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Optimal strategies

for real doctors and medical scientists

Abstract

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A book for real doctors and medical scientists. Doctors who treat the patient, but not the disease. Scientists who make scientific discoveries on a sound philosophical basis. You will read it not without pleasure and benefit.

Contents

Motivation

With this book, we set ourself the task of raising the problem of optimal strategies (first of all) in the somatic clinic. The topic is important because the medical community is not always satisfied with the results of its work. More and more effort and resources are spent, but the results achieved are more and more modest and often depressing. Breakthroughs in scientific research are less and less likely to lead to expected clinical outcomes, and their cost is rising sharply.

Significant improvements in the quality of diagnosis over the past decade, based on modern equipment and technology, have not always been supported by equally large breakthroughs in treatment approaches. New drugs and technologies are introduced to the market of medical services, but investments in their development are less and less compensated by real returns from practical application. For us, the problem is that the approach to clinical diagnosis and treatment is based on a false philosophy, when the norms of a healthy person are also accepted as the norms for a sick person and are fetishized. In this philosophy, there is no place for the norms of the sick person, and this, in the end, is the reason for the often lack of good treatment results.

Human nature has no place in this philosophy. It is postulated that human nature is imperfect, and the mechanisms of disease (mechanisms of recovery!), chosen by evolution, are imperfect. The opinions that health and illness are not opposite categories, that the patient also has health and needs it (health) even more for recovery, that illness, like health, can be normal, are extremely rare, and if they are declared, they drown in the dogmas of this philosophy. The diagnosis "sick" in this philosophy usually means the need to prescribe treatment based on the norms of a healthy person.

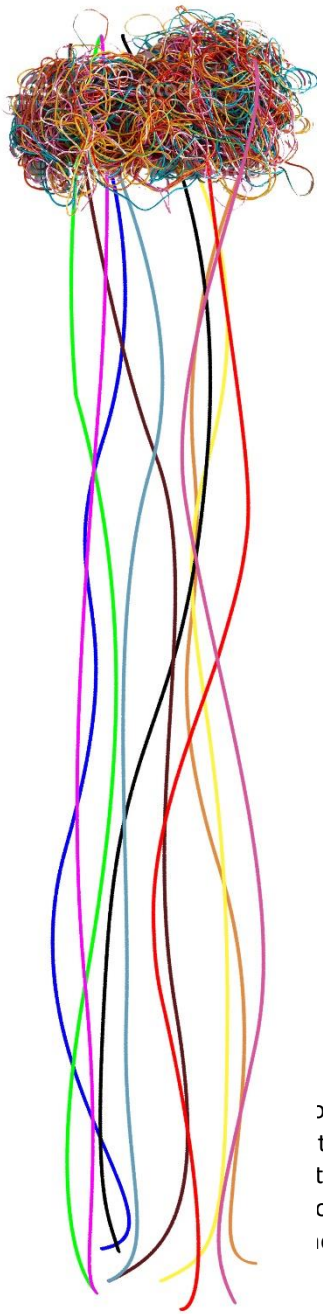
Modern scientific, methodical, educational and other literature cannot free itself from the shackles of pathogenesis, as if human nature arranged the disease in such a way that it, the disease, represents a series of violations, deviations, errors that must be eliminated and fought with until madness. Since our literature is arranged this way, since our teachers teach us this way, since we load each other with these ideas, what remains to be done but to fight the disease, even if it costs a person his life.

This book is a rethinking of our ideas published in different years, partly in co-authorship with each other, when the first of us started, and the second continued, supplemented and contributed to their further development with approbation in modern directions of development of the somatic clinic (cardiology and neurology, respectively). Rethinking, supplementing, systematizing the accumulated experience, we note that modern medicine, unfortunately, has not yet freed itself from the shackles of false philosophy. The world and medicine with it "firmly" entered the third millennium, but the understanding of the wisdom of Nature bequeathed by the founders of medicine, unfortunately, continues to remain at the initial level. The new philosophy is based on a number of principles, the most important of which are the principles of consistency between health and disease and the optimality of disease.

The principle of consistency of health and disease is based on the consistency of categories of health and disease. The principle of disease optimality is part of the Principle of the optimality of Nature. In accordance with this principle, the optimal paths for the course of the disease are distinguished, providing the highest quality and complete recovery in acute cases and determining the most favorable course in chronic cases, deviations from which are those violations in its course, those forms that require interventions, with a precondition for minimizing losses on these interventions. These interventions are deterministic and boil down to optimization or, in other words, the return (if possible) of the course of the disease to an uncomplicated condition. A measure of the degree of optimality of the course of the disease in each case is the payment of the patient's body for the disease. The most optimal variant of the disease is there, when the payment for recovery at it is the smallest. Let's not dissemble, Nature did not select the mechanisms of the disease as not the mechanisms of recovery.

We know, colleague, that you are the best of doctors, and we count on your great interest in this new version of the book, now in English. We hope this book will help you in your ongoing improvement as a physician. Criticism, comments, we will take as your desire to help make it more interesting and useful.

Cordially yours Mykola Iabluchanskyi & Andriy Yabluchanskiy



The principle
of non-contradiction of health and illness

The principle with which we will introduce you now does not destroy the wall between health and disease, because this wall does not exist. For those who believe in the imaginary wall, this principle opens up a new understanding and a new relationship between these categories. Let's explain everything in order.

A wall is built between health and illness. They are opposed to each other, and therefore healthy a priori has no right to illness. The Constitution of the World Health Organization explicitly states that "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity."

In real life, each person has his own health, personal health resource and suffers from diseases. Therefore, one of the essences of life is the dialectic of the relationship between health and disease.

Подтверждение того, что здоровье и болезнь одновременно присущи одному и тому же человеку, можно найти далее в названном Уставе ВОЗ. Contrary to its definition, the WHO Constitution goes on to state that "the enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition."If there is a highest attainable level of health, then there are other levels of health that do not reach it.

ome to the concept of individuality of health. According to tion in the WHO Constitution, its definition of health tood as a dream of "the highest attainable level of ould be aspired to, but which is hardly ever achieved by ot find a person who has everything at once - complete

physical, spiritual and social well-being at the same time. There is simply no person who has not experienced any childhood illness at least once in his life.

Health is always individual. It is determined by genotypic resources and phenotypic assets, both positive and negative. Between high genotypic resources augmented by positive phenotypic acquisitions and low genotypic resources disrupted by negative phenotypic acquisitions, there is an unlimited number of options for individual health resources. For example, one of the inherited health resources may be more lucky, the other - less. But the first phenotypically can acquire more with a "minus" sign, and the second - with a "plus" sign, and at one stage of life they can become equal in terms of available health resources. The number of health options here is endless, and these options are actually strictly individual or personalized.

The phrase in the WHO Constitution that the enjoyment of the highest attainable level of health is one of the fundamental rights of every person confirms its (health) individuality. But you still need to be able to use this right, and government institutions should provide opportunities for using this right, and not just declare it.

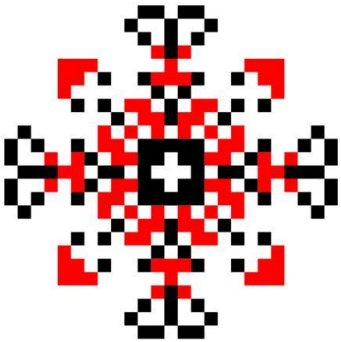
From a philosophical point of view, health and illness are categories of measure, which is understood as a qualitatively determined quantity. Both of them, the measure of health and the measure of illness, are characterized by their qualitatively defined quantities. As categories of measure, they do not contradict each other. There is no wall between them, this wall cannot be built, their confrontation is impossible, and one and the same person has health and can have a disease (diseases) at the same time.

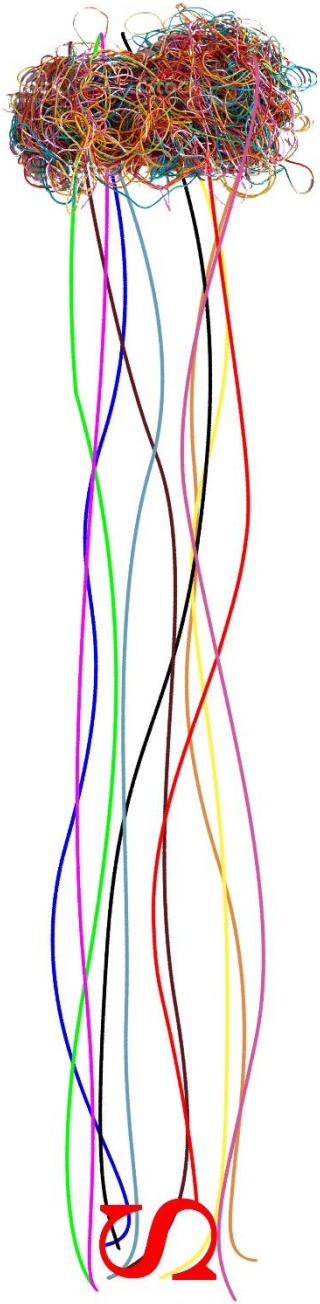
A measure of health is all variants of health in genotypic (including race and sex), phenotypic, age, physical, spiritual, and social expression. The measure of disease is all possible known diseases with all possible consequences. We see that the capacities of both measures are endless, and their combination is precisely the basis of individuality or personification.

The concept of norm is closely related to the measure category. The norm is understood exclusively as a specific, qualitatively certain quantity related to the goal function. Different norms correspond to different purposes. Many goals give rise to many norms, but each norm taken separately is one and only one qualitatively certain quantity and it is determined by a given function of the goal taken separately. We come to the concept of norms of health and norms of illness, to be more precise, to the concept of norms in the measure of health and in the measure of illness. This remark is very important, and now you will understand why.

In health, it is natural to distinguish racial, gender, age and other norms. This applies to anthropometric, functional, laboratory and any other indicators. And now attention! If norms of health are derived from indicators of health, if norms of disease must also be derived from indicators of disease, and the two sets of indicators are independent of each other, norms of health cannot be norms of disease. Illness, like health, must have its norms, and it really has its norms. What norms are naturally released during illness, we will explain in the section devoted to the Principle of Optimality of Disease, formulated by the first of us.

Everyone is born with their own reserve of health and everyone uses it in their own way. Illness cannot be avoided by anyone, and in order not to get sick, you need to have enough health, and to recover from an illness or, when it doesn't work out, to live with a chronic disease, it is better to have the smallest loss, you need to have enough health. Therefore, if someone has built a wall between health and disease, it does not mean that it actually exists. Health and illness are not opposite categories, but coexisting categories. This discovery has major implications not only for understanding the disease, but also for managing it by developing and implementing the best possible strategies for treating patients. This is the essence of the principle of non-contradiction of health and illness.





The principle
of symmetry in the projection of health and illness

Nature is stingy, and human nature is no exception. There are many examples. Each person, with the exception of some congenital defects, is "programmed" with only 46 chromosomes, the differences between a man and a woman are concentrated in only one, and all this limited number of them (chromosomes) provides an exclusive individuality, the personification of each of us. An important example for a doctor in the terms of this book is the realization of health and illness in one (limited) number of mechanisms. Typical pathological processes are "assembled" from normal physiological reactions, like bricks of enamel. It's too expensive to have different health and disease tools, and the disease tools turn out to be hypertrophied health tools if you look closely, examples of why will be shown later.

Nature realizes its diversity through a limited number of principles, and one of the most important is the Principle of Symmetry. The assimilation of this Principle is a necessary condition for the unerring assimilation of the laws of health and disease both in medical science and in practice. There are mirror, transitional (progressive), sliding, rotational, central symmetries, including in their various combinations, and we find all of them not only in anatomical and functional, but also in mental dimensions. We will give examples of the first two, mirror and transitional symmetries, respectively.

Let's start with mirror symmetry. First we will touch on health, and then illness.

As for health, there are norms of anthropometric, mental, physiological, laboratory, biochemical, immune and related indicators for each age, sex, and race.

Deviation to both sides, to increase and to decrease - signs of health problems with negative consequences for him (health). Therefore, if a deviation in one direction is declared for some indicator, be sure that this deviation should also be in the other direction, and its detection one hundred percent will lead you to success in establishing your name in medicine.

On September 25, 2008, at the IX National Congress of Cardiologists of Ukraine, I. Hussak from the USA (with Ukrainian roots) gave a lecture on long and short QT syndromes. Everything is clear with long QT syndrome. We have known this for a long time with many possible dangerous consequences. The greatest danger is fatal arrhythmias. The honor of opening the short QT belongs to I. Hussak, and the circumstances of the opening are very interesting. In the 80s of the last century, he worked at the Kaunas Arrhythmia Center (Lithuania of the former USSR). Engineers creating "smart" pacemakers asked him to compile a list of ECG signs of life-threatening conditions. Among other signs, I. Hussak named prolongation of the QT interval. When the engineer asked if there was a short QT, he answered: "In order not to ask such questions, you need to get a medical education and work as a doctor for at least 20 years." He said, but then stayed up all night pondering the logic of the engineer's question. Soon he discovered the first cases of a short QT interval, but only after emigrating to the USA, supplementing them with new observations, he and his colleagues prepared an article for a cardiology journal. This happened already in this century, and more than 10 years passed from the discovery of short QT to the publication of the article. The history of the publication of the article is also interesting, because the editors of the magazine initially did not accept it with strict condemnation: "You drew this cardiogram yourself." Now, thanks to I. Hussak, we know that a short QT interval is one of the causes of idiopathic atrial fibrillation.

One of the areas of scientific research of the first of us is related to the development and medical application of heart rate variability. This is an important technology for researching the regulatory systems of the human body, because it even allows predicting the risks of sudden death. The risks of death are usually discussed when heart rate variability decreases dramatically, but according to the symmetry principle, these problems should also occur when heart rate variability increases. We were the first to demonstrate this, but we did not achieve the result for as long as I. Hussak, because we consciously relied on the Principle of Symmetry.

These are just two examples of using mirror symmetry to determine health to keep in mind. For health, it is important to localize indicators in

the so-called "golden mean", any deviations from which are signs of a decline in the level of health up to catastrophic consequences..

In the previous chapter, we agreed that health and disease are not opposite categories, but co-existing categories. We agreed that like health, disease has its own norms, and these norms can differ (in most cases) from the norms of health in each of the indicators. For the disease with the best course (we will talk about it in the following sections), from the point of view of mirror symmetry, there is a "golden mean" for each of the indicators, the deviation from which has the consequence of worsening the course of the disease. Just as the norms of health change depending on age, sex, race, the disease itself (its type, localization of the main pathological process, etc.), the phases of the development of the disease, the available health resources of the patient and their changes, the norms of the disease also change. We will continue this topic in the following chapters, but we should note that this area is still largely unexplored, and there is more than enough room for everyone to find their golden fleece.

Like mirror symmetry, transitional symmetry is everywhere, in both health and disease.

Turning to health, we emphasized the well-known fact that there are anthropometric, mental, physiological, laboratory, biochemical, immune, etc. norms for each age, sex, race. But the transfer of rules from age to age, gender to gender, race to race, etc. is a manifestation of transitional symmetry. Similarly, the transition of health norms from indicator to indicator is a manifestation of transitional symmetry. The same applies to the disease, when the norms must be correlated with the disease itself (type, localization of the main pathological process, etc.), with the phases of the development of the disease, the available health resources of the patient and their changes.

There are reasons to once again return to I. Hussak's speech at the 10th National Congress of Cardiologists of Ukraine. In it he also said that it was only 4 years after the publication of the short QT that he was struck by the idea that if there is a long QRS, there must also be a short QRS. Soon he found and described it. What did I. Husak see? What principles of Nature did he rely on? Intuitively, he relied on the Principle of Symmetry. By the way, if the members of the editorial board of the journal also knew the Principle of Symmetry, they would not have been mistaken, and I. Hussak's article on the short QT interval would have been published much earlier. If you ask why we did not finish the story about long and short QT in one of the previous paragraphs, but moved it here, we will answer because the

long and short QRS is an example of transition (transitional symmetry) of the QT duration to the QRS duration.

Relying on transitional symmetry in disease issues, we understandably translate knowledge from one disease to gaps in knowledge about another disease. And even if it is necessary to confirm the possibility and correctness of such an action, the confirmation plan and its implementation become extremely clear with the minimization of costs for the confirmation itself.

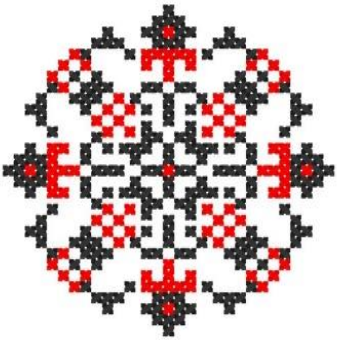
Heart attack and stroke are different diseases, outwardly different pathological processes, but they are variants of acute inflammation in response to a sharp blockage of blood flow in the part of the ventricle of the heart and part of the brain, respectively, and therefore they have common features, common regularities in the variants of the course and results which we will show in one of the following sections.

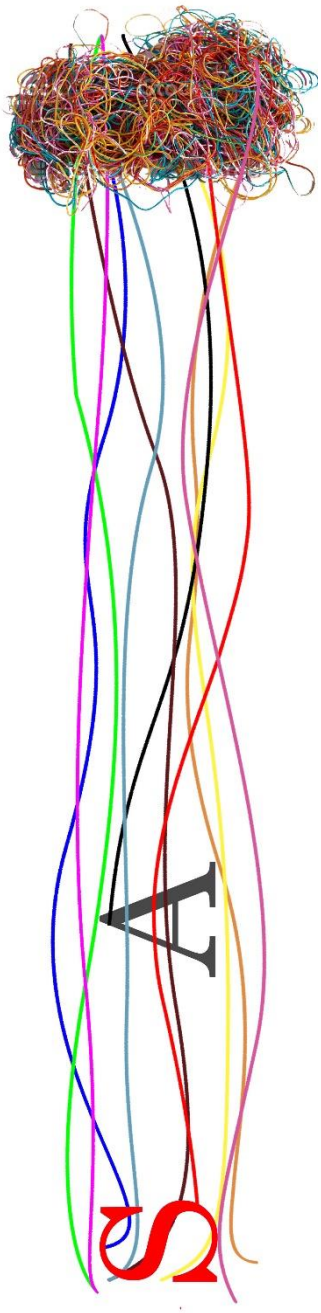
If there are ventricular late potentials, there are atrial late potentials. If there is hypertrophic cardiomyopathy, there is also hypertrophic myopathy of skeletal muscles, also with different localization options, for example, only of temporal muscles. There are many rheumatic diseases as variants of chronic immunopathological inflammation. These are all examples of transitional symmetry, and by applying it, you become more effective in scientific research and clinical applications.

One of our graduate students defended his PhD thesis on the treatment of patients with arterial hypertension, taking into account the orthostatic reactions of blood pressure. Treatment results were better only in intermediate reactions, worse in others. In this light, it is not enough to control blood pressure, it is also necessary to control its orthostatic reactions.

We cannot complete the chapter without an example of symmetry in the mental sphere, for which we turn to the book of one of the Nobel laureates E. Wigner "Symmetries and reflections". At the end of the book, the author has included biographies of two more Nobel laureates in physics. Both developed cancer, both learned of their illness, and both died within the next six months. When the first learned about the disease, he asked the doctor how long he had left to live, and during this time he made an incomparably greater contribution to science than during the previous period of his life. For the second, the knowledge of his illness proved incompatible with human conceptions, and he eventually turned into a plant in his experiences. With these two biographies, E. Wigner allegorically showed an example of symmetry in the mental. Probably the highest according to the principle of symmetry.

From the examples given, we also see that symmetry in illness is much more comprehensive than symmetry in health, because the norms of a sick person are not just different from the norms of a healthy person, but are their own for different stages of its development. , and, in addition, like a healthy person, a sick person is also determined by age, sex, race and many other geno- and phenotypic characteristics. To know the principle of symmetry means to master it, therefore, to use it consciously. The principle of symmetry is especially important in the work of a practical doctor who, while providing assistance to a patient, is forced to move, as it is called, on a razor's edge, when danger to the patient's health is possible from almost anywhere, when there is only one best result of treatment. Note, nature cannot but be stingy, otherwise its creations, including man, in its healthy development, in most cases in successful prevention, overcoming diseases and coexistence with diseases when they cannot be cured, would be unsustainable.





The meaning of
biological and astronomical clocks

There are biological and astronomical clocks. We are made up of many biological clocks, but we live in a world of astronomical clocks, which are also many. These clocks are cyclic (rhythmic). Cycles - life (from birth to death), activity-sleep, daily fluctuations in body temperature, heart diastole-systole, inhalation-exhalation, Krebs cycle, deoxyribonucleic acid replication cycle - are examples of biological cycles or clocks. Cycles - daily, monthly, seasonal, annual - are examples of astronomical cycles or clocks.

Biological clocks are genetically coded and synchronized with astronomical clocks through the sensors of the regulation systems of the human body. If they are well synchronized, then there are no health problems, if not - the level of health decreases, diseases appear. Problems in one or another clock system, as well as in the synchronization of the first with the second, are important factors in reducing the level of health and increasing the risk of developing diseases.

Age is measured by the astronomical clock, but it is determined by the biological clock, which does not always correspond to the astronomical clock. One is young in body and soul. The other seems to be young, but looks old. Wasteful life, unhealthy environment, diseases are aging…

The response of the human body to stress, other things being equal, is determined by the time factor. At some points in time this reaction is positive, and at others it can be negative. The biological clock determines the body's response to stress in the appropriate period of time.

The most important synchronizer of biological clocks is the Sun, followed by the Moon. Among biological rhythms, the most important are diurnal.

Each cell of the human body contains genes that determine its daily periodicity. These intracellular clocks are adjusted to the periods of the change of light and dark time of the day. The period of the intracellular clock is not equal to 24 hours and is in the interval of 20-29 hours, which is reflected by the term circadian rather than daily rhythm. The circadian endogenous clock is adjusted by external periodic synchronizers to the 24-hour period of the Earth's day. However, they can be stretched and compressed over a wide range of up to 48 and 16 hours, respectively. The polar night in the north, staying for many days in deep karst caves, sailing on submarines, etc. are examples of conditions in which the other is realized in relation to the 24-hour circadian periodicity.

The human body as a whole system can normally exist only under the condition of temporal coordination of all its functions, which implies the presence of a central clock. It is believed that the central clock is located in the suprachiasmatic nucleus of the thalamus. Nerve fibers from the optic nerve arrive here, and with the blood, hormones (in particular, melatonin) that set this clock to external synchronizers.

The regulation functions of the "central" clock are largely under the control of the pineal gland.

A person spends a third of teir life in sleep. Sleep is a physiological state that occurs mainly in the dark and is characterized by inhibition of active interaction with the environment. Conscious mental activity stops completely. Sleep quality determines overall health and quality of life, which is measured in terms of social, mental, emotional and physical well-being. Disruption of sleep naturally leads to a significant decrease in the quality of life. They have an even more significant impact on the patient's health, causing fatal disorders. Sleep is a cyclical process. Each cycle consists of a phase of slow (75-80% of the cycle) and a phase of fast (25-20% of the cycle) sleep. A total of 3 to 6 cycles. During sleep, changes occur in the brain, accompanied by reactions of autonomic and humoral regulation. They are related to psychological processing of experience, stabilization of the psycho-emotional sphere, synchronization of systems and processes, restoration of energy potential. All this is aimed at ensuring effective wakefulness. The need for sleep ranges from 4-6 to 8-10 hours or more. It is established in early adolescence and changes little throughout life.

During daylight hours, a person usually does not sleep, and this is his active life. Everyone has their own style. In different periods of life, this

style changes, but each of them has a fairly conservative structure. This structure is the start time and duration of each element of activity: waking up, charging, breakfast, taking medication, physical and intellectual activity, rest, free time, preparing for sleep, etc.

Activity and sleep are interconnected—disruption of activity is often the cause of sleep disorders, just as poor sleep determines low activity.

Genetic coding and external synchronization of biological clocks ensure their high resistance to stress factors. With age, however, there is an increase in some rhythms with the possible development of various disorders.

The simplest indicator of the circadian rhythm is the circadian index. It is defined as the ratio of the average daytime heart rate to the average nighttime heart rate. In healthy people older than 3 years, this indicator has no sex-age differences and is within 1.24 - 1.44 units. On average, in adults, it is estimated at 1.32±0.08 units.

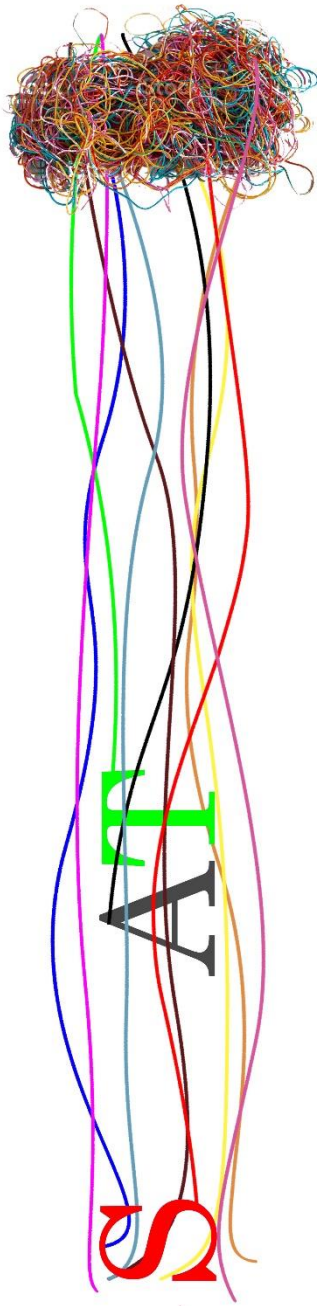
The norms of biological rhythms are individual. To some extent, individuality is taken into account in chronobiological types, which are conventionally distinguished - "larks", "owls", "pigeons". In "larks", the entire spectrum of activity falls on the first half of the day. They go to bed early and wake up early. In "owls", this activity takes the second half of the day. They go to bed late and wake up late. "Pigeons" tend to be "larks" in terms of activity.

Biological rhythms are not frozen constructs. Being clearly "tied" to external synchronizers, they have a spectrum of stable states and when the frequency characteristics of the synchronizers change, they pass from one stable state to another (transient processes). For the circadian rhythm, the duration of the transition process can be from 5 to 40 days.

During transient processes, the greatest probability of violations of biological rhythms, known under the general name of desynchronosis, arises. Acute and chronic desynchronosis are distinguished. Acute desynchronosis is observed during transcontinental transmeridian flights, and in clinical practice - during circadian rhythm sleep disorders. Acute desynchronosis can turn into a chronic form. Chronic desynchronosis is a pathological condition caused by persistent desynchronization of the physiological functions of the human body. Desynchronosis as changes in the circadian structure of physiological functions are early predictors of health disorders.

And now the most important thing. Speaking about the biological clock, one cannot ignore the topic of temporal organization of pathological processes underlying diseases. In diseases let's emphasize that biological

rhythms are mostly not just disturbed, but also desynchronized with natural ones. Moreover, diseases lead to the development of new additional rhythms, such as the acute disease cycle and the cyclic organization of chronic diseases with cycles of exacerbation and remission. Diseases, like everything in life, are organized in time, with biological clocks adjusted to them. Diseases must be overcome. It is necessary to survive the disease if it proceeds in an acute form. You will have to live with the disease if it has become chronic. For the best consequences of diseases, there are norms of the biological clocks. Just as a healthy pregnancy should fit into approximately 9 months, the best possible outcomes of an illness also fit into its own temporal hierarchy. But more details about this already in the Principle of disease optimality.



The influence
of weather sensitivity on the course of the disease

The problem of weather sensitivity (meteosensitivity) and its importance for human health is new and old at the same time. It dates back to the time of Hippocrates, but scientific development began only in the last century after the publication of A. Chizhevsky's book "The Earth's Echo of Solar Storms". The medical community did not pay much attention to this until climate change became a global threat. Today, human dependence on climatic factors has increased dramatically, and this cannot be overstated, especially when it comes to health and disease. Today, more than ever, the doctor must consider the weather sensitivity of his patient.

Man is constantly connected with nature, so his body's reactions to climate and weather changes are purely natural. These reactions are called weather sensitivity and are implemented through adaptation to climate change factors. The interaction of the human body with weather factors is carried out in sensory systems located in the skin (temperature, humidity, wind, solar activity, atmospheric electricity, radioactivity), lungs (temperature, purity and ionization of air, humidity, wind), organs of vision and hearing, receptors tactile and taste sensitivity (light, noise, smell, temperature and chemical composition of air), etc.

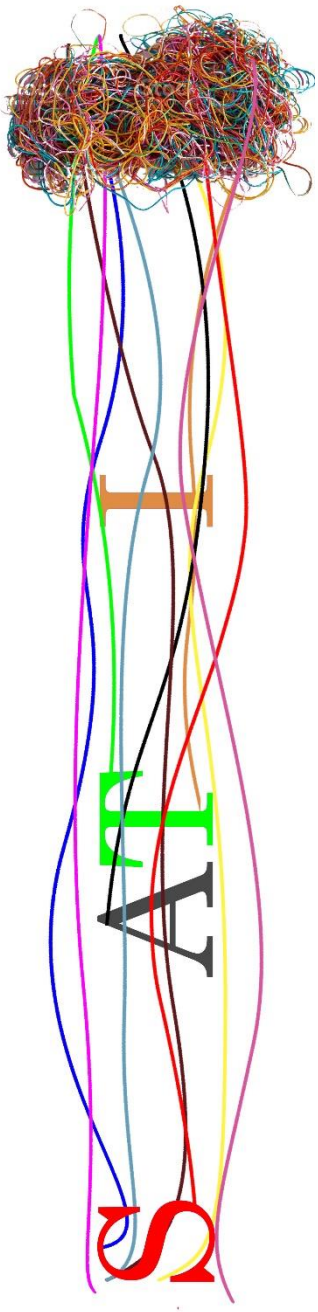
Weather sensitivity can be physiological and pathological. In a healthy person, adaptation to climate changes and weather factors has a physiological nature and is not accompanied by deterioration of well-being. These conditions are called the comfort zone.

When health deteriorates, weather sensitivity becomes pathological and manifests itself in worsering of mental and/or physical health. Pathological weather sensitivity refers to deviations from physiological, and these deviations can be both in the direction of strengthening and in the direction of weakening of these reactions. Deviations in both directions are fraught with a decrease in health resources, an increase in the risk of developing diseases and their aggravation. The less health resources, the more painful. Young children and the elderly, first of all women, especially those with chronic diseases, are most susceptible to weather changes. Intensification of psycho-, neuro- and vasculopathological reactions and crises is most often associated with a change in the weather. In older age, there is an increase in the frequency of acute coronary events, postoperative complications and injuries, as well as man-made disasters. Additional signs of pathological weather sensitivity are obesity, hormonal changes during puberty, pregnancy, menopause, cardiovascular diseases, acute respiratory viral and bacterial infections, deterioration of the socio-economic and environmental situation; another. Pathological meteosensitivity is also called meteoaddiction or meteopathy.

In developed countries, about 40% of healthy men and 50% of healthy women have signs of pathological weather sensitivity. The share of patients increases to 90%. Residents of large cities are more prone to meteorological reactions compared to the population of small towns and rural residents. The main reason is harsh environmental conditions, oversaturation of the air with heavy ions, shortening of the daylight hours, reduction in the intensity of ultraviolet radiation, strong influence of man-made, social and mental factors on the development of chronic diseases, grief.

Pathological weather sensitivity can be recognized by anticipation of a change in the weather and associated deterioration of well-being: decrease in physical activity, the development of depressive states, discomfort (including pain) in various systems, absence of other possible reasons deterioration of well-being, exacerbation of the current disease, recurrence of such manifestations with climate and weather changes, rapid improvement during positive climate and weather changes.¶

Physiological and pathological weather sensitivity largely depends on human biological rhythms, the quality and degree of their synchronization with astronomical natural rhythms, which we have already emphasized. Ignoring weather sensitivity and its complications is a mistake and reduces the effectiveness of both scientific research and medical care for patients.



The principle
of disease optimality

R. Rosen's book "Optimality Principles in Biology" and the works of various authors on the mathematical theory of optimal processes (in the list of references, as an example, the book by L. Pontryagin with co-authors) led us to the formation of the Principle of disease optimality. Our research, supported by followers, first in the field of myocardial infarction and stroke, and then in other areas, became the material basis of the Disease Optimality Principle. In the next section, we will focus on the consequences of myocardial infarction and stroke as a vivid example of the Principle of disease optimality.

The principle of disease optimality states that there are optimal ways of the course of the disease, in which the payment for it (the course) is minimal, and that human mechanisms seek to ensure its (disease) development precisely in these optimal ways. The optimal ways of the course of the disease ensure a high-quality recovery in its acute forms, and in the chronic form - a stable remission with rare exacerbations that are easily eliminated. The best possible optimal course of the disease is the one in which the consumption of the patient's health resources is minimal.

The principle of disease optimality in this formulation does not apply to resuscitation, where the doctor solves the task not of minimizing losses, but of minimizing the time of providing assistance to the patient, or from the point of view of the mathematical theory of optimal processes - the task of quick action.The principle of disease optimality is based on the mechanisms of recovery genetically fixed in the human body.

Disease resulting from the interaction of the patient's body with etiological factors due to the reduction of the patient's body's protective mechanisms to these factors is formally a strategy and tactic of recovery. Nature has nothing to select and genetically fix the mechanisms of the development of diseases, except for the mechanisms of recovery.

According to the Principle of disease optimality, it is not enough to diagnose the disease in the patient, it is necessary to establish which version of the course you are dealing with - optimal or deviations from it. If the course of the disease is carried out according to the optimal option, it is unlikely that it will be possible to make it more optimal simply because it is impossible to be smarter than Nature. If in the course of the disease there is a deviation from the optimal option, it is necessary to intervene, but not by bringing it to the norms of a healthy person, which cannot be the norm for a patient, as we have already shown above, and to those norms that are precisely the characteristics of the optimal variant of the course of the disease in terms of the timing and intensity of changes in the structure of the relevant body systems.

Ideas of optimality can be seen indirectly in the works of many scientists and doctors, but the Principle of disease optimality was not formulated before. At the same time, the adverse consequences of the disease were not always perceived as the result of the breakdown of its mechanisms. According to H. Selye, we can often improve Nature by suppressing reactions that were developed for protection, but are not necessarily useful in all circumstances. According to I. Davydovsky, the biological expediency of inflammation does not mean that this act is always appropriate in individual conditions and that it provides absolute protection, and therefore the doctor is faced with the need not only to observe it, but also to be ready to intervene in it. In H. Selye Nature can be improved, and in I.V. Davydovsky, Nature must be observed and intervened if necessary. H. Selye, like many others, perceives the violation of the expediency of the mechanism selected by evolution as its impropriety.

Identifying the optimal course of the disease and its disorders (non-optimal variants), it is natural to establish their internal mechanisms, the dialectics of their pathogenesis and sanogenesis. There is no doubt that the number of the most optimal ways of the course of the disease is limited, and the evasions from them (including the mechanisms) are extremely diverse. Identifying the optimal course of the disease and its internal driving forces, it is necessary to find and describe the variants of its disorders and to identify the mechanisms that cause them. This is the only way to build

the correct treatment strategy, which is based on the optimization of options for the course of the disease that deviate from the optimal one.

The task is not easy, and the first question that arises is related to the very understanding of the optimal course of the disease. We repeat, only the one in which the price of the patient's health for the disease is the lowest can be recognized as the optimal course of the disease. This price is a minimum of structural and functional consequences from the localization of the pathological process and changes in the patient during the disease with the maximum achievable quality and duration of his life.

In providing assistance to the patient, all solved tasks must obey the global task, which ensures the optimal course of the disease with the best possible results. With the smallest loss of health due to illness, the highest possible quality and life expectancy of the patient are achieved.

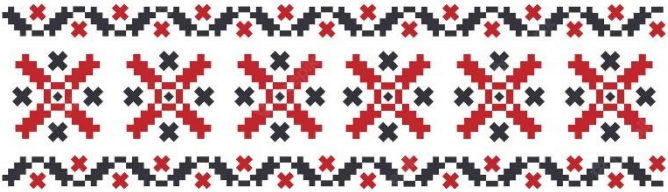
Errors that accumulate in medical practice are largely related to the fact that in our actions we do not trust the healing powers of the patient's body, and, forgetting about the unity of the strategic goal of treatment, we replace it with absolutized private current tasks. We, for example, set the main goals in myocardial infarction to limit the size of the peri-infarct zone, limit the size of the infarct zone, protect the intact myocardium, anticoagulation therapy, ... But these and similar tasks are only private current tasks and Nature punishes for such substitution. Limiting the size of the infarct zone, limiting the size of the infarct zone, protecting the intact myocardium, anticoagulant therapy worsened the results of the treatment of myocardial infarction and had to be abandoned.

Discovering the optimal course of the disease and its disorders, we come to the tasks related to bringing these disturbed forms to the conditions of its (disease) optimal course. The content of such intervention is determined by the specific form of violations, the degree of their deviation from the optimal variant of the disease, the phase of development of the typical pathological process underlying them. At each stage of the disease, our opportunities to optimize its course will be different simply because some mechanisms and systems are involved in some stages, and completely different in others. This topic develops further.

Disease means a disorder of the whole organism. Pathogenesis and sanogenesis, systems of local and organismal regulation are inseparable in it. In addition, regulatory systems, including the mental "I", are the organizers of the disease, determining its course and results. Regulation systems, both pathogenetic and sanogenetic, local and global, are the essence, manifestation of the disease and are distinguished only in our mental models. It

is they who are of exceptional importance in the trajectory of the development of the disease, and it is thanks to them that it is possible to intervene effectively or ineffectively in it, and it is they who should be, first of all, the object of the doctor's research and intervention.

The approach, based on the Principle of disease optimality, should be subject to both the clinic and fundamental research, based on the results of which it is built. It is necessary to build experimental animal models based on optimal and suboptimal forms of the course of the disease. It is necessary to develop methods of treatment, and more precisely, methods of optimization, methods of optimal management, based on models of disturbed forms of the course of diseases. The quality of treatment must be checked on models of uncomplicated forms of the course of diseases from the point of view of how much it (treatment) optimized the course of complicated forms of the model, how much it brought their course closer to the characteristics of the model of uncomplicated forms. Further, the principle is filled with specific content regarding the leading mechanisms of disease development and methods of its diagnosis and treatment.



Risk factors
of somatic diseases

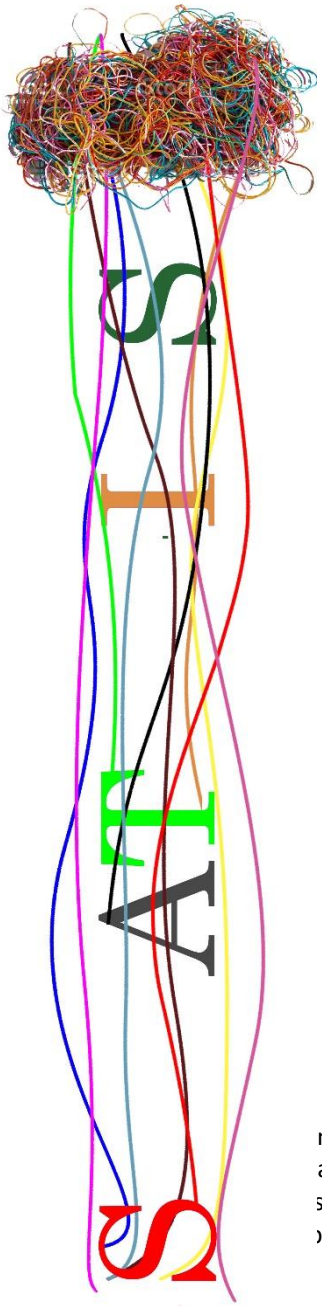
Factors contributing to the development of diseases are called risk factors. They are divided into external and internal. Both of them are divided into uncontrolled and controlled. It is almost impossible to influence the uncontrollable factor, but we can change the controllable factors.

Uncontrollable external risk factors include many environmental factors that can only be eliminated by relocating and improving the environment, which is often extremely difficult to do. Uncontrollable intrinsic risk factors include gender and family history (heredity), which are also beyond our control.

Controllable external risk factors are those that can be changed, including water and diet. Controlled internal risk factors usually include high blood cholesterol, high blood pressure, smoking (also passive), alcohol abuse, hyperglycemia, diabetes, overweight, accumulated diseases before this disease, low physical activity, psychosocial distress, age (biological). After reading the chapter on symmetry, you might ask where is low blood cholesterol, low blood pressure...and you'd be absolutely right. According to the Principle of symmetry, the number of controlled risk factors should be supplemented.

The more health, the better it is, the more chances of not getting sick, the more chances for a favorable course of emerging diseases with the best consequences. Each risk factor increases the likelihood of development and worsens the course of the disease. With an increase in the number of combinations of these factors, the risk of development, the severity of the course, the risk of early adverse consequences of any disease becomes increasingly irreversible.

Regarding arterial hypertension, an integral indicator is proposed, which takes into account the influence of a set of risk factors present in the patient. This is called global cardiovascular risk. Its spread to patients with any somatic disease is natural. In this form, the indicator can be called a global somatic risk.¶ ¶We must not forget about the risk factors of diseases. Controlled risk factors should be controlled. It is a reliable means of reducing the probability of developing the disease, and when it has already developed, creating conditions for its best course and outcome.



The essence
of diseases

Any disease is aimed at solving the problem facing the body, eliminating or, in case of failures, limiting the influence of causal and accompanying factors on it with the maximum possible restoration of disturbed functions and structures in changed conditions of existence.

Since ancient times, the disease was perceived as a natural phenomenon, the cause of which is the influence of harmful environmental factors (both external and internal), and the essence - processes aimed at recovery, compensation, adaptation, finally.

The mechanisms underlying the disease are called pathogenesis. But it is important to understand pathogenesis as the mechanisms of the disease and not to associate it (pathogenesis) with the negative, unnatural, abnormal in the disease. A sick person cannot have everything like a healthy person. The disease must be survived, the mechanisms of the disease are the mechanisms of recovery, which can not so rarely break down. A narrow (incorrect) understanding of pathogenesis as abnormal explains attempts to apply the concept of sanogenesis with its opposition to pathogenesis. Note that those who use the term sanogenesis pay attention to the fact that pathogenesis and sanogenesis are inseparable.

Disease is a purposeful process and our intervention in it, if it is not correlated with its goals, the degree of compliance or non-compliance of its course with optimal conditions, is nothing more than a rough regulation, brings more harm than good.

ng, as we noted in the introduction, derives from our al infarction and stroke and is supported by this and s, as well as the work of our students. We chose these rocesses in scientific studies because of their equally

high clinical significance, one pathogenetic mechanism (acute alteration inflammation, which you will soon see), an exceptionally high frequency of occurrence of this particular pathogenetic mechanism in the somatic clinic, and also as (attention!) entering in it (inflammation), as its component, almost the entire set of other (with the exception of tumor processes, the subject of which is oncology) mechanisms. You will find dystrophies, atrophies, microcirculation and blood coagulation disorders, thrombosis, necrosis, regeneration, hypertrophy, hyperplasia, organization, etc. at one or another phase, in one or another part of the localization of inflammation, regardless of its nature (infectious or aseptic). We note that the same mechanisms of myocardial infarction and stroke shown by us are another example of the spread of the Principle of symmetry (in this case, transfer symmetry) in medicine.¶ ¶Somatic diseases are conditionally divided into acute, subacute and chronic.

The acute course is understood as a disease with clearly defined phases of formation, development and exacerbation, as well as certain limitations of their duration (biological clock). At the same time, there are criteria for recovery, which include, in addition to clinical, subtle biochemical, morphological and other data. The principle of disease optimality declares the quality and completeness of recovery as the main criterion of an acute disease.

The essence of the chronic course of the disease is a long (as a rule, lifelong) course. Chronic diseases have a relapsing nature with phases of exacerbation and remission. The ratio of these phases is determined by the state of health of the patient, the pathological process, its features and changes in the course of the disease. In the early stages, the symptoms caused by the pathological process predominate, in the later stages - symptoms associated with primary and/or secondary dysfunctions of the organs involved in the process.

According to the ratio of phases, chronic diseases vary from latent forms to constantly relapsing. In some cases, it is appropriate to schematize chronic diseases, according to which they are considered as some sequence of acute ones, and each of them occurs against a changed background. An example can be exclusion from the list of chronic pneumonia, when each new episode of inflammation in the lungs is perceived as acute pneumonia.

Subacute diseases are transient forms with the possibility of recovery, both in acute diseases and transition to chronic ones. From the point of view of the Principle of the disease optimality, subacute forms of the disease do not have sufficient grounds and are no more than a part of the

acute options, deviated from the optimal ones.¶ ¶All somatic diseases are realized through the logic of systemic and local mechanisms in their multilevel interaction. Therefore, there is quite a lot in common between them, which is caused, on the one hand, by the integration of any organ or system of organs into the body and their internal inseparability, and on the other hand, by a small number of pathological processes which make up the core of the disease and are characteristic of it, as well as regarding the organs and systems more or less involved in their orbit.

The integrity of the human body at the regulatory level is supported by the mental sphere, nervous, endocrine and immune systems, and therefore, in their integrity, they play a key role in the course of the disease.

The mental sphere also solves the problem of disease perception. Through appropriate reflex mechanisms, it establishes in the brain the perception of the disease as a structural trace not only during its phases, but also after it, which under certain circumstances can cause serious adverse consequences. The mental sphere is of exceptional importance in the organization of recovery mechanisms, but, as we can see, it can be a source of serious disturbances after an illness that seemed to have been resolved successfully.

The reaction of the body's regulation systems in case of illness is implemented through stress mechanisms in the form of the general adaptation syndrome of H. Selye. It manifests itself in changes in vegetative regulation (activation of the sympathetic nervous system, sympathorvagal imbalance in variants), disturbances in systemic and local regulatory humoral systems (hormones, cytokines, etc.), immunity and, through them, in the development of the functions of all executive organs. The activity of the organism is reoriented in favor of the organ, organ system according to the degree of their involvement in the pathological process. In stress in the form of the general adaptation syndrome in diseases, phases of anxiety or mobilization and recovery (in our terminology eustress) are distinguished, as well as, in cases that end unfavorably, phases of resistance or exhaustion (in our terminology distress).

Eustress is a necessary condition for a favorable course of the disease without negative consequences. Distress leads to disruption of the course of the disease with various variants of adverse consequences. Among the variety of variants of distress, hyperreactive, hyporeactive and intermediate with a diverse combination of hyporeactive and hyperreactive variants of distress are distinguished. With hyperreactive distress in the course of the disease, destructive processes may prevail over restorative ones. With hyporeactive distress, the body's resistance decreases,

which creates a threat of generalization of the pathological process and various delays in its recovery processes. With intermittent distress, there are various variants of the listed violations.

If the entire set of options for myocardial infarction and stroke in the light of stress mechanisms is narrowed down to eustress, hyperreactive distress, and hyporeactive distress, it turns out that their outputs will be better in eustress and worse in hyperreactive and hyporeactive distress.

With eustress, the infarct zone heals with a post-infarction scar. With hyporeactive and hyperreactive distress, there will be a risk of heart rupture, or the formation of a heart aneurysm with variants of heart failure. With hyperreactive distress, the risk of fatal arrhythmias additionally increases. During eustress, a scar is formed at the stroke site, which will minimally disrupt the anatomical relationships of viable structures of the brain without their deformations and possible functional disorders as a result. In hyperreactive and hyporeactive distress, a scar can disrupt the anatomical connections of brain structures with functional consequences. In addition, a cyst may develop with anatomical and functional consequences. Next, we will show that in the case of myocardial infarction and stroke with the same complications, the mechanisms of their formation in hyperreactive and hyporeactive distress will be fundamentally different.

The system-forming functions of stress turn a local pathological process (in our example, aseptic inflammation due to a myocardial infarction or stroke) into a disease of the whole body, and the success of recovery depends on the extent to which these (local and systemic) phenomena meet the requirements of the moment.

Inflammation is a protective-compensatory-adaptive reaction of the body in response to damage and is aimed at solving the problem created by the damage. In the literature, you will find that myocardial infarction is necrosis of the myocardium, and stroke is necrosis of the brain. But necrosis, like trauma, sets off a chain of events that together constitute inflammation. In the zone of myocardial infarction and in the zone of stroke (under favorable conditions), ischemia, necrosis, development and organization of granulation tissue with the formation of a scar occurs. Agree, this is something much more than just necrosis!

Damage, in the same area of myocardial infarction and stroke, with the release of metabolic products into the blood, includes stress, which brings the body to a new level of regulation. Manifestations of this are pain syndrome, fever, activation of the sympathoadrenal system, release of hormones into the blood, leukocyte reaction of the blood, changes in immun-

ity, disruption of systemic blood circulation, etc. The course and consequences of inflammation largely depend on how stress reacts to these processes. Taking into account changes in indicators of the sympathoadrenal system, leukocyte blood reactions, etc., it is possible to conclude about eustress, hyporeactive or hyperreactive distress.

The connection between the focus of inflammation and the system-forming mechanisms (in the form of stress) occurs through the border zone, through its microcirculatory channel. This is how exudation is carried out in the area of inflammation and removal into the bloodstream along the concentration gradient of products of impaired metabolism and damaged tissues. The border zone is the place of connection of the inflammatory zone with systemic regular mechanisms, and for a successful connection, its dimensions must meet the requirements of the inflammatory zone, but no more and no less. How many passions have there been for the treatment of myocardial infarction, stroke and other inflammatory conditions by limiting the size of the border zone! All of them ended in defeat!

Destruction of necrotizing tissues in the area of inflammation occurs due to immigration here from the blood using chemotaxis mechanisms of polymorphonuclear leukocytes and, to a much lesser extent, blood monocytes. Among the factors of positive chemotaxis for them, leukotriene B4 is of great importance. The destruction of necrotized tissues is associated with a decrease in their strength, which threatens the development of complicating bleeding, the destruction of organs, such as, for example, rupture of the heart during myocardial infarction, perforation of the walls of the organs of the digestive tract, etc.

Pay attention to how fabulous Nature is! A significant number of these leukocytes in the tissues is dangerous for the body - the risk of damage is too high with such placement. Therefore, leukocytes in the amount necessary to ensure processes of this type are concentrated in the bone marrow depot. For example, the number of polymorphonuclear leukocytes here exceeds their number in peripheral blood by 20 or more times. Only when the products of disturbed metabolism begin to flow from the damaged area into the blood and trigger stress mechanisms, leukocytes are released from the depot along with them into the blood. The speed of immigration of polymorphonuclear leukocytes into the damaged zone is about 4 mm per hour, that is, they penetrate it very quickly and are ready to perform their biological functions.

With an uncomplicated course of inflammation, regenerative processes develop simultaneously with necrotic processes (synchronization of the phases of inflammation), which contributes to the preservation of the

strength of the walls of cavity organs, as well as the preservation of anatomical relationships in the tissue of non-cavity organs, which is especially important, for example, for the brain. Their development is carried out due to the hematogenous influx of connective tissue precursor cells, which here differentiate into fibroblasts, macrophages, plasma and mast cells, tissue forms of T-lymphocytes, as well as local cambial cells. which have epithelial tissues, hepatocytes and some other tissues and cells. The breakdown products of polymorphonuclear leukocytes, entering the blood, slow down their (polymorphonuclear leukocytes) further immigration to the affected area (negative chemotaxis), but activate and regulate the influx of those types of leukocytes that ensure the formation of connective tissue (positive chemotaxis). The activity of these cells can explain the value for the assessment of regenerative processes during inflammation of proteins and protein-carbohydrate complexes (C-reactive protein, seromucoid, fibrinogen, products of fibrinogen degradation, sialic acids, oxyproline, chlorine-soluble mucoprotein, etc.) of blood.

Many adhere to the incorrect point of view that at the site of damage, necrosis and the formation of connective tissue are disconnected, that connective tissue begins to form only after the end of necrosis. However, this can happen in inflammatory diseases with the development of various, often fatal, complications, which we will show in the examples below.

Precisely because any inflammation is a single indivisible process, locally mediated through the dialectic of necrotic and regenerative processes, when the latter coexist for a considerable time and are controlled by each other (including through systemic stress mechanisms), conditions are created for the healing of the damaged area of the connective tissue scar, and the larger the size of the affected area, the longer, other things being equal, healing takes.

Inflammation, we see, is really a protective and adaptive reaction of the body in response to damage by replacing dying tissues with connective tissue, and therefore our task should be to create conditions for its favorable course.

Violation of the interaction (desynchronization) of the phases of inflammation usually occurs in hyperreactive and hyporeactive distress and various variants of their transformation from one to another. Thus, avoidance of eustress in both directions (mirror symmetry from the Principle of symmetry) has the same consequence - desynchronization of the phases of inflammation as the cause of its disturbances and unfavorable results.

Hyperreactive distress causes a sharp increase in leukocyte blood reaction with rapid and massive infiltration of the inflammatory zone by

polymorphonuclear leukocytes as secretory organs of the lesion. At the same time, there is a delay in the immigration of blood agranulocytes to the inflammatory zone as precursors of the cell pool of granulation tissue due to their small number and insufficient activation in the peripheral blood by various mechanisms, including due to suppression through the hyperactivated polymorphonuclear leukocytes. With a very high increase in the number and activity of polymorphonuclear leukocytes, agranulocyte blood reactions can be completely suppressed. The result is a sharp acceleration of the destruction of necrotic tissues and a delay in regenerative processes.

Hyporeactive distress causes an insufficiently intense leukocyte blood reaction with delayed and insufficiently intense infiltration of the inflammatory zone by polymorphonuclear leukocytes as the secretory organs of the lesion. Destructive processes slow down, concentration gradients of polymorphonuclear leukocyte destruction products in the blood are insufficient for proper activation of agranulocytes as precursors of the pool of granulation tissue cells. As a result, the immigration of these cells into the inflammatory zone is slower than necessary, delaying and slowing down the recovery processes, which complicates the course of inflammation.

We see that mirror deviations in the regulation of inflammation in hyporeactive and hyperreactive distress have one consequence for inflammation, namely the desynchronization of necrotic and regenerative processes when they are separated from each other in time, which is the cause of its (inflammation) disturbances.

As for myocardial infarction and stroke, I hope it is now clear why it is wrong to equate them with necrosis. If the regenerative processes are delayed in relation to the necrotic ones, the result of the inflammation will always end badly, as can be seen in the example of myocardial infarction, when all patients must die from a ruptured heart. The wall of the heart is subjected to a cyclical load of great intensity, and the loss of strength in the infarct zone should end with a rupture of the heart. Nature acted wisely. It organized inflammation in the infarct zone so that necrosis and the formation of connective tissue coexisted and controlled each other, preserving the strength of the heart wall. Synchronization of the phases of damage and development of connective tissue is the key mechanism for the uncomplicated course of any inflammation.¶ ¶The result of uncomplicated inflammation is the formation of structurally and functionally complete connective tissue at the site of damage. Its complications are expressed in the predominance of destructive processes over regenerative and/or delay of regenerative processes, as a result of which the course of inflammation

is disturbed. Different types of cysts can form in parenchymal organs, and in hollow ones - aneurysmal sacs up to the point of rupture (where it is thin, it ruptures), etc.

The implementation of the mechanisms of inflammation through the system of connective tissue cells (starting with bone marrow cells-precursors of connective tissue, and then with blood leukocytes and cells of the connective tissue of organs involved in the pathological process) allows to explain the possible mechanisms of chronic inflammation in the case of primary injury by a harmful agent (viruses) of cells- precursors of connective tissue.

Connective tissue cells are renewed at the expense of the hematopoietic stem cell, which forms mature cellular forms for the body's connective tissue through different trajectories of differentiation through pluripotent and committed progenitor cells. This is how macrophages (tissue monocytes), plasma cells (tissue B-lymphocytes), etc. are formed. A parallel line of fibroblast differentiation is allowed.

The stem cell, classes of pluripotent and committed progenitor cells, peripheral blood leukocytes and connective tissue cells form a single self-sustaining system of connective tissue cells.

The implementation of inflammation in the connective tissue framework of organs, the important role of connective tissue cells in the mechanisms of chronic inflammation, as well as the hematogenous origin of most cells of the connective tissue of organs give reasons to believe that their disorders are of exceptional importance in the pathogenesis of various diseases. These processes should unfold at the level of stem cells, classes of oligopotent and committed progenitor cells, which go through the active phase of the mitotic cycle, when they are most vulnerable to the action of damaging factors. Primary damage to mature stromal cells is possible but unlikely.

In the case of viral etiology of diseases, damage to one or more classes of polypotent and/or committed progenitor cells in the histogenetic series of connective tissue cells is most likely. As a result, clones of defective cells, mechanisms of self-support, reproduction and settlement of the connective tissue of organs are formed, which ensure a variety of disease manifestations.

Perhaps, a critical mass of cells of this clone is necessary for the development and further episodes of exacerbation of chronic diseases, which, thanks to the known self-maintenance mechanisms of the pool of

polypotent and committed progenitor cells, has a cyclic nature with periods of tens of days. For macrophages, this period can be about 120 days with wide fluctuations.

It should be taken into account that a small part of them participates in the mitotic cycle from a clone of defective polypotent and committed progenitor cells of connective tissue. The transition to the mitotic cycle of certain groups of cells will be characterized by the release into the bloodstream and entry into the connective tissue of new volumes of defective cell forms with new episodes of disease exacerbation.

Primary damage to classes of pluripotent and committed progenitor cells leads to the colonization of the connective tissue of the organs involved in the process with the inclusion of defective cells. Therefore, there is reason to expect that inflammation in such cases will acquire a persistent character, which is understood as chronic inflammation.

With this understanding, it is easy to explain the possibility of recovery from some types of toxic forms of inflammation.

The effect of a toxic agent on the classes of polypotent and committed progenitor cells leads to the formation of defective cells and their replenishment of the pool of stromal cells for the entire period of circulation in the body at a sufficient concentration of the toxic agent.

But if the toxic agent does not violate the genetics of polypotent and committed progenitor cells, then when it is removed, only healthy cells are formed (if hematopoiesis is not suppressed), which over time populate the connective tissue of organs and heal it.

In the case of genetic disorders, relative recovery can be achieved by suppressing the relevant genes or by synchronizing and transferring all defective pluripotent and committed progenitor cells to the G phase of the mitotic cycle using bone marrow or, preferably, by replacement transplantation. These methods make it possible to cure systemic lupus erythematous, rheumatoid arthritis, dermatomyositis and other diseases of this line. Among the various forms of inflammation, autoimmune is of great practical importance to one degree or another. In principle, any inflammation is autoimmune to one degree or another. The immune system is a subsystem of the connective tissue system and therefore its participation in inflammation is natural.

With adequate inflammation, changes in the immune system are cyclic and contribute to its rapid and high-quality completion. Immune mechanisms ensure the individuality of inflammation in accordance with the individuality of specific etiological and pathogenetic factors. The fact that the

same inflammation proceeds differently in different cases is largely explained by the individuality of each person and the immune mediation of inflammation.

With regard to autoimmune inflammation, it is necessary to remember of immunodeficiency conditions, which can be both primary and secondary, arising in severe conditions, such as, for example, with serious injuries or operations.

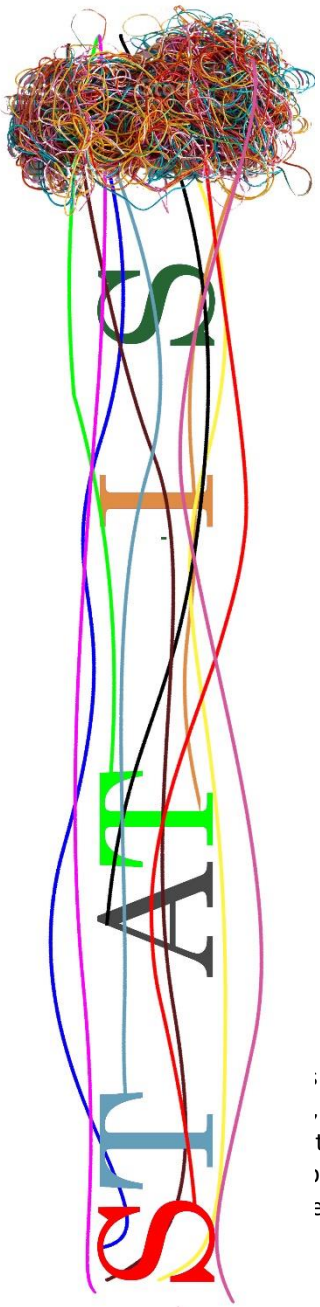
Fever, which we mentioned in the examples of myocardial infarction and stroke, occupies an exceptional place in the course and consequences of inflammation. It develops in response to the appearance of pyrogens in the bloodstream, regardless of endogenous (for example, leukocyte) or exogenous (for example, microorganisms) origin. It increases the speed and intensity of metabolism, increases the body's resistance, activates and strengthens systemic regulatory mechanisms mediated by stress. For the course of the disease to be favorable, it is necessary that the fever be adequate to it (the course). An insufficient temperature is just as bad as an excessive increase in temperature. During inflammation, fever is one of the components of stress in eustress and distress.¶ ¶For any disease, inflammatory diseases are no exception, in addition to the considered changes on the part of regulatory systems and the inflammation zone, there is necessarily a violation of the specific functions of the organs involved in the pathological process. For diseases of the circulatory system, this is a disturbance in the circulatory system, for diseases of the digestive organs, in the processes of digestion, etc. Functional disorders can be reversible, but they can also be irreversible. They necessarily interact with the pathological process underlying the disease and modify it. These effects can be serious in the case of significant functional impairment.

Let's take myocardial infarction as an example. With an optimal course, a scar of the minimum possible size is formed in the area of the infarction. At the same time, thanks to the hypertrophy of the remaining myocardium, the initial (before the disease) shape of the ventricle of the heart, which is the basis of its normal functioning, is restored. If this process is disturbed, an aneurysm of the heart can form, which creates the basis for the development of heart failure. The earlier it develops and the larger it is, the stronger the consequences of functional disorders of the heart.

Diseases do not always end in full recovery and can turn into a chronic form. In such cases, compensatory and adaptive processes are of great importance. Their diversity and relationship with local and organis-

mal regulation systems determine the individualization of the clinical manifestations of the disease, its uniqueness. According to the Principle of disease optimality, the more structural and functional losses, the more compensatory and adaptive mechanisms are activated, and the more resources are spent on the disease, the less optimal it is.

In the clinic, it is important not only to know to what extent the symptoms of the disease correspond to its optimal course, to what extent they deviate from it, but also to predict them in order to take measures to return to the optimal course. When studying the mechanisms of the disease, it is necessary to find qualitative and quantitative equivalents of typical pathological processes for the optimal course of the disease and deviations from it, and precisely in such conditions to develop, test and offer new preventive and therapeutic means technologies for clinical practice.



The course
of somatic diseases

The course of somatic diseases is unique. The reason is the individuality of the person, as well as the uniqueness of the risks and causal factors of the disease itself, multiplied by each other. At the same time, diseases, no matter how different they are, have the same structure. This is based on the unique genetic mechanisms of building our body and the limited number of pathological and compensatory-adaptive processes.

In everyday work, the doctor evaluates the individuality of the disease and its typical structures. This act is provided by the analysis of clinical signs - symptoms and syndromes (we will continue to use the term syndromes) - of the disease in their dialectical unity and projection on the individuality of the patient's body.

Based on the Principle of disease optimality, the approach should be complemented by the correlation of the syndromes of the disease with the variant of its development according to the degree of its compliance or non-compliance with the optimal variant.

The problem to be solved is three-stage. In the first stage, the number of clinical syndromes in the patient is determined, making it possible to judge the disease. In the second stage, the contribution to the syndromes of regulatory structures and structures that form the basis of the pathological process is determined. In the third stage, the degree of their compliance (non-compliance) with the optimal course of the disease is assessed.

; change during the course of the disease. They appear, , change, disappear, etc. Not only for suboptimal, but also ts of the disease, there is a logic in changing these syn- hase of the disease, the same syndrome must have one er - a completely different one.

None of the clinical syndromes is caused exclusively by regulatory influences or the action of the structures involved in the pathological process in the locus morbi of the disease. Nevertheless, it is advisable to divide them into subsets related mainly to systemic and local manifestations of the disease.

A subset of systemic level syndromes can include psychosomatic, asthenic, hyperthermic, intoxication, metabolic disorders, changes in non-specific and specific immunological reactivity, etc.

A subset of local level syndromes can include characteristics of a typical pathological process unfolding in them, and changes in the functions of organs that are the locus morbi of the disease, etc.

When distinguishing and evaluating subsets of syndromes at the organismal and local levels from the point of view of the Principle of disease optimality, the following must be kept in mind.

The mechanisms of the disease, the essence of which is ultimately to ensure recovery in its acute forms or stabilization in chronic ones, are controlled through body systems and are reflected in the corresponding syndromes of the body level. But they are largely determined by syndromes at the local level. The localization of the process, its prevalence, the severity of the violations of the structure and function of the organs involved in the pathological process require appropriate management, and therefore there must be a mutual and unambiguous mapping between the syndromes of the two conventionally selected levels. One quality of syndromes on the part of these organs must correspond to a certain quality on the part of syndromes of the organismal level. There should be appropriate manifestations of stress, changes in non-specific and specific immunological reactivity, fever, if present, etc.

It can be said in another way that one quality from the syndromes of the organismal level must correspond to a certain quality from the syndromes of the organs involved in the pathological process.

In assessing the psychosomatic state, patients with chronic diseases pose the greatest difficulties. Acute diseases upon completion in a positive case, no matter how difficult they are, do not form a stable structural trace in the psyche of the patient. On the contrary, chronic diseases, especially in the stage of decompensation, bother. Such a patient can, for example, withdraw into himself and become aggressive. Correctly assessing clinical syndromes in a patient, therefore, means taking into account the modifying influence of the patient's higher nervous activity.

Touching on anatomical and functional types, it is important to evaluate the body's reactivity, respectively, eureactive stress, hyperactive, and

hyperreactive distress. Inadequate changes in reactivity are one of the important causal factors in disorders of the optimality of disease development, which we have already shown in the previous section. The first signs of hyperreactive and hyporeactive distress in patients can be, respectively, a restless and inhibited state, hyperemia and pallor of the skin, tachycardia and bradycardia, arterial hypertension, and hypotension. They are confirmed by an excessive and insufficient increase in the level of catecholamines, steroid hormones, and the number of blood leukocytes, neutrophilia, and neutropenia, excessive and weak hypersensitivity skin reactions of the immediate and delayed type, hyperkinetic and hypokinetic types of blood circulation, etc. Moreover, the disease can begin both from a state of hyperreactivity and from a state of hyporeactivity. Intermittent reactivity produces more severe forms of the disease course than just hyperreactive and hyporeactive distress. This is usually a recurrent course of the disease.

Returning to the fever, it is not enough that it corresponds to the prevalence of the process, the phase of its development, and etiological factors, it is important that the changes in metabolism, hemodynamics, breathing, etc. are consistent with it. A favorable variant of the disease, as well as elimination from it, are reflected in changes in fever and it can act as a prognostic and diagnostic marker, as well as a marker that evaluates the effectiveness of measures to optimize the disease course.

Intoxication has a serious impact on the disease, and at different levels. Such symptoms as brokenness, weakness, malaise, irritability, headache, and many others cause a lot of trouble to the patient. The worst is the slowing down of metabolic pathways, reduction of reactivity, and barrier functions of substances and therefore always suppression of the optimal course of the disease. Measures to treat patients are unlikely to be successful if the disease is not the issue.

One of the indicators that reflect changes in the state of reactivity at the beginning of the development of acute diseases, or in the initial phase of exacerbation of chronic diseases of an inflammatory nature, is leukocytosis. Let's consider an example. Two patients with myocardial infarction with only one difference. In one patient, the physiological norm of the number of blood leukocytes is 4E9 1/l, and in another - 8E9 1/l. At the beginning of the disease, the number of blood leukocytes in both patients rose to the same level, namely to 12E9 1/l. This determined to a large extent the different course of the disease in the future. In the second patient, the myocardial infarction progressed favorably, and in the first, it was complicated by a post-infarction heart aneurysm, frequent arrhythmias were

observed in the acute period. Supervision of markers of necrotic and reparative processes in the infarct zone showed that in the second patient, everything went well, as befits a favorable variant of the disease. In the first, these markers showed an acceleration of necrotic and delayed reparative processes. The reason is the hyperreactive course of the disease in the first and normoreactive course in the second. In the second case, the level of leukocytes in the blood increased twice, and in the first - three times. Approximately such a result should be expected for other forms, clearly, as the second of us showed in the example of an experimental hemorrhagic stroke. The outcome of a stroke was largely determined by leukocyte blood reactions in response to its development.

Considering the syndromes of the so-called target organs, which are the locus morbi of the disease, they must be classified into two subsets. The first subset is represented by syndromes reflecting pathogenetic mechanisms of the disease, and the second subset is caused by secondary functional disorders of these organs. Syndromes from the first subset have a direct relationship to optimality and suboptimality in the course of the disease, while syndromes from the second subset have an indirect effect on them.

The optimal forms of the course of acute diseases are completed, as far as possible, by the restoration or substitution of disturbed structures and functions, or, what is the same, their preservation as much as possible after the elimination of the causative factors. With suboptimal forms, the consequences may be even more significant than expected. The optimal forms of the course of chronic diseases can be recognized as those when exacerbations are as rare as possible and in their course approach the optimal forms of the course of acute diseases. These requirements, it is not difficult to see, are formed not from the principle of shortening the duration of treatment, cheaper treatment, etc., but from the principle of the lowest price for the disease in terms of its possible consequences for health.

Non-optimal forms of the course of the disease do not satisfy these (the Principle of disease optimality) requirements. Understanding the logic of the course of optimal and suboptimal forms of the disease seems to be extremely important in their differentiation, and their signs should be considered as differential diagnostic criteria between them.

To use these criteria, you need to fill them with content, determining which quality of each of the syndromes corresponds to the optimal and suboptimal variant of the course of the disease. In the case of a suboptimal variant, the syndromes must be determined by assessing the degree of

their inconsistency with the syndromes for the optimal form of the course of the disease.

This question is not as simple as it might seem at first glance. Clinical syndromes are conservative structures. They also change as the clinical picture of the disease changes over time.

The content of the syndrome corresponds to the same form of the course of the disease in each of its stages. With the change in the clinical picture of the disease, the syndromes also change, up to resolution in a favorable case.

Let's take as an example changes in enzymes or other markers (aspartate aminotransferase, alanine aminotransferase, lactate dehydrogenase, creatine phosphokinase, myoglobin, etc.) of myocardial infarction. Their level is a very important diagnostic feature. It is important for the size of the damage zone, which can be determined by the total activity of any of these markers during the acute period of myocardial infarction. But this level is also important in assessing the pathogenesis of this process. The level increases during the stages of destruction of the necrotic myocardium, reaching and then decreasing to the individual physiological norm after the completion of the destructive processes. So, it is very important when and what values this marker acquires at each of the stages of this process.

In order to determine what kind of myocardial infarction it is, probable or reliable, it is enough to make sure whether the level of the marker has increased or not and to what extent it has exceeded the level of the physiological norm. In order to determine the mass of the infarct zone, it is necessary to find the total amount of the marker during the period of necrosis without taking into account how these processes took place. If we want to determine how the process proceeds and what its outcome is expected to be, it is necessary to monitor changes in the marker and compare them with changes characteristic for the optimal development of myocardial infarction.

Undoubtedly, a disease is a disease. But, we repeat, it is a protective natural tool for recovery, and problems arise only when this tool breaks down. This means that the disease must be intervened when there is a threat of damage or when the tool has broken. Moreover, the essence of the intervention should be to return the course of the disease to uncomplicated circs.

Many complications can actually be protective tools against the aggravation of the disease and its further avoidance from the optimal option. A case of transmural widespread myocardial infarction, which we observed

in a young patient, is illustrative. Despite the severity of the myocardial infarction and the seriousness of the rhythm disturbance in form of atrial fibrillation, the patient had no signs of acute left ventricular failure until the doctor restored the sinus rhythm with antiarrhythmic drugs. As a result of the restoration of sinus rhythm, acute heart failure developed. Atrial fibrillation involving both atria eventually reduced preload on the heart's left ventricle, preventing the development of acute heart failure. By their actions, the doctor violated the defense mechanism.

Another example. We have already drawn attention to the fact that the relationship between the inflammation zone and systemic mechanisms is realized through the border zone and its microcirculatory vessels. For their optimal provision, the border zone in the dynamics of inflammation must change in accordance with changes in the inflammation zone itself.

Consider thromboendocarditis, which is a complication of myocardial infarction. It develops when the endocardial surface of the heart is involved in the infarct zone (transmural and non-transmural subendocardial myocardial infarction). If thromboendocarditis did not develop with this form of myocardial infarction, the endocardial part of the surface of the infarct zone would not participate in ensuring the relationship of the infarct zone with systemic mechanisms. As a result, healing of the infarct zone would be completed due to the desynchronization of necrotic and restorative processes. But thanks to thromboendocarditis, the endocardial surface of the infarct zone is involved in ensuring its connections with systemic mechanisms - through it, blood leukocytes enter the infarct zone and participate in the formation of an inflammatory infiltrate at all stages from the destruction of the necrotic myocardium to its replacement by connective tissue. Another important protective role of thromboendocarditis arises from the fact that it forms a patch over the infarct zone, which increases the strength of the heart wall during the healing period. Over time, thromboendocarditis, like the area of a heart attack, is replaced with the connective tissue and covered from the inner surface of the heart with endothelium. Therefore, in the clinic, we should not talk about thromboendocarditis as a complication of myocardial infarction, but about disorders in thrombus formation, when the conditions for detachment of blood clots and embolization with the development of the same ischemic stroke may arise. It is natural to ask whether our anticoagulant and antithrombotic measures in such cases are the cause of complicated thromboendocarditis in patients with myocardial infarction. The answer to the question is positive for us.

Without a doubt, the optimal course of the disease is as individual as the patient himself, as individual as all the factors, including in various combinations with each other, that determine the disease. There are no rigid algorithms that would be suitable for all cases of life, and in each specific case, the task is solved individually. Nevertheless, a general scheme, a general approach to the assessment of the patient's course of illness can be determined.

In the diagnosis of suboptimal forms of the disease, biochemical, laboratory, and other markers that reflect the pathological process play a decisive role. With the help of functional methods, it is possible to differentiate optimal and suboptimal forms only to a certain extent without differentiating suboptimal forms.

For example, consider the approach to the analysis of syndromes that reflect the essence of the pathological process in somatic diseases of an inflammatory nature. In the case of acute disease, in the phase of exacerbation of the chronic disease, many interdependent processes develop at the locus morbi of damage - alteration, regional microcirculation disorders, diapedesis, exudation, proliferation, followed by the formation and organization of connective tissue.

For example, let's focus on syndromes related to alteration and proliferation, as key in the development of the inflammatory process.

Violation of alterative processes is a component link in the mechanisms of suboptimal forms of inflammatory diseases. They always occur with inadequate changes in the reactivity of the patient's body.

Acceleration corresponds to the hyperreactive variant of distress, and slowing down of alterative processes corresponds to the hyporeactive one. They can be evaluated by changes in any of the markers, such as changes in the activity of enzymes or cytokines, the number of blood granulocytes and agranulocytes, etc. In the diagnosis of alterations of alterative processes, the time when these markers reach their maximum is important, or, in other words, the time when they reach their maximum value in the blood.

Observation of changes in markers of the alterative phase of inflammation often shows their fluctuating changes. The latter is often misinterpreted as a sign of destabilizing inflammation. With the corresponding clinical picture, a sharp repeated increase in the blood of the marker, it must be undoubtedly a recurrence of this phase of inflammation. However, it must be taken into account that the oscillatory nature of their changes is due to biological rhythms. From this point of view, the monotonous change of markers should cause great concern.

Inadequate changes in reactivity, hyporeactive and hyperreactive distress in response to the development of the disease have as a consequence the disruption of not only alterative but also proliferative and related processes. The main manifestations of violations of proliferative processes, we remind you, are their delayed and slowed-down development. In the clinic, it is advisable to use the results of the determination of inflammatory proteins in the blood to monitor the state of proliferative processes.

In the diagnosis of suboptimal forms of acute inflammatory diseases or exacerbations of chronic inflammatory diseases, as well as in monitoring the effectiveness of measures that optimize them, determining the degree of desynchronization in alterative and proliferative processes becomes important. Diagnostic signs of desynchronization are lengthening of the time interval between the moments when the markers of alterative and proliferative processes reach their maximum.

The implementation of the Principle of disease optimality requires a correct understanding and a correct philosophy of health and disease. Returning to the first chapter, where we introduced the Principle of non-contradiction of health and illness, we will recall the error of most of the approaches developed today in medicine, when health is equated with norms, replaced by norms. Illness in these approaches is not considered a measure equivalent to health measure and is opposed to the norms of health. It is nonsense.

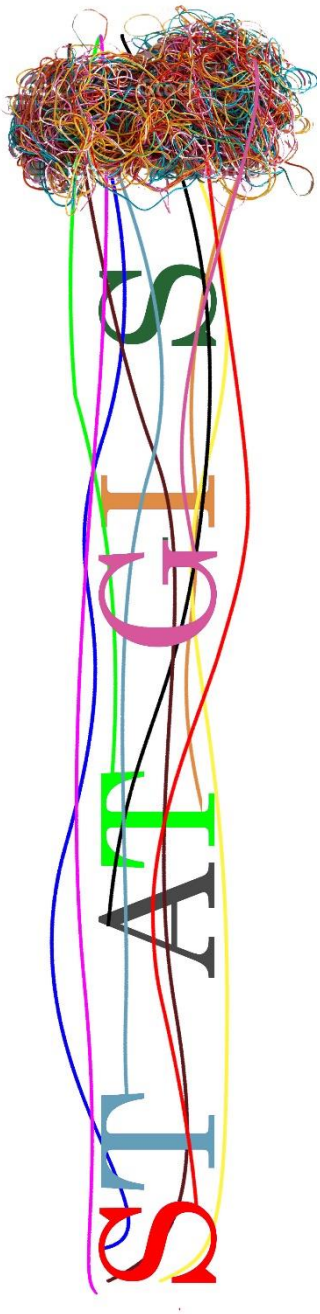
You don't have to go far for an example. Let's recall the opposition "health - disease" and "normal - pathology". We are not against the opposition "health - disease", but we are alien to the opposition "norm - pathology". The norm, let's recall, is only a concept related to the measure, and therefore there should be and in fact, there are many norms in the measure of health and in the measure of illness. The opposition "health - disease" can be brought into line with the opposition "sanology - pathology", but not "norma-pathology".

The measure defines the phenomenon in general, the norm - its individual characteristics. Let's take some acute disease and observe its course. The course can be different with various consequences: quick and high-quality recovery, the transition of the disease into a protracted course, development of irreversible and serious complications, chronicity of the disease, and torpid course with fatal outcome. From the point of view of the Principle of disease optimality, the first option is favorable, or optimal, in other words, all other options are unfavorable, or suboptimal.

If you take the optimal version of the course of a specific disease, which ends with the best possible consequences, and observe its markers (laboratory, biochemical, immune, functional, etc.) in dynamics, you will be able to see their changes according to a certain law. These marker changes are the norm for this disease. The goal function is clearly visible here - a specific marker for the optimal course of the disease should take a certain number of values and no others. Any evasions here are nothing more than signals of a violation in the deviation of the disease from the optimal option.

It should be noted that the question of measure and norm in disease, not only in practical, but also in theoretical medicine, continues to be at an embryonic level today, and there is enough work for everyone.¶ ¶The fetishization of health norms for illness and, as a result, the rule of bringing the condition of a sick person to these norms by any means threatens serious complications, because, let's repeat, Nature selected illness as a tool, as a mechanism of recovery.

There was a time when it was believed that all means are good to achieve the goal. Fortunately, these times are in the past.



Clinical diagnosis
of a somatic patient

Translated from Greek, diagnosis means recognition. According to this, a wide variety of phenomena can be diagnosed, and in everyday life, we encounter technical, ecological, construction,..., and, above all, medical diagnostics.

Clinical diagnosis is one of the varieties of medical diagnosis. It can be defined as an internally consistent formalized conclusion about the patient's health, expressed in terms of medical terminology and classifications.

We offer a scheme for clinical diagnosis, based not only on the accumulated medical experience but also on the principles we have formulated regarding the understanding of health and disease, as well as disease optimality.

This structure consists of 9 points and has the following form.

Name of the disease (in terms of the International Classification of Diseases).

1. 2. Duration of the disease. For acute diseases, accurate information is provided whenever possible. As for a disease such as myocardial infarction and stroke, even time matters, as it depends on whether recanalization of thrombosed vessels, etc., will be possible. For chronic diseases, the duration in years, or the year when they occurred, as well as the date of the last exacerbation, are indicated.
2. Etiology (if established). It is also recommended to include a set of risk factors and causative factors that influence the disease.

3. Stage (phase) of disease development. Among acute diseases, stages of development, maximum clinical manifestations, and reverse development are most often distinguished. In some diseases, the developmental stage may be preceded by a prodromal stage. In chronic diseases, stages of exacerbation and remission are distinguished. The stage of exacerbation over time has substages similar to the stages of an acute disease.
4. The degree of severity of the disease (mild, moderate, etc.) is assessed based on the data from the anamnesis, objective examination, and results of laboratory and instrumental studies. The main criteria are the severity and polymorphism of clinical syndromes, the functional and morphological state of the organ (system of organs) involved in the process, the effectiveness of therapy, the presence of complications, and the frequency of relapses during the year.
5. Main clinical syndromes. Systemic and corresponding local disease syndromes are indicated. Examples are asthenia, fever, state of reactivity, circulatory insufficiency, secretory insufficiency of the corresponding organ, cholestasis, polycythemia, etc. The assessment of clinical syndromes is based on qualitative and quantitative signs.¶ ¶7. Course of the disease (an optimal, suboptimal, variant of suboptimal). This is the most important section of the diagnostic structure that determines pathogenetic treatment. If the disease develops in an optimal mode, we do not need to change anything in the patient's health. In the presence of deviations, it is necessary to intervene in the course of the disease not by bringing it to the norm of a healthy person, but to the norms of the corresponding phase of the development of the optimal course of the disease with all its individuality.¶ ¶8. Complications (listed in order of importance of impact on the course of the disease).
6. Prognosis of the disease.

All diseases are not fixed constructs. Acute, subacute, and chronic diseases have a gradual nature of development. Their course is under the modifying influence on the patient of etiological and pathogenetic factors, their anatomical and constitutional features, heredity, the state of nonspecific resistance and immunological reactivity, environmental, seasonal, and other factors, and, finally, the prescribed drugs therapy.

The diagnosis, as a conclusion about the patient's state of health, should correspond to this state and should change with its changes, and not remain a frozen structure.

Observing a patient in the remission phase of chronic diseases without interfering with the body's functions, or carrying out the treatment process for acute and chronic diseases, we note changes in the patient's health, which must necessarily be reflected in changes in the diagnosis.

Any change in the manifestations of the disease causes the requirement to change the diagnosis. The resulting sequence of diagnoses is perhaps the most important conclusion regarding the development of the disease over time and the effectiveness of preventive or therapeutic measures.

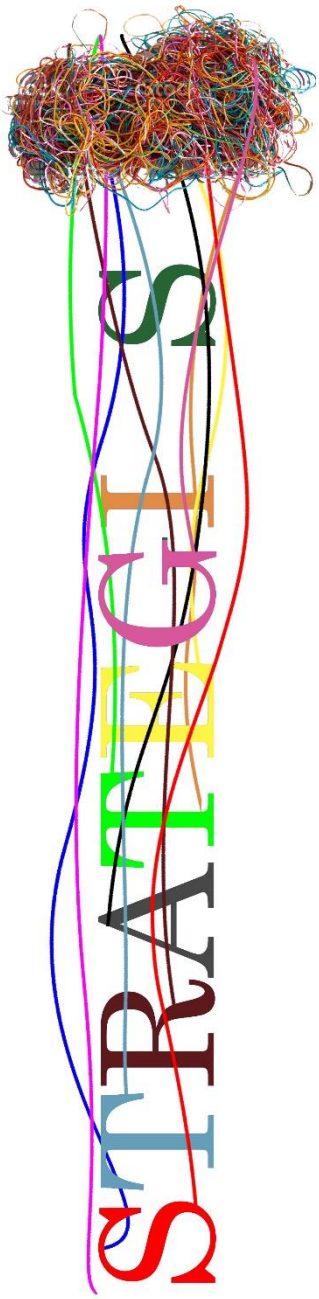
It can be more precisely said that the sequence of diagnoses is itself a diagnosis containing information about the course of the disease.

The structure of the diagnosis is important not only and not so much for formalizing medical logic, fixing the patient's condition, and, ultimately, the anamnesis expressed through a sequence of diagnoses, but for substantiating the choice and quality control of the therapy. The therapy must be related to the disease or (in terms of the structure of the diagnosis) to all elements of the structure of the diagnosis.

The more complete the diagnosis, the more opportunities the doctor has to correlate the selected therapy with the disease and ensure its compliance with the latter.

The proposed structure of the diagnosis is invariant with respect to the state of health of a particular patient, i.e. regarding one or some set of diseases coexisting in his body. If there is not one, but several diseases, the structure of the diagnosis is consistently applied to each of them.

In the case of multiple competing diseases, their diagnoses are arranged in sequence from the cause of the patient's visit to the doctor to accompanying ones that have no etiological and pathogenetic connections with the study.



The principle
of disease optimality in the treatment of somatic patients

The principle of disease optimality does not contradict the existing philosophy of treatment of somatic patients but imposes limitations on it. These limitations consist in ensuring the course of the disease along trajectories leading to the highest quality full recovery of the patient.

In treatment, absolutely everything is important, the patient themself in the integrity of their mental and somatic structures, their changes according to the disease, ecology, social environment, and the interaction of the doctor with the patient.

The doctor must assess how much his patient's disease in terms of time, the severity of the course, and organization of systemic and local pathogenetic mechanisms corresponds to a favorable option or differs from it in order to make the right decisions regarding the volume, quality, and sequence medical interventions. These measures must be correlated with the patient's condition, its changes, the degree of suboptimality, and/or optimality in the course of the disease.

The doctor must trust the patient, human nature, the inexhaustibility of their vital energy, and the exceptional expediency of the disease mechanisms chosen by evolution.

Any disease has a phase course. Accordingly, there are their own, strictly individualized and not yet fully studied norms of its development, which lead to recovery from acute diseases and relapses with minimal structural and functional consequences.

The doctor's goal is not the fastest possible recovery of the patient or the fastest possible remission of the disease, but the least possible consequences of the disease for the patient's health, and the least possible health costs from the disease.

Achieving the goal of treatment is impossible in the absence or insufficient contact with the patient's microenvironment, without creating a benevolent constructive aura around them. It is necessary that the doctor at each visit comprehensively discusses with the patient the condition and changes in the well-being of his health; jointly planned the intervention, up to the selection of specific drugs and their prescribing schemes, taking into account the whole complex of factors.

The patient is the master of his health, no matter how it is evaluated and no matter what the prospects of its changes are. He is an equal partner in the treatment process and relies not on directive instructions, but on collegial decision-making with the doctor at every step.

Educational work is extremely important in the prevention of the disease and achieving better results in the treatment of the disease that has already occurred. It is aimed at providing the patient and, in necessary cases, the microenvironment with the necessary knowledge.

Mental sphere

The patient's personality is extremely important in making decisions about treatment. A person is united physically and mentally, and this unity requires an appropriate approach to him from the doctor.

In order to restore the psychosomatic disorders detected in the patient, the doctor must carry out their correction and develop adequate personal attitudes in the perception and solution of the problems facing him.

Various psychotherapeutic techniques can be used, such as autogenic training, psychoanalysis, hypnosis, massage, meditation, music therapy, religion, breathing techniques, "self-coding", and physiotherapy.

You cannot give the patient less time than he expects from the doctor.

The word heals, and the word maims. This can never be forgotten. The doctor must dispel the patient's doubts about his recovery and revive his faith in the possibility of recovery.

The doctor must help the patient correctly assess the changed conditions of his coexistence, and show them how, by imposing restrictions on biological life, it is possible to ensure fruitful social activity. Recommendations should not be abstract, but extremely specific.

Physical health

The formula – a healthy mind in a healthy body- is golden. In youth, we do not value our health and generously scatter it. At an older age, we often have to regret it. Somewhere around forty, if we lived more or less safely before that, diseases begin to join.

But both at forty and fifty... all is not lost. All we have to do is take care of our physical health, and everything will begin to recover.

For health, a healthy lifestyle is necessary, which includes all its qualities, work, nutrition, and rest. Proper rest, if we are talking about rest.

Physical activity prevents chronic overstrain, chronic fatigue, the development of dystrophic and atrophic processes in organs, and premature aging; increases the general resistance of the body, its resistance to the development of any diseases, first of all, atherosclerosis and its complications, obesity, will make it easier to tolerate diseases.

If sufficient physical activity is useful for maintaining health, it is simply necessary for recovery and a more favorable course of an incurable disease. This activity should correlate with the health of the patient.

When there is a need, physical therapy is needed, which is qualitatively selected according to the patient's state of health. Restrictions on physical activity are also necessary, sometimes serious. But when we talk about the physical health of patients, we should think not about what additional physical restrictions to impose, but about how to make their physical activity more diverse and get by with fewer restrictions.

An important place belongs to exercises aimed at optimizing the state of organs and systems involved in the pathological process. Special exercises for the head and neck are for improving their condition, for the chest - for improving the condition of the lungs and heart, for the muscles of the front abdominal wall - for the organs of the abdominal cavity, etc.

Restrictions are necessary for the period of development of acute disease, in the period of exacerbation of the chronic disease. The patient's body itself feels the need for this. But as the patient recovers or recovers from an exacerbation, the physical activity should be increased in accordance with individual norms, including those determined by the underlying disease.

Loads should not be higher than those that allow the intensification of the functions of breathing and blood circulation in the modes of physiological reactions.

Body weight control

Body weight control is indicated for everyone, regardless of the disease. It is advisable to measure body weight every week or every month at the same time, preferably in the morning after using the toilet. It is advisable to use an electronic (floor) scale with the function of calculating the body mass index. Body mass index is defined as the fraction of weight in kilograms divided by height in square meters.

The physiological level of the body mass index for adults is 22-25 kg/m2. A low body mass index (less than 20 kg/m2) is a proven independent risk factor for osteoporosis and fractures. A high body mass index (over 25 kg/m2) is evidence of metabolic disorders in the body. Excess body weight is associated with a high risk of cardiovascular diseases, the severity of metabolic disorders, and also the risk of developing fractures.

Food culture

Nutrition issues are extremely important in maintaining health, they are three times more important in the treatment of diseases.

In the case of somatic diseases, in addition to the limitations of the disease itself, a number of conditions must be met:

- eating food in an amount no larger than is necessary to maintain physiological weight standards,
- implementation of restrictions on the animal fats, refined carbohydrates, and table salt,
- more vegetables, fruits, and fish products should be consumed,
- food should contain plenty of vitamins and minerals,
- intake of coffee, tea, and other tonic drinks should be limited.

Many metabolic disorders are largely due to the intake of poor-quality water.

The first should be moderation in food. Food should be healthy, at least 3 times a day, and in case of serious diseases with disorders of the absorption function of the intestine, more frequent and smaller portions.

When necessary, psychotherapeutic measures should be involved in controlling the quality and quantity of food.

In adults, for the prevention of osteoporosis, it is necessary to monitor the sufficient intake of calcium and vitamin D with food.

In the midst of acute diseases and exacerbation of chronic diseases, the appetite often drops and this is normal. Health will begin to improve, appetite will return and everything will fall into place.

Food culture and physical activity are the first medicine. There are none, other actions will not give the desired result.

The site www.mypyramid.gov can help you build your own food model).

Alcohol

A healthy lifestyle allows the consumption of alcohol based on ethanol up to 10 ml per day for women and 20 ml per day for men. Abuse of beer is also associated with fluid volume overload and may contribute to the development of cardiac decompensation.

Smoking

Smoking is harmful to everyone and it is recommended to give it up completely.

Sleep

Full sleep is an important condition for maintaining physical and mental health. The last meal should be 1.5-2.0 hours before bedtime, limit liquids and avoid coffee and tea 3.0-4.0 hours before bedtime.

Action with pathological weather sensitivity

Preventive measures for pathological weather sensitivity include tracking changes in the weather with strengthening of the components of a healthy lifestyle (full rest, physical exercises, contrasting temperatures, diet, physiotherapeutic procedures) and carrying out medical treatment measures, when necessary, in accordance with the patient's condition.

There are three types of prevention for pathological weather sensitivity - one-time, planned and seasonal. A one-time measure is applied to persons without chronic somatic pathology and is carried out 1-2 days before the weather changes. Planned measures are prescribed for people with chronic somatic diseases, start 1-2 days before and last up to 3-5 days after the weather change. Seasonal measures are applied to persons with chronic somatic diseases in transitional seasons according to their physical condition, weather conditions and response to weather changes. One of the reasons for the low effectiveness of the treatment of the disease is an underestimation of the significance of the pathological reactions of the patient's weather sensitivity.

Detoxication

Detoxication has a worthy place in the treatment of patients, even when the manifestations and consequences of intoxication are not obvious. This applies to acute and chronic diseases.

Detoxication through the improvement of regulatory systems contributes to the transition of the disease in a favorable direction. It creates a basis for effective treatment measures.

The first thing in detoxication is to increase the amount of water taken for a while by 2 or more times.

It is desirable to take the water at regular intervals, once an hour, etc.

Two-thirds of the load should be in the first half of the day.

The stronger the intoxication, the greater should be the volume of water taken.

Caution is required with heart and kidney problems.

The load is carried out under the control of the volume of water released. The balance of water intake and secretion must be observed.

If necessary, diuretics are used to force the removal of water. In the first 2-3 days of detoxication, they can be prescribed daily, and then intermittently.

Detoxication can be enhanced by prescribing laxatives and cleansing enemas.

Enterosorbents can be used on request.

Therapeutic fasting plays an important role in detoxification. It can be carried out in a wide range of techniques from partial to full, which is largely determined by the health of the patient. One of the most common methods of medical fasting is the so-called intermittent fasting.

Intravenous drug infusions, plasmapheresis, etc. are part of intensive therapy, and it has special goals.

Influence on etiological and risk factors

In the somatic clinic, the doctor more often has problems with chronic diseases, when etiological factors acquire historical significance. With them, the reason loses relevance, and there is generally no need to talk about such therapy. This therapy is more important in acute forms of the disease, where its effect may also be limited.

Antibiotics and antiviral drugs are used for diseases of a microbial or viral nature. This therapy often turns out to be insufficient without affect-

ing the patient's body. Thus, we address the need to increase the non-specific and specific immunological reactivity of the patient's body. In other words, it is about treating the patient, not the disease them has.

In other diseases, for example, ischemic myocardial infarction and ischemic stroke, recanalization of a thrombosed vessel can be carried out within the first few hours of their onset. But if the therapeutic window for this has closed (usually about 4 hours from the development of the disease), the possibilities of such etiological therapy have closed too.

In addition to etiological factors in the development of somatic diseases, risk factors are important. It is desirable to eliminate their influence while simultaneously improving the patient's quality of life. But here you also have to be wise. For example, abrupt cessation of smoking during exacerbation of chronic obstructive pulmonary disease can increase the exacerbation.

Optimization of pathogenetic mechanisms of the disease

The most important issue of treatment is the impact on pathogenetic mechanisms of the disease. From the point of view of our book, these mechanisms are restorative and are aimed at recovery from an acute disease or transition to remission in an exacerbation of a chronic disease. Intervention in them is not always necessary. There is no reason to fight these mechanisms unless they are broken. We must optimize them, and only when they avoid the optimal path by returning them to that path.

Let's consider the approach on the example of inflammation, having in mind acute inflammation, or the stage of exacerbation of chronic inflammation. Let us repeat that inflammation is one of the most common and clinically important typical pathological processes that determine the disease.

Synchronization of the phases of injury and recovery in the locus morbi, which is necessary for a favorable termination of inflammation, and their desynchronization as a cause of the development of complications indicate that therapeutic measures should really be based on the Principle of the disease optimality. According to it, it is necessary to intervene in complicated forms of inflammation, returning them to the expected uncomplicated condition.

When carrying out an intervention, it is necessary to predict the outcome of inflammation, because only an organized scar in its place,

other things being equal, is a structural condition for the highest quality completion of the process.

The optimization procedure is dynamic and is carried out by monitoring and changes in indicators reflecting the state of the inflammatory process.

Since the foundations of uncomplicated and complicated course of inflammation are laid in the first hours of the disease, optimization measures are most effective when they begin with its occurrence or exacerbation in chronic form.

The later optimization starts, the less effective it is. In addition, it is necessary to take into account that any interventions in the course of inflammation affect the reactivity and other regulatory functions of the body and thus affect its outcome in both a positive and a negative sense.

A rational combination of basic treatment methods can sometimes contribute to the normalization of inflammation without additional interventions.

Targeted interventions include optimization of reactivity, as well as optimization of inflammatory phases, including their synchronization.

Optimization of reactivity

Violations of the body's reactivity play a key role in the complications of most diseases, so its optimization is an important condition for the effectiveness of medical measures.

Reduction of reactivity in the hyperreactive form of the disease with a hyperreactive type of distress can be achieved with the help of anti-inflammatory drugs (steroidal and non-steroidal anti-inflammatory drugs, new biological cytokine or leukotriene drugs, antihistamine and diuretic drugs, beta-blockers, etc).

These drugs are prescribed for the time during which there is a transition from hyperreactive distress to eustress, characteristic of an uncomplicated course of the disease.

The greater the degree of avoidance of eustress, the more active in its effect the drug should be used, the higher dosages and frequency of its appointment may be required. The choice of drug is also determined by the ratio of pain and inflammatory syndromes. In the first case, preference is given to drugs with a predominant anti-anginal effect, and in the second - anti-inflammatory action. In more severe cases, drugs from among the listed belonging to different pharmacotherapeutic groups can be combined.

Means of increasing reactivity are pro-inflammatory drugs (propyretics, as well as stimulators of alpha- and beta-adrenoceptors). Prodigiosan is an example of propiretics. Therapy with these drugs can be supplemented with leukopoiesis stimulators, biogenic stimulators, and immunomodulators.

The conditions for prescribing drugs to increase reactivity are the same as for drugs to decrease reactivity, in which it is easy to see the Principle of symmetry in action.

The selection of the most appropriate drugs for reducing and increasing reactivity for a specific clinical situation must be made taking into account possible side effects and contraindications.

Optimization of necrotic processes

Optimization of the process underlying the disease consists of optimization of each of its phases and, as regards diseases of an inflammatory nature, first of all, after reactivity, the phase of necrotic tissue changes in the inflammatory zone. Necrotic processes are important because they are not only mechanisms for the elimination of dead structures, but also control the regenerative processes themselves. With intensive necrotic processes, the regenerative processes are inhibited, and with slow necrotic processes, they begin with a delay. In other words, a necessary condition for an uncomplicated course of inflammation is a course of necrotic processes adequate to the disease (in terms of prevalence of the process, sex, age, disease, etc.).

In cases where intervention in the state of reactivity of the patient's body does not give the expected results, or did not have time to intervene in it at all, measures are taken aimed at necrotic processes. They are based on the management of leukocyte blood reactions, as the destruction of necrotic tissues is largely ensured by leukocytes immigrating from the blood to the area of inflammation.

The drugs used here are essentially the same as those used to optimize reactivity, only they continue or begin to be used in the necrotic phase of inflammation. In intensive necrotic processes, anti-inflammatory drugs are used, and in slow necrotic processes, pro-inflammatory drugs are used. The duration of their use is determined by the duration of necrotic processes, the speed and time of bringing these processes to optimal conditions. Monitoring of changes in markers of necrotic processes serves as a control of the ongoing therapy.

Optimization of restorative processes

Restorative processes represent the next phase of inflammation after necrosis. Separating them from each other, we must note, is completely conditional. In uncomplicated cases, restorative processes occur simultaneously with necrotic ones for a considerable time. There is a point-by-point replacement of damaged tissues with a connective tissue, so that all the properties of the inflammation zone, including strength, are preserved at all stages of the process.

Interference with restorative processes in uncomplicated inflammation is nonsense. There are publications about a decrease in the strength of the postoperative scar with a decrease in elasticity and an increase in roughness when the restorative process is accelerated. It is necessary to intervene in recovery processes in case of their violations. Since hyporeactive and hyperreactive distress are equally complicated by the later onset and delayed development of restorative processes, in these cases they must be stimulated.

Drugs that stimulate restorative processes include anabolic steroid and non-steroidal drugs, stimulators of leukopoiesis, immunomodulators, etc.

In measures to optimize restorative processes, it is necessary to combine drugs from different pharmacotherapeutic groups.

In hyperreactive distress, these drugs cannot be prescribed until the formation of an infiltrate in the inflammatory zone is completed, when, as in hyporeactive distress, they should be prescribed from 1-2 days of illness to accelerate and strengthen the infiltrate in the inflammatory zone.

In general, such interventions in restorative processes are necessary for patients with impaired reactivity, when it cannot be optimized, when the course of necrotic processes is disturbed, or when there is a delay in the development and/or weakening of restorative processes not related to other phases of inflammation.

Methods of synchronizing the phases of inflammation

Desynchronization of necrotic and restorative processes is a pathogenetic mechanism of inflammation complications, therefore measures to optimize it should ensure their synchronization.

This task, in accordance with the above data, is solved through the optimization of reactivity, necrotic and reparative processes, including ensuring the timely inclusion of reparative processes.

Medicinal optimization of complicated forms of inflammatory diseases in the existing system of treating patients

Methods of optimization of complicated forms of diseases of an inflammatory nature do not change, but complement the existing system of treating patients.

Uncomplicated forms of the inflammatory process with the replacement of damaged tissues with a complete scar are one of the most important tasks of treatment. No therapy of the disease should destroy the inflammatory process. New drugs and methods of treatment must be studied from the point of view of their influence on these processes. Disappointments in the development of new methods of treatment are often caused by a contemptuous attitude towards ensuring the uncomplicated course of the inflammatory process underlying the disease.

Thus, the second of us showed, using the example of an ischemic stroke model, that the same possible drug, in this case carbon monoxide, had a protective effect on the brain when administered before the creation of a stroke or not earlier than 3 days after its reproduction. If it was administered in the first hours of a stroke, the course of the latter was significantly complicated.

Consequences of improperly conducted pathogenetic therapy

Any therapy carried out without taking into account the pathogenetic mechanisms of the disease, especially if it violates them, will have adverse consequences for its outcome.

Let's turn again to acute local aseptic inflammation, examples of which are the same myocardial infarction and stroke. The described mechanisms of their uncomplicated and complicated forms of healing explain the reason for the ineffectiveness of late thrombolysis.

Successful late thrombolysis leads to a powerful washout of necrosis products into the systemic bloodstream, high concentration gradients of which translate myocardial infarction and stroke into states of hyperreactive distress. Acceleration of leukocyte immigration to the inflammatory zone increases not only due to additional activation and a higher concentration gradient of chemoattractants from the lesion zone, but also due to an increase in the ways of their access here through the vascular network of the lesion zone, which opens for blood flow. This arouses conditions for acceleration of necrotic and delayed recovery processes, which creates the

prerequisites for complicated healing of both processes. Since with successful late thrombolysis, the degree of increased reactivity can be much stronger than with hyperreactive myocardial infarctions and strokes outside of reperfusion, the consequences of complications of their healing will be more significant.

The problem of polypharmacy

There is a desire to intervene in all possible manifestations of the disease and even replace the doctor's word with psychotherapeutic drugs. There is no need to discuss this issue in detail.

Every doctor knows about the side effects of drugs, but few know about their interaction with each other in the human body, especially the patient.

There are cases when the result of polypharmacy is the appearance of serious complications. Complete withdrawal of the drug in such cases leads not only to their disappearance, but often to the general improvement of the patient's well-being and even recovery.

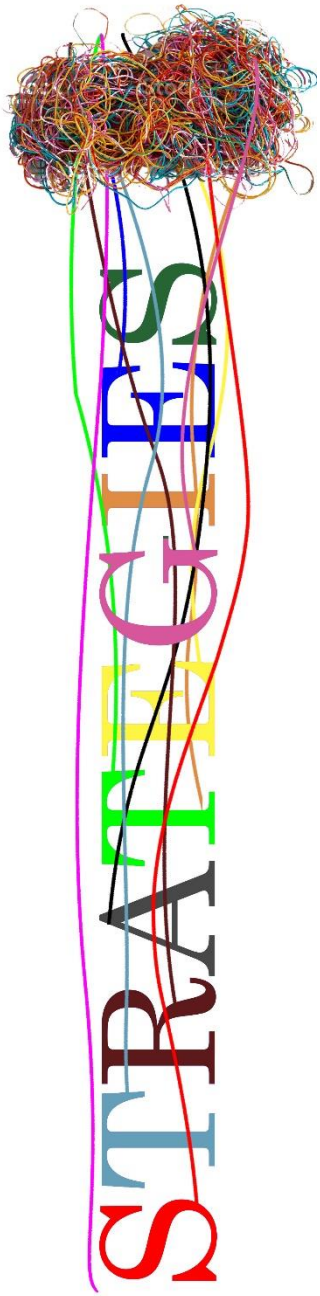
The doctor should limit themself to the minimum possible number of drugs, and if necessary, having prescribed several of them, cancel them in a timely manner when the result is achieved.

Today, clinical pharmacology allows you to choose such combinations of drugs, when the expected result can be achieved with the minimum number of them.

During treatment, it is wrong to influence all manifestations of the disease. It is necessary to help the patient's body in self-healing.

It is necessary to select not only the minimum daily dose of the drug, but also the widest possible interval of its administration, since there are individual peculiarities of the pharmacokinetics of drugs, in addition, no one has canceled chronobiology.

It is always necessary to ask the patient about the drugs prescribed by doctors of related specialties. Curious cases were described when the number of drugs prescribed by doctors reached 45 or more. Don't you believe? Ask Google!



Final chords

Modern treatment of somatic patients is based on evidence-based medicine. Priority is given to drugs whose effectiveness has been proven in so-called well-conducted multi-center, randomized, double-blind, placebo-controlled studies.

Recommendations for treatment are formed on the basis of these studies by special commissions of international and national medical societies, represented by well-known specialists in this field.

We will not discuss the integrity of the compilers of these documents. There is a major problem with the design of the studies that are then used to create these papers. There are cases when, after the completion of these studies, their results, to put it mildly, are not confirmed by clinical practice, and so on.

We consider it important to pay attention to the indisputable point that all these recommendations are and should always remain not prescriptive, but advisory and, preferably, only educational documents. These are mainly reviews summarizing the latest advances in the diagnosis and treatment of somatic diseases. And that's why we recommend understanding them in this way.

The right to choose the strategy and tactics of patient management is completely up to the doctor. He is personally responsible for the results of treatment and decides how to treat their patient.

Modern medicine has not yet developed the principles outlined in our book. Some of these principles belong to us, most of them were formulated by our predecessors, and our principles are simply constructed by them. Without dividing what was formulated before us and what was formulated by us, we will recall the most important consequences of them.

This is the non-contradiction between health and illness, these are different norms of health and illness, this is the mistake of accepting the norms of a healthy person as the norms for a sick person, these are the pathogenetic mechanisms of the disease as mechanisms of recovery, this is the cause of the complication of the disease due to the violation of its pathogenetic mechanisms, this is an intervention in the disease only when it strays from an uncomplicated path.

We have provided a general framework with several examples. We specifically tried to present our understanding of health and disease in a generalized form, without cluttering the constructed philosophy with trifles.

At the same time, we are more than convinced that this very philosophy, which summarizes the historical experience accumulated by medical science in this new, we are sure, correct understanding of the nature of human health and disease, should become the basis of individualized or personalized medicine, about which there is so much talk today, but the understanding of which has not yet been formulated.

We will gladly and gratefully accept remarks, comments and advice. Good luck to you in your noble cause.

Literature

The unfathomable cannot be grasped. Our philosophy and the results obtained on its basis were not built in a vacuum and are an accumulation of achievements both in the previous history of medicine and contemporaries. To make a long list of used literature is only to give priority to some and silence the importance of other scholars. We have included in the list only a limited number of names that have most influenced our philosophy and its application, as well as some of our works. The description of the sources is given in the original languages. References are presented in alphabetical order, first to English-language sources, then to Russian-language and Ukrainian-language sources. We are grateful to the entire medical community, without whom this philosophy and the results obtained on its basis would not have been possible.

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