pathogens isolated from sputum or bronchial contents during a culture study. If sensitivity cannot be determined, then empirical therapy should be started with amoxicillin, and with intolerance to b-lactam antibiotics – with macrolides.

In cases of infectious exacerbation of CB in patients with frequent exacerbations who received systemic antibiotics in the previous 3 months, elderly people with chronic concomitant diseases (CHF, diabetes mellitus, etc.), the advantage is given to protected aminopenicillins, in particular, amoxicillin / clavulanate, which is prescribed 625 mg 3 times a day or 1 g 2 once a day, or respiratory fluoroquinolones (levofloxacin 0.5 g 1 time a day or moxifloxacin 0.4 g 1 time a day).

With insufficient effectiveness of such treatment, they switch to parenteral administration of cephalosporins of the third generation without antisynegin activity (cefotaxime intramuscularly or intravenously 2 g 3 times a day) or cefepime intramuscularly and intravenously 2 g 2 times a day.

Pathogenetic treatment is aimed at improving pulmonary ventilation, restoring bronchial patency.

Oxygen therapy and physical therapy classes contribute to the improvement (restoration) of impaired pulmonary ventilation, in addition to eliminating the inflammatory process in the bronchi.

The main thing in CB therapy is the restoration of bronchial patency, which is achieved by improving their drainage and eliminating bronchospasm.

In the treatment of chronic bronchitis, it is important to use mucolytic and expectorant drugs: ambroxol orally 30 mg 3 times a day, acetylcysteine orally 200 mg 3-4 times a day, carbocysteine 750 mg 3 times a day, bromhexine orally 8-16 mg 3 times a day. Therapy is carried out for 2 weeks. Herbal preparations (thermopsis, ipecacuanha, mukaltin) are used as alternative medicines.

In order to eliminate bronchospasm, bronchodilators are used. Anticholinergic drugs are used (ipratropium bromide; its combination with phenoterol and methylxanthines (euphyllin and its derivatives). The inhalation route of administration of medicinal substances is the most preferable and safe. Prolonged euphyllin preparations are also effective, which are prescribed orally only 2 times a day.

Physiotherapy treatment is prescribed: chest massage and breathing exercises.

Outside the period of exacerbation with bronchitis of a mild course, foci of infection are eliminated; the body begins to harden. Physical therapy classes (breathing exercises) are held constantly.

With bronchitis of moderate severity and severe, along with anti-relapse and sanatorium treatment (the Southern coast of the Crimea, dry steppe strip), many patients are forced to constantly receive supportive medication. In moderate cases of the course of CKD, constant exercises in respiratory gymnastics are mandatory.

Supportive therapy is aimed at improving bronchial patency, reducing pulmonary hypertension and combating right ventricular insufficiency. Prescribe the same drugs as during the period of exacerbation, only in smaller doses, in courses.

Primary prevention measures include prohibition of smoking in institutions and enterprises, improvement of the external environment, prohibition of work in a polluted (dusty and polluted) atmosphere, constant prevention of acute respiratory infections, treatment of nasopharyngeal pathology, etc.

Secondary prevention measures are all actions aimed at preventing the development of exacerbations of the disease.

Chronic Obstructive pulmonary disease (COPD)

Chronic obstructive pulmonary disease (COPD) is a serious problem for healthcare due to its widespread, progressive course, and shortened life expectancy. According to WHO, 600 million people suffer from COPD in the world and by 2020 the number of patients will double. Mortality from this disease has been increasing significantly since the 70s of the twentieth century, and almost a third of those who died from COPD are people of working age.

COPD is a primary chronic inflammatory disease with a predominant lesion of the distal respiratory tract and lung parenchyma, the formation of emphysema of the lungs, a violation of bronchial patency with the development of partially reversible or irreversible bronchial obstruction caused by a pathological inflammatory reaction. The disease develops in predisposed individuals and manifests itself by coughing, sputum separation and an increase in shortness of breath, has a steadily progressive course with an outcome in chronic respiratory failure and pulmonary heart.

COPD is a disease characterized by partially irreversible bronchial obstruction. Obstructive ventilation disorders tend to progress and are associated with an unusual inflammatory response of the lungs to exposure to pathogenic gases or particles. The development of COPD can be hereditarily determined with congenital deficiency of a1-antitrypsin, but more often it is caused by active or passive smoking, air pollution, prolonged exposure to occupational factors (dust, vapors, chemical irritants), unfavorable home atmosphere (kitchen smoke, household chemicals).

The pathogenetic basis of COPD is a chronic inflammatory process of the tracheobronchial tree, pulmonary parenchyma and blood vessels, in which increased numbers of macrophages, T-lymphocytes and neutrophils are detected. Inflammatory cells secrete a large number of mediators: leukotriene B4, interleukin 8, tumor necrosis factor and others that can damage the structure of the lungs and support neutrophilic inflammation. In addition, an imbalance of proteolytic enzymes, antiproteinases and oxidative stress are important in the pathogenesis of COPD.

Morphologically, inflammatory cells infiltrate the surface epithelium in the tracheobronchial tree. The mucous glands expand and the number of goblet cells

increases, which leads to hypersecretion of mucus. In small bronchi and bronchioles, the inflammatory process occurs cyclically with structural remodeling of the bronchial wall, characterized by an increase in collagen content and the formation of scar tissue, leading to persistent obstruction of the respiratory tract. The further course of the disease is determined by the development and severity of obstructive ventilation disorders. To ensure proper ventilation, it is necessary to increase the pressure in the alveoli, which is provided by additional muscle effort. Due to a decrease in the rate of exhalation, increased pressure in the alveoli persists for most of the day. The alveoli gradually increase in volume. An increase in the alveoli leads to compression of the pulmonary capillaries and neighboring bronchioles. This leads to increased obstruction due to compression of the bronchioles and reduction of the capillary bed. In the vessels of the pulmonary artery basin, intima thickening gradually occurs, followed by an increase in the number of smooth muscle cells and collagen and irreversible thickening of the vascular wall.

The necessary blood flow in the reduced channel is provided by an increase in pressure in the small circle of blood circulation. The pulmonary heart develops. Thus, obstructive pulmonary emphysema and the associated reduction of capillary blood flow are gradually formed. There is a sequential stage in the development of COPD: the disease begins with hypersecretion of mucus and impaired function of the atrial fibrillation → bronchial obstruction develops and progresses → pulmonary emphysema forms → gas exchange is disrupted → respiratory insufficiency increases → pulmonary hypertension occurs → the pulmonary heart develops.

These data show that, for reasons, pathogenesis, morphology, COPD is the result of chronic bronchitis, prolonged bronchospastic syndrome and/or emphysema of the lungs and other parenchymal destructions (including congenital) associated with a decrease in the elastic properties of the lungs.

Classification

WHO recommends classification of COPD by severity (see table).

Stage 0 means an increased risk of COPD. It is characterized by the appearance of symptoms (cough, sputum) with normal indicators of ventilation function of the lungs.

With a mild course of COPD (stage 1) with minimal clinical signs (cough, sputum), obstructive disorders are recorded. With moderate COPD (stage 2), more pronounced obstructive pulmonary ventilation disorders are recorded and, in addition to coughing and sputum separation, shortness of breath appears, which indicates the development of respiratory failure. In severe COPD (stage 3), chronic respiratory failure and signs of a pulmonary heart are noted. The extremely severe course of COPD (stage 4) is characterized by global respiratory insufficiency (hypoxemia, hypercapnia), and obstructive disorders detected during the study of lung ventilation function can reach critical values

Classification of COPD by severity (GOLD, 2003)

COPD stage
Stage 0
Normal spirometry indicators
Chronic symptoms (cough, sputum)
The zero stage is not included in the classification, it is considered as a pre-disease, which is not always realized in COPD
Stage 1 Mild COPD

Forced Exhalation Volume 1/Functional Vital Capacity Of Lungs <70%
Forced Exhalation Volume 1≥ 80% of the required values
Presence or absence of chronic symptoms (cough, sputum)

Stage 2 COPD of moderate severity
Forced Exhalation Volume 1/Functional Vital Capacity Of Lungs <70%
50%≤Forced Exhalation Volume 1<80% of due
Presence or absence of chronic symptoms (cough, sputum)

Stage 3 Severe COPD
Forced Exhalation Volume 1/Functional Vital Capacity Of Lungs <70%
30%≤ Forced Exhalation Volume 1<50% of due
presence or absence of chronic symptoms (cough, sputum, shortness of breath)
Stage 4 Extremely severe COPD
At this stage, the quality of life deteriorates markedly, exacerbations can be life-threatening. The disease acquires a disabling course
Forced Exhalation Volume 1/Functional Vital Capacity Of Lungs <70%
Forced Exhalation Volume 1<30% of due
Or Forced Exhalation Volume 1<50% in the presence of chronic respiratory failure.. Respiratory failure:PaO2<60% mmHg and/or PaCO2>50 mmHg)
The presence of cough, sputum, shortness of breath

Diagnosis of COPD

The disease usually develops in middle age and progresses slowly. The diagnosis of COPD is based on the analysis of anamnestic data, clinical manifestations and the results of a study of the ventilation function of the lungs. The main clinical manifestations are cough with sputum and, subsequently, shortness of breath. When examining the patient, scattered dry wheezes of various timbres are heard. Sometimes auscultative phenomena in the lungs are not detected and for their detection it is necessary to offer the patient to make a forced exhalation. In the late stages of COPD, there are clinical signs of emphysema of the lungs.

The sensitivity of physical examination methods in the diagnosis of COPD and the determination of its severity is low. They provide guidelines for the further direction of diagnostic research using instrumental and laboratory methods. (The diagnosis of COPD is described in more detail in the OOD scheme for the curation of a patient with COPD).

Laboratory and instrumental studies.

Mandatory studies in COPD
o Sputum cytology
o Clinical blood test.
o Chest
X-ray o Spirometry (examination of the function of external respiration)
o Peak flowmetry
o ECG

In the study of the function of external respiration, the necessary diagnostic standard is the detection of partially irreversible bronchial obstruction in the study of the ventilation function of the lungs. To assess the reversibility of obstructive ventilation disorders, a pharmacological test is performed. The initial value of FEV1 is compared

with the same parameter 30-45 minutes after inhalation of sympathomimetic (400 mcg) or cholinolytic (80 mcg), or a combination of bronchodilators of different mechanism of action. An increase in the volume of forced exhalation for the 1st second (FEV1) by more than 15-12% or 200 ml or more indicates the reversibility of bronchial obstruction. With bronchial asthma, high increases in air volumes are common, and with COPD they are minimal. This test is included in the criteria for differential diagnosis of COPD.

Additional research methods

o Bronchoscopic examination

o Immunological examination

o Physical activity test

o EchoCG

Differential diagnosis

 Bronchial asthma

 Heart failure

 Tuberculosis

 Bronchiectasis

Treatment

The goal of treatment is to reduce the rate of progression of the disease.

COPD treatment programs are determined by the stage of the disease, the severity of symptoms, the severity of bronchial obstruction, the frequency and severity of exacerbations, the presence of respiratory failure and other complications, concomitant diseases. In all stages of COPD, special attention is paid to the exclusion of risk factors (first of all, smoking cessation), patient education, preventive and rehabilitation measures.

COPD treatment with a stable course

The basic principles of management of patients with stable COPD are as follows:

• Bronchodilators are central to COPD therapy.

• Inhaled glucocorticoids are used only in patients with a proven clinical or spirometric response or with Forced Exhalation Volume 1<50% of due or with recurrent exacerbations.

• Long-term use of systemic corticosteroids is not recommended.

• Gradual increase in the volume of therapy depending on the severity of the course.

• Patient education, exclusion of risk factors.

• Use of pharmacotherapy to improve symptoms and/or reduce complications.

• All patients are shown physical training programs.

• Vaccination is advisable to prevent infectious exacerbations.

• In case of severe respiratory insufficiency, prolonged oxygen therapy is advisable.

In stage 0 , drug therapy is considered not indicated .

In stage 1, short-acting bronchodilators are used according to need.

In stage 2, the systematic use of one bronchodilator (or a combination of drugs) is prescribed.

In stages 3 and 4, regular use of bronchodilators (one or more) is used, inhaled corticosteroids are prescribed (if clinical and ventilation indicators significantly improve) and means for the treatment of complications. In severe respiratory failure, prolonged oxygen therapy is indicated.

Pharmacological tests in COPD demonstrate low reversibility of bronchial obstruction, but it has been proven that the systematic use of bronchodilators improves the condition of patients. Therefore, bronchodilators are the basis of symptomatic therapy with a stable course of COPD. Preferably their inhalation use. The choice between cholinolytics, b2-agonists, theophylline or combination therapy depends on their availability, individual effectiveness and side effects.

Inhalation use of bronchodilators is preferable. The main bronchodilators for the treatment of COPD are holinolytics. As we age, the sensitivity of the receptors to cholinolytics persists and, in addition, these drugs usually have no systemic effects. These features are important because COPD usually has a starting point starting from the age of 45, and a significant part of patients have concomitant cardiovascular diseases. Therefore, cholinolytics for COPD are widely used at any age, both with a stable course of the disease and with exacerbations.

They are represented by ipratropium bromide (duration of action 6-8 hours) and tiotropium bromide (duration of action 24 hours). Combined inhalation drugs (b2-agonist + cholinolytic) have certain advantages. A similar drug berodual (ipratropium + phenoterol) has been successfully used for many years in the treatment of chronic bronchitis and COPD. This drug has different mechanisms of influence on the tone of the bronchi, affects different parts of the bronchi (cholinolytics affect the proximal, and sympathomimetics affect the distal parts), one drug combines a faster onset of action (b2-agonist) and a longer effect (cholinolytic). The metered–dose inhaler of berodual contains in one dose ipratropium bromide – 20 mcg and phenoterol hydrobromide - 50 mcg. When using it, side effects are less often noted, because the dosages of each of its components are small. Berodual for inhalation contains in 1 ml (20 drops) 250 mcg of ipratropium bromide and 500 mcg of phenoterol hydrobromide. The drug is used with standard aerosol therapy and with the help of a nebulizer. With this method of application, a single dose is usually 0.5–1 ml of the drug.

Inhalation of bronchodilators through a nebulizer is indicated:

• if it is necessary to use high doses of bronchodilators;

• in the absence of the possibility of coordination of inhalation and pressing on the can of a metered-dose inhaler;

• with Forced Exhalation Volume 1<35% of the proper value;

• for long-term therapy of patients with severe and moderate COPD.

Advantages of inhalation therapy through a nebulizer:

• no coordination of inhalation and inhalation is required;

• inhalation technique is easily feasible for the elderly and seriously ill;

• absence of freon and other propellants;

• creating an aerosol with an optimal particle size;

• the possibility of administering a therapeutically active dose;

• ease and convenience of use;

• possibility of inclusion in the oxygen supply circuit;

• use during artificial lung ventilation.

B2-agonists of short (4-6 h) action are widely used: phenoterol, salbutamol. The action of b2-agonists occurs quickly, but they are characterized by a number of systemic side effects due to their effects on the cardiovascular system. With age, the sensitivity of receptors to sympathomimetics decreases. With their constant use, electrolytes should be periodically checked (hypokalemia is possible).

In recent years, a new generation of inhaled bronchodilators, b2–agonists of prolonged (12 h) action, has been used in the treatment of COPD. These include formoterol and salmeterol.

The therapeutic possibilities of COPD treatment have expanded with the creation of a 24-hour inhaled cholinolytic – tiotropium bromide (spiriva).

Theophyllins of prolonged (12-24 h) action are effective in the treatment of COPD and are currently widely used both as monotherapy and in addition to sympathomimetics. Due to their potential toxicity, preference is given to inhaled bronchodilators.

In moderate COPD (stage 2), one of two treatment regimens may be recommended: a) tiotropium bromide in combination with short-acting inhaled sympathomimetics (salbutamol, phenoterol), b) prolonged inhaled b2-agonists (formoterol, salmeterol) in combination with short-acting cholinolytics (atrovent, berodual).

In the treatment of severe COPD (stage 3), combinations of prolonged b2-agonists (salmeterol, formoterol) and cholinolytics (tiotropium) are used, and with low effectiveness of such a scheme, therapy can be supplemented with small doses of oral prolonged methylxanthines (teopec) or short-acting inhaled bronchodilators.

COPD of extreme severity (stage 4) involves the use of the most massive therapy: a combination of prolonged inhaled bronchodilators (b2-agonists and cholinolytics) and inhaled glucocorticosteroids, and, if necessary, the appointment of short-acting inhaled bronchodilators.

Bronchodilators in metered aerosol packages can be used with the help of a spacer, which facilitates the coordination of inhalation and inhalation of the drug, prevents oropharyngeal deposition of aerosol, prevents cold irritation and a possible cough response to inhalation.

Corticosteroids, which are so effective in the treatment of bronchial asthma, are used in the maintenance therapy of COPD only with a proven clinical or spirometric effect. A reversibility test has been formulated to predict the feasibility of prescribing corticosteroids: after the initial determination of FEV1, corticosteroids are prescribed orally (for 1-2 weeks) or inhaled (for a period of 6-12 weeks). An increase in FEV1 by 15% (or 200 ml) after trial use of steroids is considered as a positive result and gives grounds for prolonged therapy with inhaled corticosteroids. This test can also be performed using peak flowmetry (a 20% increase in exhalation power is considered positive).

Treatment of COPD exacerbations

All exacerbations of COPD contribute to the progression of the disease. The causes of exacerbations may be tracheobronchial infections, environmental pollution, as well as pneumonia, pulmonary embolism, pneumothorax, chest injury, side effects of medications (sedatives, sleeping pills, drugs, b-blockers), congestive heart failure. The cause of COPD exacerbation may be drugs that depress various respiratory functions (respiratory depressants), including sedatives and some analgesics.

With an exacerbation of COPD, the volume of drug therapy is increased:

• Indications for the appointment of antibacterial therapy are an increase in the volume of sputum, the appearance of purulent sputum, increased shortness of breath and / or an increase in body temperature.

• Inhaled bronchodilators (especially b2-agonists and / or anticholinergics), theophylline or glucocorticosteroids with systemic, mainly oral administration, are effective in the treatment of exacerbations of COPD.

• Controlled oxygen therapy is the cornerstone of COPD exacerbation treatment.

If the exacerbation is a consequence of a tracheobronchial infection, then the algorithm of outpatient treatment provides for the first step in therapy to choose and prescribe an antibacterial drug. In outpatient practice, an oral antibiotic, which is most likely to suppress the infectious agent, will be optimal.

The most common agents causing COPD exacerbation are (in descending order of frequency): pneumococci, hemophilic bacilli, moraxella, mycoplasma, chlamydia, viruses. The federal standard for outpatient antibacterial therapy of COPD exacerbations provides for the use of amoxicillin/clavulanic acid, azithromycin, clarithromycin, moxifloxacin. The duration of antibacterial therapy with exacerbation of COPD is at least 5-7 days.

During exacerbation, the volume of bronchodilating therapy increases. It is preferable to prescribe a combined drug (berodual). Thus, in the treatment of COPD exacerbation, bronchodilating therapy should be enhanced through the regular use of effective bronchodilators or the appointment of combinations of drugs of different mechanisms of action. At the same time, you should pay attention to the dosages of drugs in order to avoid possible side effects.

In recent years, one can note a skeptical attitude towards the appointment of expectorants and mucolytic agents. Nevertheless, in the presence of viscous, difficult-to-separate sputum, it is advisable to use sufficient doses of mucolytics (ambroxol, acetylcysteine) for a short period of time.

Glucocorticosteroids with systemic use are highly effective in the treatment of exacerbations of COPD, contributing to faster relief of exacerbation and normalization of ventilation function of the lungs. Treatment is carried out in parallel with broncholytic therapy. If the patient has not previously received long-term courses of glucocorticoids, then their short-term use for 7-10 days allows their rapid cancellation, without a step-by-step reduction in dosages.

Rational therapy of stable COPD makes it possible to reduce the frequency of exacerbations, reduce the frequency of hospitalizations, and improve the quality of life of patients.

Task 4. Mastering the scheme of the indicative basis of actions.

The scheme of the indicative basis of actions in the curation of the patient.

The scheme of the indicative basis of the actions during the curation of a patient with COPD

Stage 1. Initial interview and examination of the patient, as a result of which it is necessary to determine whether the patient has signs of COPD.

Stage 2. Make a preliminary diagnosis.

Stage 3. Determine the scope of additional research methods.

Stage 4. Perform differential diagnostics.

Stage 5. To make a reasonably final detailed diagnosis.

Stage 6. Determine the amount of therapy needed.

Stage 1. Initial survey and examination of the patient.

During this stage, you must determine whether the patient has:

 Cough (it is necessary to set the frequency of its occurrence and intensity) . Cough is noted during the day, rarely at night.

Sputum (it is necessary to find out the nature and amount of it). Sputum, as a rule, is excreted in a small amount in the morning (rarely more than 50 ml / day), has a mucous character. The purulent nature of sputum and an increase in its amount are signs of an exacerbation of the disease. The appearance of blood in sputum deserves special attention, which gives reason to suspect another cause of cough (lung cancer, tuberculosis and bronchiectasis), although streaks of blood in sputum may appear in a COPD patient as a result of persistent persistent cough.

Shortness of breath (it is necessary to assess its severity, its connection with physical activity). Shortness of breath — a cardinal sign of COPD — is the reason why the majority of patients go to the doctor. Quite often, the diagnosis of COPD is established at this stage of the disease. Shortness of breath, felt during physical exertion, occurs on average 10 years later than a cough (extremely rarely, the onset of the disease can begin with shortness of breath). As the pulmonary function decreases, shortness of breath becomes more pronounced. Shortness of breath in COPD is characterized by: progression (constant increase), constancy (every day), increase with physical exertion, increase with respiratory infections.

In addition to the main complaints, the patient may be disturbed by morning headache and drowsiness during the day, insomnia at night (a consequence of hypoxia and hypercapnia), weight loss and weight loss. These signs relate to extrapulmonary manifestations of COPD.

Anamnesis. When talking to a patient, it should be remembered that the disease begins to develop long before the appearance of pronounced symptoms. COPD proceeds for a long time without vivid clinical symptoms: at least, patients do not make active complaints for a long time. It is advisable to clarify what the patient himself associates with the development of symptoms of the disease and their increase. Studying the anamnesis, it is desirable to establish the frequency, duration and characteristics of the main manifestations of exacerbations and evaluate the effectiveness of previously carried out therapeutic measures. Find out if there is a hereditary predisposition to COPD and other lung diseases.

In cases where the patient underestimates his condition, and the doctor cannot determine the nature and severity of the disease when talking to him, special questionnaires should be used.

As the disease develops, COPD is characterized by a steadily progressive course.

ANALYSIS OF RISK FACTORS

When questioning a patient, it is necessary to pay attention to the analysis of risk factors in each individual patient. To ask in detail about the patient's childhood, to clarify the features of climatic and housing conditions, working conditions. The main risk factors are smoking, prolonged exposure to occupational irritants, atmospheric and domestic air pollution, and genetic predisposition. Often, risk factors can be combined.

Smoking (both active and passive). COPD develops in about 15% of male and female smokers and in about 7% of former smokers. 4 If the patient smokes or has smoked, then it is necessary to study the smoking history (length of service) and calculate the smoker's index, expressed in "pack/ years":

The number of cigarettes smoked (day)x smoking history (years)/20 Index of smoker more than 10 (pack/years) is a reliable risk factor for COPD.

The index of a smoker over 25 (pack/years) is a heavy smoker.

Prolonged exposure to occupational irritants (dust, chemical pollutants, acid and alkali vapors). The development of the disease and the stage of the pathological process are directly influenced by the length of service, the nature of dust and its concentration in the inhaled air. The maximum permissible concentration for low—toxic dust is 4-6 mg/ m3. Professional experience by the time the first symptoms of COPD appear is on average 10-15 years. COPD is formed in approximately 4.5—24.5% of people working in harmful and unfavorable production conditions.

Atmospheric and domestic air pollution. Common and most dangerous pollutants are diesel fuel combustion products, car exhaust gases (sulfur dioxide, nitrogen and carbon dioxide, lead, carbon monoxide, benzpyrene), industrial waste — black soot, fumes, etc. Soil dust particles (silicon, cadmium, asbestos, coal) also enter the atmospheric air in large quantities during earthmoving operations and multicomponent dust during the construction of various facilities. The role of outdoor air pollution in the development of COPD is still unclear, but probably small compared to smoking.

Of particular importance in the development of COPD is given to the violation of the ecology of the dwelling: an increase in the level of nitrogen dioxide, the accumulation of combustion products of organic fuel in residential premises without adequate ventilation, etc. Home air pollution, combustion products of organic fuel in heating appliances, burning from cooking in insufficiently ventilated rooms are considered a reliable risk factor for COPD.

When collecting information from a patient with COPD, attention should be paid to the study of factors that provoke an exacerbation of the disease: bronchopulmonary infection, increased exposure to exogenous damaging factors, inadequate physical activity, etc., as well as to evaluate the frequency of exacerbations and hospitalizations for COPD. It is necessary to clarify the presence of concomitant diseases (pathology of the cardiovascular system, gastrointestinal tract) that occur in more than 90% of COPD patients and affect the severity of the disease and the nature of complex drug therapy. It is necessary to find out the effectiveness and tolerability of previously prescribed therapy, the regularity of its implementation by the patient

PHYSICAL EXAMINATION

The results obtained during an objective examination of the patient (assessment of the objective status) depend on the severity of bronchial obstruction, severity of emphysema and manifestations of pulmonary hyperinflation (overstretching of the lungs), the presence of complications such as respiratory failure and chronic pulmonary heart, the presence of concomitant diseases. However, the absence of clinical symptoms does not exclude the presence of COPD in the patient.

■ Examination of the patient:

Assessment of the appearance of the patient, his behavior, the reaction of the respiratory system to the conversation, movement around the office. Lips are collected by a "tube", forced position — signs of severe COPD. Assessment of skin coloration is determined by a combination of hypoxia, hypercapnia and erythrocytosis. Central gray cyanosis usually serves as a manifestation of hypoxemia. Acrocyanosis detected at the same time is usually a consequence of heart failure.

Examination of the chest: its shape [deformity, "barrel-shaped", sedentary when breathing, paradoxical retraction (sinking) of the lower intercostal spaces on inspiration (Hoover sign)] and participation in the act of breathing of the auxiliary muscles of the

chest, abdominal press; significant expansion of the chest in the lower parts are signs of severe COPD.

Chest percussion: box percussion sound and lowered lower borders of the lungs are signs of emphysema.

Auscultative picture

Weakened vesicular respiration in combination with low standing of the diaphragm confirm the presence of emphysema of the lungs. ' Dry wheezing, which increases with forced exhalation, combined with increased exhalation — obstruction syndrome.

Stage 2. Preliminary diagnosis. Based on the patient's complaints, anamnesis, based on the data of physical examination, a preliminary diagnosis of COPD is made, but for the final analysis it is necessary to conduct laboratory and instrumental studies, primarily spirometry with a test with a bronchodilator.

Stage 3. Laboratory and instrumental research methods.

The most important method of diagnosis of COPD at the stage of laboratory and instrumental examination is the study of the function of external respiration. This method is necessary not only for making a diagnosis, but also for determining the severity of the disease, selecting individual therapy, evaluating the effectiveness of its implementation, clarifying the prognosis of the course of the disease and conducting an examination of the ability to work.

Mandatory studies in COPD

o Sputum cytology

o Clinical blood test.

o Chest X-ray

o Spirometry (study of the function of external respiration) o Peak flowmetry

o ECG

Study of the function of external respiration

Patients with chronic productive cough should be subjected to an examination of the function of external respiration in the first place to detect air flow restriction, even if they do not have shortness of breath.

Spirography. A decrease in the bronchial tree lumen, manifested by chronic restriction of airflow, is the most important documented factor in the diagnosis of COPD. The main criterion that allows us to say that the patient has a chronic restriction of airflow or chronic obstruction is a decrease in the ratio of post-bronchodilator FEV to the forced vital capacity of the lungs less than 70% of the proper value, and this change is recorded starting from the first stage of the disease (mild COPD). Bronchial obstruction is considered chronic if it is registered at least 3 times within one year, despite ongoing therapy. The partially reversible bronchial obstruction characteristic of COPD is determined in patients during a bronchodilation test. The value of the increase in FEV, less than 12% of the required and less than 200 ml is recognized as a marker of a negative bronchodilatory response. When such a result is obtained, bronchial obstruction is documented as little reversible and indicates COPD.

Peak flowmetry. Determination of the volume of peak expiratory velocity is the simplest and fastest method of assessing the state of bronchial patency, but having low sensitivity, is performed by a general practitioner or a general practitioner. The values of the peak exhalation rate may remain within the normal range for a long time in patients

with COPD. Daily peak flowmetry is indicated to exclude bronchial asthma if the diagnosis remains unclear to the end.

■ Chest X-ray. Primary X-ray examination to exclude other diseases (lung cancer, tuberculosis, etc.), accompanied by similar clinical symptoms with COPD, is carried out on an outpatient basis in the direction of a therapist or a doctor of general medical practice. With a mild degree of COPD, significant radiological changes are usually not detected.

With the established diagnosis of COPD in the period of exacerbation, an X-ray examination is carried out to exclude pneumonia, spontaneous pneumothorax, pleural effusion, etc.

Chest radiography makes it possible to detect emphysema (an increase in lung volume is indicated by a flat diaphragm and a narrow shadow of the heart on a straight radiograph, flattening of the diaphragmatic contour and an increase in retrosternal space on a lateral radiograph). Confirmation of the presence of emphysema can be the presence on the radiograph of bullae, defined as X-ray transparent spaces more than 1 cm in diameter with a very thin arch-shaped border.

Chest CT is required when the existing symptoms are disproportionate to spirometric data; to clarify the changes detected during chest X-ray; to assess indications for surgical treatment. CT, especially of high resolution (step from 1 to 2 mm), has a higher sensitivity and specificity for the diagnosis of emphysema than standard chest radiography.

Blood tests

■ Study of the gas composition of blood. The study of blood gases of patients in outpatient settings is not carried out.

In a polyclinic, finger and ear oximetry can be the means of choice for examining patients to determine blood saturation. Pulse oximetry is used to measure and monitor oxygen saturation, but it makes it possible to register only the level of oxygenation and does not allow monitoring changes in raSO2. If the oxygen saturation index is less than 92%, then a study of blood gases is shown.

Pulse oximetry is indicated to determine the need for oxygenotherapy (if there is cyanosis, or pulmonary heart, or FEV, less than 50% of the required values).

Clinical blood test. Neutrophilic leukocytosis with rod-nuclear shift — signs of exacerbation of the disease. With the development of hypoxemia, polycythemic syndrome is formed in patients with a predominant bronchitic type of COPD (an increase in the number of red blood cells, a high hemoglobin level, low ESR, an increase in hematocrit of more than 47% in women and more than 52% in men, increased blood viscosity). The detected anemia may be the cause of shortness of breath or an aggravating factor.

Sputum examination is not performed on an outpatient basis.

Other studies

■ ECG. Detects signs of hypertrophy of the right parts of the heart, it is possible to detect cardiac arrhythmias. Allows to exclude the cardiac genesis of respiratory symptoms.

■ EchoCG. allows you to evaluate and identify signs of pulmonary hypertension, dysfunction of the right and left parts of the heart and determine the severity of pulmonary hypertension.

Thus, the diagnosis of COPD is carried out by summing up the following data: the presence of risk factors, clinical signs, the main of which are cough and expiratory

dyspnea; steadily progressive violation of bronchial patency, assessed according to spirometry; exclusion of other diseases that may lead to the appearance of similar symptoms.

Stage 4. *Differential diagnosis.*

The main disease with which COPD needs to be differentiated is bronchial asthma. Approximately 10% of COPD patients also have bronchial asthma. If it is difficult to conduct differential diagnostics with bronchial asthma, the patient is referred to a pulmonologist for consultation.

Other diseases

In a number of clinical situations, it is necessary to make a differential diagnosis of COPD with the following diseases.

 Heart failure. Wheezing in the lower parts of the lungs during augmentation. A significant decrease in the ejection fraction of the left ventricle. Dilation of the heart. The radiograph shows the expansion of the contours of the heart, congestion (up to pulmonary edema). In the study of lung function, violations of the restrictive type are determined without limiting the airflow. Consultation with a cardiologist.

 Bronchiectasis. Large volumes of purulent sputum. Frequent association with bacterial infection. Rough wet multi-caliber wheezing during auscultation. "Drumsticks". An X—ray or CT scan shows the expansion of the bronchi, thickening of their walls. If suspected — consultation of a pulmonologist

 Tuberculosis. It starts at any age. Radiography shows infiltration into the lungs or focal lesions. If suspected, consult a phthisiologist.

 Consultation of an otorhinolaryngologist to exclude pathology of the upper respiratory tract.

V stage. *Making a final diagnosis.*

The final diagnosis is formed in accordance with the classification.

When formulating the diagnosis of COPD, the severity of the course of the disease is indicated: mild (stage I), moderate (stage II), severe (stage III) and extremely severe (stage IV), exacerbation or remission of the disease; the presence of complications (pulmonary heart, respiratory failure, circulatory insufficiency).

Stage VI. *Determination of the volume of necessary therapy.*

The basic principles of therapy are highlighted above. Recall that smoking cessation is the first mandatory step in the COPD treatment program. Patient education in order to encourage smoking cessation has the greatest potential impact on the course of COPD. Even short three-minute consultations aimed at stopping smoking are effective and should be used at every medical appointment.